



**INVEST INDIA**

NATIONAL INVESTMENT PROMOTION  
& FACILITATION AGENCY



# SDG INVESTOR MAP REPORT for INDIA

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**SDG Impact**





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**SDG  
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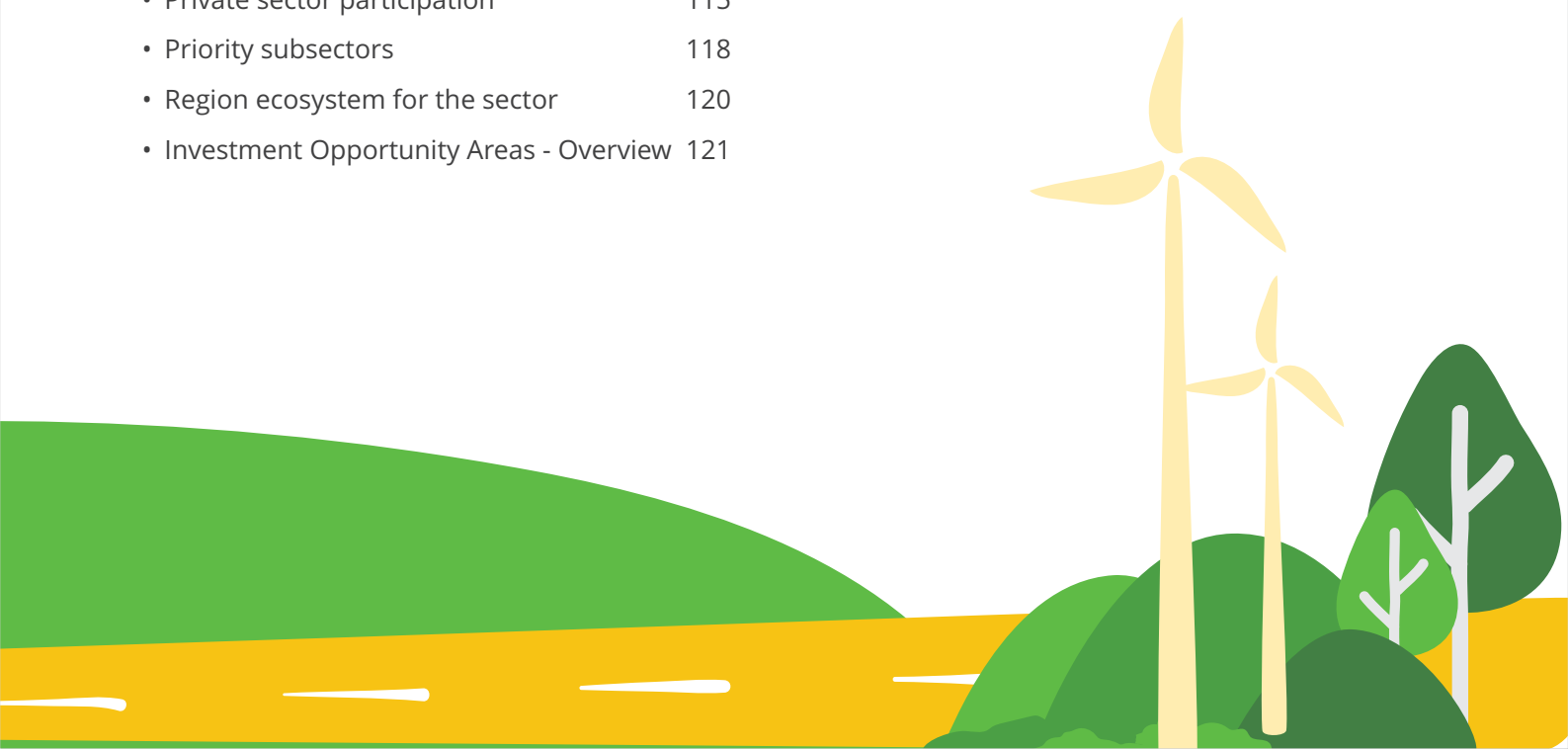
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# List of Abbreviations used in the India Investor Map

<b>AAY</b>	Antyodaya Anna Yojana
<b>AC</b>	Alternate Current
<b>AePS</b>	Aadhar-enabled Payment System
<b>AH&amp;D</b>	Animal Husbandry and Dairying
<b>AiMeD</b>	Association of Indian Medical Devices Industry
<b>AMTZ</b>	Andhra Pradesh MedTech Zone
<b>ANM</b>	Agent Network Management
<b>API</b>	Active Pharmaceutical Ingredients
<b>APMC</b>	Agricultural Produce Market Committees
<b>APY</b>	Atal Pension Yojana
<b>ARAI</b>	Automotive Research Association of India
<b>ASCI</b>	Agriculture Skill Council of India
<b>ASER</b>	Annual Status of Education Report
<b>ASSOCHAM-PWC</b>	Associated Chambers of Commerce and Industry of India - Price Waterhouse and Coopers
<b>ATM</b>	Automated Teller Machine
<b>ATS</b>	Agricultural Technology System
<b>B2B</b>	Business-to-Business
<b>B2C</b>	Business-to-Consumer
<b>BC</b>	Business Correspondents
<b>bcm</b>	billion cubic metres
<b>BESS</b>	Battery Energy Storage Systems
<b>BEV</b>	Battery Electric Vehicle
<b>BFSI</b>	Banking, Financial Services and Insurance
<b>BoG</b>	Board of Governors
<b>BoP</b>	Bottom of the Pyramid
<b>BPS</b>	Budget Private School
<b>BPSS</b>	Board for Regulation and Supervision of Payment and Settlement Systems
<b>BSBDA</b>	Basic Savings Bank Deposit Accounts
<b>C&amp;I</b>	Commercial and Industrial
<b>CAD</b>	Command Area Development
<b>CAGR</b>	Compound Annual Growth Rate
<b>CAPEX</b>	Capital Expenditure
<b>CCC</b>	Certified Credit Counsellors
<b>CCEA</b>	Cabinet Committee on Economic Affairs
<b>CDSCO</b>	Central Drugs and Standards Control Organization
<b>CEA</b>	Central Electricity Authority
<b>CECED</b>	Centre for Early Childhood Education and Development
<b>CGWC</b>	Central Ground Water Commission
<b>CIPPB</b>	Canada Investment Plan Pension Board
<b>CNG</b>	Compressed Natural Gas
<b>CO2</b>	Carbon Dioxide
<b>COVID-19</b>	Coronavirus Disease
<b>CUF</b>	Combined Utilization Factor
<b>cu m</b>	Cubic metres
<b>CPCB</b>	Central Pollution Control Board
<b>CSE</b>	Centre for Science and Environment
<b>CSR</b>	Corporate Social Responsibility
<b>CWC</b>	Central Water Commission
<b>CWMI</b>	Composite Water Management Index
<b>CY</b>	Calendar Year
<b>DBT</b>	Direct Benefit Transfer
<b>DC</b>	Direct Current
<b>DCGI</b>	Drug Controller General of India
<b>DEDS</b>	Dairy Entrepreneurship Development Scheme
<b>DHI</b>	Department of Heavy Industries
<b>DIKSHA</b>	Digital Infrastructure for Knowledge Sharing
<b>DIDF</b>	Dairy Processing and Infrastructure Development Fund
<b>DISCOM</b>	Distribution Companies
<b>DPCO</b>	Drug Price Control Orders
<b>DPIIT</b>	Department for promotion of Industry and Internal Trade
<b>DRIP</b>	Dam Rehabilitation and Improvement Programme
<b>EBITDA</b>	Earnings Before Interest, Taxes, Depreciation and Amortization

<b>ECCE</b>	Early Childhood Care and Education
<b>ECE</b>	Early Childhood Education
<b>EdTech</b>	Education Technology
<b>EESL</b>	Energy Efficiency Services Limited
<b>EGoS</b>	Empowered Group of Secretaries
<b>eNAM</b>	Electronic National Agriculture Market
<b>EODB</b>	Ease of doing business
<b>EPC</b>	Engineering, Procurement and Construction
<b>EQUIP</b>	Education Quality Upgradation and Inclusion Programme
<b>EY</b>	Ernst & Young
<b>EV</b>	Electric Vehicle
<b>F&amp;B</b>	Food & Beverages
<b>FAME</b>	Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles
<b>FC</b>	Float Charger
<b>FDI</b>	Foreign Direct Investment
<b>FHP</b>	Farm Harvest Price
<b>FICCI</b>	Federation of Indian Chambers of Commerce & Industry
<b>FIES</b>	Food Insecurity Experience Scale
<b>FII</b>	Foreign Institutional Investors
<b>FLDG</b>	First Loan Default Guarantee
<b>FM</b>	Finance Minister
<b>FME</b>	Food Processing Enterprise
<b>FPI</b>	Foreign Portfolio Investors
<b>FY</b>	Financial Year
<b>GDP</b>	Gross Domestic Product
<b>GEAC</b>	Genetic Engineering Appraisal Committee
<b>GEM</b>	Global Education Monitoring
<b>GER</b>	Gross Enrolment Ratio
<b>GFSI</b>	Global Food Security Index
<b>GHG</b>	Green House Gas
<b>GMO</b>	Genetically Modified Organisms
<b>GoI</b>	Government of India
<b>GST</b>	Goods and Services Tax
<b>GVA</b>	Gross Value Added
<b>GW</b>	Giga Watt
<b>HDPE</b>	High-density Polyethylene
<b>HFC</b>	Housing Finance Companies
<b>HWC</b>	Health and Wellness Centre
<b>IBA</b>	Indian Bankers Association
<b>IBEF</b>	India Brand Equity Foundation
<b>IBSC</b>	Indian Bio-medical Skill Consortium
<b>IC</b>	Internal Combustion
<b>ICAR</b>	Indian Council of Agricultural Research
<b>ICDS</b>	Integrated Child Development Services
<b>ICMED</b>	Indian Certification of Medical Devices
<b>ICRA</b>	Investment Information and Credit Rating Agency of India
<b>ICT</b>	Information and Communications Technology
<b>IEEFA</b>	Institute for Energy Economics and Financial Analysis
<b>IFC</b>	International Finance Corporation
<b>IMF</b>	International Monetary Fund
<b>IMP</b>	Impact Management Project
<b>INR</b>	Indian National Rupee
<b>IOA</b>	Investment Opportunity Area
<b>IoT</b>	Internet of Things
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IRDAI</b>	Insurance Regulatory And Development Authority of India
<b>IREDA</b>	Indian Renewable Energy Development Agency
<b>IRR</b>	Internal Rate of Return
<b>IT</b>	Information Technology
<b>ITES</b>	Information Technology-enabled Services
<b>ITP</b>	Institutional Trading Platform
<b>IWPA</b>	Indian Wind Power Association
<b>JLG</b>	Joint Liability Group
<b>JNNSM</b>	Jawaharlal Nehru National Solar Mission
<b>JNNURM</b>	Jawaharlal Nehru National Urban Renewal Mission
<b>KCC</b>	Kisan Credit Card
<b>KSM</b>	Key Starting Materials
<b>KVK</b>	Krishi Vigyan Kendras
<b>KW</b>	Kilo Watt
<b>KYC</b>	Know Your Customer
<b>LAB</b>	Local Area Banks
<b>LFPR</b>	Labour Force Participation Rate
<b>LLC</b>	Limited Liability Company
<b>LoA</b>	Letters of Award
<b>MAT</b>	Minimum Alternate Tax
<b>M&amp;A</b>	Mergers and Acquisitions
<b>MCI</b>	Medical Council of India
<b>MCM</b>	million cubic meters
<b>MeitY</b>	Ministry of Electronics and Information Technology



<b>MFI</b>	Microfinance institutions	<b>PSB</b>	Public sector banks
<b>MGNREGA</b>	Mahatma Gandhi National Rural Employment Guarantee Act 2005	<b>PSL</b>	Priority Sector Lending
<b>MHRD</b>	Ministry of Human Resource Development	<b>PSO</b>	Payment System Operators
<b>MMR</b>	Maternal Mortality Ratio	<b>PSU</b>	Public-sector Undertakings
<b>MNC</b>	Multinational Corporations	<b>PV</b>	Photovoltaic
<b>MNRE</b>	Ministry of New and Renewable Energy	<b>QCI</b>	Quality Council of India
<b>MoFPI</b>	Ministry of Food Processing Industries	<b>QR</b>	Quick Response
<b>MoHI</b>	Ministry of Heavy Industries	<b>R&amp;D</b>	Research & Development
<b>MoHFW</b>	Ministry of Health and Family Welfare	<b>RBI</b>	Reserve Bank of India
<b>MoSPI</b>	Ministry of Statistics and Programme Implementation	<b>RE</b>	Renewable Energy
<b>MoU</b>	Memorandum of Understanding	<b>RfS</b>	Request for Selection
<b>MoWR,</b>	Ministry of Water Resources, River Development and	<b>RMNCH+A</b>	Reproductive-Maternal- Neonatal-Child and Adolescent Health
<b>RD &amp; GR</b>	Ganga Rejuvenation	<b>ROCE</b>	Return on Capital Employed
<b>MSME</b>	Micro, Small and Medium Enterprises	<b>RPO</b>	Renewable Purchase Obligations
<b>MSP</b>	Minimum Support Prices	<b>RPSSGP</b>	Rooftop PV & Small Solar Power Generation Programme
<b>MSW</b>	Municipal Solid Waste	<b>RRB</b>	Regional Rural Banks
<b>MW</b>	Mega Watt	<b>RRR</b>	Repair, Renovation and Restoration
<b>NABARD</b>	National Bank for Agriculture and Rural Development	<b>RTE Act</b>	Right of Children to Free and Compulsory Education
<b>NABCB</b>	National Accreditation Board for Certification Bodies	<b>SAMPADA</b>	Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters
<b>NATRIP</b>	National Automotive Testing and R&D Infrastructure Project	<b>SANKALP</b>	Skills Acquisition and Knowledge Awareness for Livelihood Promotion
<b>NBFC</b>	Non-Banking Financial Company	<b>SBICAP</b>	SBI Capital Markets Ltd.
<b>NCCD</b>	National Centre for Cold-chain Development	<b>SHREYAS</b>	Scheme for Higher Education Youth in Apprenticeship and Skills
<b>NCD</b>	Non-Communicable Disease	<b>SASB</b>	Sustainable Accounting Standards Board
<b>NDP</b>	Net Domestic Product	<b>SICS</b>	Sustainable Industrial Classification System
<b>NEP</b>	National Education Policy	<b>SCORES</b>	SEBI Complaints Redressal System
<b>NFIS</b>	National Financial Inclusion Strategy	<b>SDG</b>	Sustainable Development Goals
<b>NFSA</b>	National Food Security Act	<b>SECI</b>	Solar Energy Corporation of India
<b>NGMIS</b>	National Groundwater Management Improvement Scheme	<b>SFB</b>	Small Finance Bank
<b>NGO</b>	Non-Governmental Organization	<b>SFC</b>	State Financial Corporation
<b>NHS</b>	National Health Mission	<b>SHC</b>	Soil Health Cards
<b>NIF</b>	National Indicator Framework	<b>SIDBI</b>	Small Industries Development Bank of India
<b>NISA</b>	National Independent Schools Alliance	<b>SME</b>	Small and Medium Enterprise
<b>NISHTHA</b>	National Initiative for School Heads' and Teachers' Holistic Advancement	<b>SPV</b>	Special Purpose Vehicle
<b>NLEM</b>	National List of Essential Medicines	<b>SRI</b>	Self-Reliant India
<b>NMSA</b>	National Mission for Sustainable Agriculture	<b>SRO</b>	Self-Regulatory Organizations
<b>NOX</b>	Nitrogen Oxide	<b>STEM</b>	Science, Technology, Engineering and Mathematics
<b>NPA</b>	Non-Performing Asset	<b>STRIVE</b>	Skill Strengthening for Industrial Value Enhancement
<b>NPPA</b>	National Pharmaceutical Pricing Authority	<b>SWM</b>	Solid Waste Management
<b>NPCI</b>	National Payments Corporation of India	<b>T&amp;D</b>	Transmission and Distribution
<b>NPDD</b>	National Programme for Dairy Development	<b>TCO</b>	Total Cost of Ownership
<b>NSQF</b>	National Skills Qualifications Framework	<b>TOP</b>	Tomato, Onion and Potato
<b>NSS</b>	National Sample Survey	<b>TPED</b>	Total Primary Energy Demand
<b>NASSCOM</b>	National Association of Software and Service Companies	<b>TReDS</b>	Trade Receivables Discounting Systems
<b>NHB</b>	National Housing Bank	<b>UCB</b>	Urban Cooperative Bank
<b>OECD</b>	Organisation for Economic Co-operation and Development	<b>U-DISE</b>	Unified District Information System for Education
<b>OEM</b>	Original Equipment Manufacturer	<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>OOP</b>	Out-Of-Pocket	<b>UHC</b>	Universal Health Coverage
<b>OPEX</b>	Operating Expenditure	<b>UIDAI</b>	Unique Identification Authority of India
<b>OPPI</b>	Organisation of Pharmaceutical Producers of India	<b>ULB</b>	Urban Local Bodies
<b>P2P</b>	Peer-to-Peer	<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>PACS</b>	Primary Agricultural Credit Society	<b>UNFAO</b>	United Nations Food and Agriculture Organization
<b>PAT</b>	Profit After Tax	<b>UNICEF</b>	United Nations Children's Fund
<b>PCR</b>	Public Credit Registry	<b>UPI</b>	Unified Payments Interface
<b>PDC</b>	Project Development Cell	<b>USD</b>	United State Dollars
<b>PHC</b>	Primary Health Centre	<b>UT</b>	Union Territory
<b>PE</b>	Private Equity	<b>VC</b>	Venture Capital
<b>PISC</b>	Project Implementation and Sanctioning Committee	<b>WASH</b>	Water, Sanitation and Hygiene
<b>PLF</b>	Plant Load Factor	<b>WHO</b>	World Health Organization
<b>PLI</b>	Production Linked Incentive	<b>WLAO</b>	White Label ATM Operators
<b>PM-AASHA</b>	Pradhan Mantri Annadata Aay SanraksHan Abhiyan	<b>WSH</b>	Wind-Solar Hybrid
<b>PMFBY</b>	Pradhan Mantri Fasal Bima Yojana	<b>WTO</b>	World Trade Organization
<b>PM-JAY</b>	Pradhan Mantri Jan Arogya Yojana	<b>YoY</b>	Year-on-year
<b>PMJDY</b>	Pradhan Mantri Jan Dhan Yojana	<b>ZEV</b>	Zero-Emission Vehicle
<b>PMJJBY</b>	Pradhan Mantri Jeevan Jyoti Bima Yojana		
<b>PMKS</b>	Pradhan Mantri Kisan Scheme		
<b>PMKSY</b>	Pradhan Mantri Krishi Sinchayee Yojana		
<b>PMMY</b>	Pradhan Mantri Mudra Yojana		
<b>PMAY</b>	Pradhan Mantri Awas Yojana		
<b>PM-KISAN</b>	Pradhan Mantri Kisan Samman Nidhi		
<b>PMSBY</b>	Pradhan Mantri Suraksha Bima Yojana		
<b>PMSMA</b>	Pradhan Mantri Surakshit Matritva Abhiyan		
<b>PMSSY</b>	Pradhan Mantri Swasthya Suraksha Yojana		
<b>POS</b>	Point of Scale		
<b>PPA</b>	Power Purchase Agreement		
<b>PPP</b>	Public-Private Partnership		



# Foreword

## Dr. Rajiv Lall

Member, Steering Committee, SDG Impact & Co-Chair,  
SDG Finance Facility platform, UNDP

**T**he Sustainable Development Goals (SDGs) and the 2030 agenda provide a global framework for addressing the most urgent social, environmental and development challenges. This is not the responsibility of governments alone, we need the private sector, its resources and ability to innovate, to achieve the SDGs.

Businesses and investors are increasingly being held accountable for not just profit outcomes but also their contributions to communities and the environment. While there is an increase in investments that target a double or triple bottom line, the efforts are not commensurate to create the tectonic shifts that are needed as we embark on the 'Decade of Action' to achieve the 2030 agenda.

COVID-19 has further challenged development models and businesses in myriad ways and have significantly impacted the gains that were made towards SDGs. UNDP estimates show that global human development – a combination of education, healthcare and living standards could be adversely affected for the first time since 1990 when the measurements first began<sup>1</sup>. India, like many peer economies, has its task cut out to boost economic growth at least to its pre-pandemic levels and also ensure inclusivity in its recovery measures.

Accelerating the recovery will require directing capital flows into sectors and businesses that scaffold the overall development of people and planet. These are notably sectors like Agriculture (to address food security issues), Healthcare (to ensure access to universal healthcare), Education

(to ensure high quality human capital) and industrial sectors to create jobs and gainful entrepreneurial opportunities.

The SDG Investor Map report makes a concerted effort to identify sectoral opportunities that are responsive to key development challenges, while being economically viable and scalable. The Map has been developed by deploying a robust research methodology and a highly consultative approach that involved over 50 structured interviews, highlights investor sentiment in subsectors and broad opportunity areas, while also suggesting viable business models that can be supported.

18 Investment Opportunity Areas (IOAs) across sectors like Education, Healthcare, Renewable Energy (RE), Food & Beverages (F&B) and Financial Services have been identified. Over 80 percent of these IOAs address productivity issues such as employment generation and over 50 percent of the suggested opportunities leverage technology to bridge the access gap. Almost all the highlighted opportunities have a focus on populations in low resource settings.

We hope that this results-oriented, data-driven approach that highlights high impact and innovative business models leads to a greater flow of capital and pathways for collaboration.

We are thankful to Invest India for their collaboration on this important initiative and we hope that the partnership shifts the discourse in the way commercial funds are invested in India.

### Source:

1. Conceição, P., Hall, J., Nayyar, S. and Melendez, M. (2020). COVID-19 AND HUMAN DEVELOPMENT: Assessing the Crisis, Envisioning the Recovery. undp.org. Available at: [http://hdr.undp.org/sites/default/files/covid-19\\_and\\_human\\_development\\_0.pdf](http://hdr.undp.org/sites/default/files/covid-19_and_human_development_0.pdf).





# Foreword

## Mr. Deepak Bagla

CEO and Managing Director, Invest India

For a country with 1.3 billion people, a number that is equivalent to almost one-sixth of humanity, India occupies a key role in determining the success of the SDGs, globally. The Government of India's (GoI) commitment towards the global SDGs is exhibited by India's mission for inclusive, equitable and sustainable growth and is amply resonated by the developmental motto of '*Sabka Saath, Sabka Vikas, Sabka Vishwas*' (Collective Efforts for Inclusive Growth). GoI has launched several initiatives and introduced a number of reforms such as Make in India, Digital India, Swachh Bharat Abhiyaan, Ayushman Bharat and the Smart Cities Mission, reforms that demonstrate this unparalleled priority. Based on the evidence from the NITI Aayog's SDG India Index, which measures progress at the subnational level, the country has developed a robust SDG localization model centred on adoption, implementation and monitoring at the State and district levels.

Being the national investment promotion and facilitation agency, Invest India aims to play a pivotal role in India's SDG trajectory. Invest India not only adopts SDGs as a key driver of its investment promotion lifecycle but also conceptualizes, curates and helps execute bespoke projects targeted at specific SDGs. More importantly, Invest India has deployed a series of tools and enablers to make the SDG orientation a key component across the investment ecosystem and among its various government and non-government stakeholders.

Invest India is honored to have partnered with UNDP India to develop the first-ever, 'SDG Investor Map for India'. The SDG Investor Map offers an integrated and functional lens to respond to India's development needs by showcasing 18 IOAs across sectors such as Education, Healthcare, RE, F&B and Financial Services. Product and service delivery in these IOAs exhibits a glorious opportunity to both

foreign and domestic investors to leverage the lucrative market forces in India, aid the nation to realise its SDG targets and impact lives of millions of Indians. We hope our data-backed research and insights serve as useful blueprints to understand how best the SDG financing gap can be narrowed in India.

This initiative is an instrumental stride in India's development trajectory, and I believe it couldn't have transpired at a better time. The COVID-19 pandemic has disrupted lives, communities and businesses worldwide. The virus outbreak has accentuated the exigency and significance of aligning public and private efforts to ensure that we achieve growth with purpose, and "reach the farthest first".

While policy-centric initiatives have a huge role to play in centralizing SDGs within with governance framework, the 'Decade of Action (2020-30)' warrants active participation of not only the government and public institutions, but also the private sector. We hope that our efforts will help pave the way towards a more promising and responsible investment ecosystem in the country and help bear testimony to the strength of collaborative effort. This development also comes at an opportune time when the demand for financial returns coupled with desired social or environmental impact, is growing manifold. Hence, the SDG Investor Map for India is uniquely poised to help build fruitful partnerships between investors, industry and policy-makers, as well as reinforce the focus on the five pillars that shape the SDGs: People, Planet, Prosperity, Peace and Partnerships.

I would like to wholeheartedly thank everyone who has provided their invaluable inputs to this exercise and express my sincere gratitude to UNDP India for undertaking this ambitious endeavour.



## Message

# Mr. Amitabh Kant

Chief Executive Officer  
National Institution for Transforming India  
Government of India

I would like to congratulate the country office of UNDP and Invest India, Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, for launching the SDG Investor Map for India in these apposite circumstances as India embarks on a journey towards a resilient recovery from the disruptions brought about by the pandemic. As we focus on building back better, the private sector will play a vital role in realising the 2030 agenda.

It gives me immense pleasure to note that NITI Aayog's SDG India Index has been leveraged by UNDP and Invest India in developing the SDG Investor Map. First released in 2018, the SDG India Index and Dashboard has become a powerful tool for measuring progress on the Global Goals at the sub-national level, fostering competitive federalism and catalysing localization of SDGs. The index has been bringing together all the sub-national governments to create a shared understanding of the goals, including creating opportunities for cross-learning.

Anchored by the development needs of different regions recognised through the SDG India Index with IOAs, white spaces, sectors and subsectors outlined, this report is an important contribution towards strengthening the means of implementation and in unshackling the power of partnerships with the private sector for achieving the SDGs. As part of the methodology, valuable insights elicited in the stakeholder consultations with a myriad of investors have further enriched the development of this tool.

The SDG Investor Map recognises the progressive strides taken by the country in creating an enabling environment for investments. While the pandemic has brought forth several challenges across all sectors, it has further energised and emboldened GoI to bring about reforms aimed at long-term transformation. SDG-aligned investments in conjunction with these enabling and transformative reforms have the potential of accelerating progress in realising the 2030 agenda as we step into the 'Decade of Action'.





# Acknowledgements

The Investor Map development process for India has been a work of deep collaboration and participation from multiple stakeholders. In this report, we have attempted to capture the rich information and insights received from government and private sector colleagues to showcase the diverse investment opportunities that can contribute to India's growth story, deliver returns to investors and make significant contributions to outpace the development challenges in the country. Examples set by audacious investors and enterprises that made the idea of commercial investments in SDG-enabling sectors and business models have spurred the production of this report. We remain grateful to these innovators.

We would also like to acknowledge the following team members, colleagues, sector experts and supporters who made contributions to this report:

**UNDP:** Karanraj Chaudri, Sebnem Sener, Sara Lisa Orstavik, Riya Saxena, Kaustav Sood, Vidhi Khabya

**Team of consultants:** Devahuti Choudhury and Ritika Mehrotra. Rhea Grover contributed to the analysis that was used for the development of the report. Pratigya Kalra Khurana was consultant advisor to the project.

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We conducted sector-specific consultations with various Venture Capital (VC)/Private Equity (PE) funds, sovereign funds, pension funds, impact investors, Development Finance Institutions,

Investment Promotion Agency for GoI, Think Tanks and Industry Networks. These experts encouraged us to organize our research in a tangible framework, providing us with critical information about the investment landscape in India and factors that will drive the investor sentiment going forward. We would specifically like to thank Abhay Kumar Singh (FICCI), Eittee Gupta (FICCI), Sanyukta Samaddar (NITI Aayog), Vikram Singh Mehta (Brookings India), Imran Jafar (Gaja Capital), Nirav Khambhati (Kaizenvest), Geeta Goel (Michael and Susan Dell Foundation), Arnav Kapur (Bill and Melinda Gates Foundation), Amie Patel (Elevar Equity), Avinash Mishra (Global Innovation Fund), Sheeba D Mello (Prayog Advisors), Nethra Bhat (Accion), Abhishek Agarwal (Accion), Nilesh Shrivastava (National Investment and Infrastructure Fund), Ragini Bajaj Chaudhary (Caspian Impact Investments Pvt. Ltd), Simrun Mehta (Kohlberg Kravis Roberts), Sanjay Gandhi (Gojo & Company), Praachi Gandhi (Gojo & Company), Shruti Srivastava (Omnivore), Shivnath Thukral (Facebook), Noshir Colah (Aavishkar), Hari Rajagopal (Samunnati), Abhishek Thanvi (Samara Capital), Barath Shankar Subramanian (Accel), Bhanu Mehrotra, Hemant Mandal (International Finance Corporation), Aditi Gupta (Asha Impact), Akash Singh (Sagana), Sujeet Govindaraju (Canada Investment Plan Pension Board), Sudershan Sampathkumar (The Bridgespan Group) and Ramraj Pai (Impact Investor's Council).

# Project Collaborators



Invest India is the national investment promotion and facilitation agency of India. It handholds investors in their India investment journey that includes establishing, operating and expanding their businesses in India. It provides comprehensive facilitation including strategic business advisory, policy guidance, location assessment, issue redressal and expansion support. Invest India focuses on sector-specific investor targeting and development of new partnerships to enable sustainable investments in India. Invest India also actively works with several Indian States to build capacity as well as bring in global best practices in investment targeting, promotion and facilitation areas. More importantly, Invest India has deployed a series of tools and enablers to make the SDG orientation a focus across the investment ecosystem and among its various government and non-government stakeholders. In addition to being the execution agency for GoI's 'Make in India' and 'Startup India' initiatives, Invest India is also the execution agency for the national technology commercialization programme, 'Accelerating Growth of New India's Innovations' (AGNI) and 'Swachh Bharat Unnat Bharat Abhiyan' from the Office of the Principal Scientific Adviser to the GoI.



UNDP works across 170 countries and territories to eradicate poverty while protecting the planet. We help countries develop strong policies, skills, partnerships and institutions so they can sustain their progress. UNDP has worked in India since 1951 in almost all areas of human development, from systems strengthening to inclusive growth and sustainable livelihoods, as well as sustainable energy, environment and resilience. UNDP's programmes continue to integrate a global vision for catalytic change with India's national priorities. With over 30 projects on the ground in almost every state, today, it works to achieve the SDGs by transforming traditional models to do development differently.

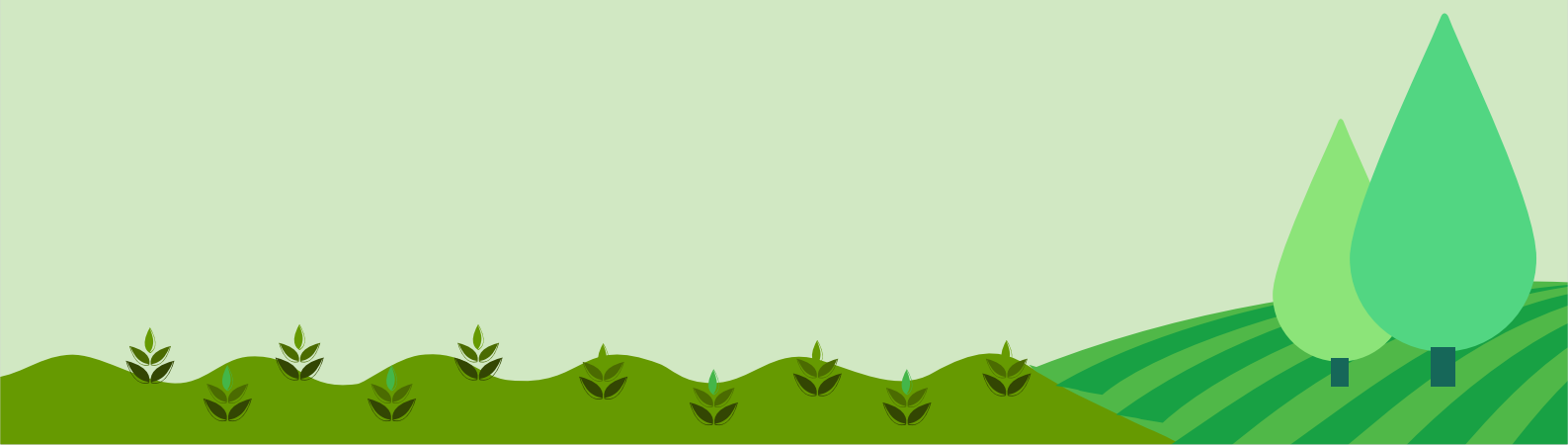




SDG Impact is a UNDP flagship initiative focused on supporting the mobilization of private sector capital and investments in support of the SDGs. By providing investors and businesses with the clarity, insights and tools required to support and authenticate their contributions to achieving the SDGs, SDG Impact's vision is a world in which all capital flows advance the 2030 agenda. By driving consistency and accountability, SDG Impact will work to enable more effective investment towards global good. It will allow investors, businesses and others to confidently authenticate their contributions to achieving the SDGs and to identify SDG investment opportunities in emerging economies and developing countries. This initiative is the first-of its-kind at the United Nations, and the champions and thought leaders on the Steering Group represent an influential cross-section of industries from the global North and South that can collectively influence investing around the world.



The SDG Finance Facility is a multi-stakeholder platform that supports the incubation and design of SDG-aligned innovative financial instruments that will crowd-in additional capital to address the key development challenges in India. It also works to strengthen the sustainable finance market architecture in India and supports the development of innovative finance through actionable research and strategic partnerships. The SDG Finance Facility is anchored by UNDP with support from the Swiss Agency for Development and Cooperation.





# Executive Summary

## Context

Global cooperation and collaboration lie at the centre of achieving the SDGs. Investors, enterprises, civil society organizations, international development networks and national governments must collaboratively approach and contribute to the solutions that can help achieve the 17 SDGs and their 169 underlying targets by 2030. As we move into the 'Decade of Action', ensuring financing of sectors, subsectors and business models, that are relevant to the SDGs, has never been more urgent.

In its 2014 World Investment Report, United Nations Conference on Trade and Development (UNCTAD) estimated that the SDGs would globally require investments of USD 5 trillion to USD 7 trillion annually and USD 2.5 trillion of this funding gap was for emerging economies like India alone.<sup>2</sup> Though investments from the public and private sectors have grown to meet this funding requirement, the volume of investments is not yet in the order that would make a significant dent in the estimated investment gaps<sup>3</sup>.

Home to almost a fifth of the world's population<sup>4</sup>, the advancement of India on its SDG commitments is key to the success of the 2030 global agenda. India's commitment to the SDGs is reflected in its convergence with the national development agenda as reflected in the motto of 'Sabka Saath Sabka Vikas' (Collective Efforts for Inclusive Growth). NITI Aayog, the apex policy think tank for GoI, is mandated to oversee the implementation of the global goals in the country<sup>5</sup> and the Ministry of Statistics and Programme Implementation (MoSPI) is responsible for creating the National Indicator Framework (NIF) to help in monitoring the progress made on SDGs and their relevant targets<sup>6</sup>. The contribution is further augmented by increased government efforts to commit public funds to SDG-relevant sectors and to create a favourable ecosystem for the private sectors to participate in boosting economic

growth. Further, World Bank Group's 'Doing Business 2020' report credits policy and financial reforms under the 'Make in India' campaign in attracting foreign investment, boosting participation, particularly in the manufacturing sectors and improving country's overall competitiveness, ensuring flow of capital to SDG-enabling sectors, among others. Key steps such as a progressive tax regime, bolstering cross-border trade and stringent steps to resolve insolvency are some of the key factors contributing to the ease of doing business in India.

The contribution of the private sector to boost sectoral growth is reflected by the growing volume of investments in India. The PE/VC industry has continued to show positive sentiment towards India as an investment destination with USD 48 billion invested across sectors in 2019. Between January 2019 and July 2020, India has received ~USD 70 billion from institutional investors. This is almost equal to all the PE investments received by India between 2013 and 2017<sup>7</sup>. The PE/VC investors are also the largest source of Foreign Direct Investments (FDI) in the country with over 80 percent of total investments made<sup>8</sup>. Investments are also fuelled by the growth and stability in Gross Domestic Product (GDP) that has been achieved through the development of both economic infrastructural facilities (energy, transport, irrigation, finance and communication) and social infrastructure (education and health).

With these positive tailwinds defining the India's growth story, UNDP in India has collaborated with Invest India, the national investment promotion and facilitation agency of India under DPIIT, Ministry of Commerce and Industry, GoI, for the development of an SDG Investor Map with guidance from SDG Impact team in UNDP headquarters. SDG Investor Maps are a market intelligence tool that provides localized data and specific information on investment and business opportunities that align with the SDGs. Users can apply various filters to narrow in on regions,



sectors, policy landscape, market ecosystem, and identify areas where their work can have a significant development impact. Invest India, in its role as an Investment Advisor, supported UNDP's SDG Impact in facilitating consultations, convenings for the project team with leading private investment institutions and contributing to analysis around identification of key business models/IOAs.

In addition to the SDGs, the Investor Map for India also took cognizance of the COVID-19 pandemic and the development needs that emerged as focus areas for GoI, private sector and the civil society. To this end, the analytical framework used for the development of this report identified and validated first-order effects

of the pandemic such as a surge in the demand for healthcare, consumer demand suppression and value chain disruptions across sectors. Second-order effects and more long-term needs such as **Productivity** (industrialization and employment generation), **Inclusion** (vulnerable and marginalized communities, businesses most affected by the pandemic), **Technology Adoption and Digitization** (warranted by social distancing norms and alternative solutions to stay connected), **Environmental Sustainability and Infrastructure Development** were identified as key determinants in the selection of investment and business opportunities highlighted in the report.

## Methodology and process

The development of the Investor Map followed an eight-step methodology that is being replicated by UNDP country offices across the globe.

The methodology follows a 'funnel' process that begins by taking stock of national development needs and policy priorities, investment momentum by public and private sectors, priority sectors, subsectors, regions with the highest development needs and a conducive environment to attract investments

The methodology finally helps to identify the SDG-relevant IOAs that are fundamentally marketable, scalable and have shown evidence of private sector investments with favourable returns

This report also includes white spaces in each sector. These are IOAs with potential for growth in the 5-7 years horizon aligned with development needs and government policies but have limited private sector participation

For the analysis of region-specific business environment for the identified sectors and subsectors, the report takes into account the regional divergence identified by NITI Aayog's SDG Index report<sup>9</sup> in the achievement of sub-national SDG goals. The regional analysis is further supplemented by understanding the urban-rural disparities in income distribution, consumption patterns, quality of access to services and prevailing ecosystem for private sector participation



## Investment Opportunity Areas

While framing the opportunity areas, it was also ensured that such are sufficiently specific, within which diverse kinds of deals/transactions can take place but also broad enough for investors to have the flexibility to deploy the best-suited funding vehicle. The business models alluded to in the sector chapters are suggestive and the relevant ecosystem continues to innovate approaches and models to adapt to changing consumer needs.

The process for developing the Investor Map for India was highly consultative with nearly 50 virtual, structured interviews conducted with government agencies, sector policy experts, think tanks, industry bodies, private sector investors and international development networks. At each stage of the process, the project team pressure tested emergent hypotheses and themes with experts to determine the SDG-relevant sectors and IOAs that are most geared to support India's development needs and policy priorities.<sup>10</sup>

## Outputs of the Investor Map development exercise

**The Investor Map for India has identified 18 IOAs and 8 white spaces across 6 sectors and 13 subsectors.** To standardize the mapping process and to facilitate comparisons at a global level with peer UN Country Offices, the Investor Maps use Sustainable Accounting Standards Board's (SASB) Sustainable Industrial Classification System (SICS) to help categorize investor and enterprise activity using a sustainability lens.<sup>11</sup> The Education sector is not adequately represented in the SASB SICS and has been added separately.







## Priority sectors and regions

The report identified six priority sectors for inclusion in the India Investor Map. These are – **Education, Healthcare, Food & Beverages, Renewable Resources & Alternative Energy, Financials and Sustainable Environment.** Four



of the sectors are also part of the 10 SDG-relevant sectors that have been highlighted in the UNCTAD World Investment Report. Further, 13 subsectors have been selected to add more focus that best respond to India's development needs and policy priorities.

## Specifically, the report highlights the following IOAs under each of the five SDG-relevant sectors



## Education

India will be home to the largest workforce in the world by 2027 and has the largest school-going population in the world of over 250 million students.<sup>12</sup> Education and skills development of India's large and growing human capital is imperative for the country's socio-economic growth. The sector has seen significant investment momentum from the private sector in the past, with FDI worth USD 3.24 billion flowing into Education between April 2000 and March 2020. The COVID-19 pandemic and the social distancing norms thereof have surged the demand for Education Technology (EdTech) platforms, making it an attractive investment area. Overview of our findings for the Education sector are as follows:

<b>Market Size</b>	Currently estimated to be over USD 100 billion	
<b>Investment Activity</b>	EdTech platforms received 20% of all VC investments in the first two quarters of 2020	
<b>Investment Opportunity Areas Identified</b>	<b>Subsectors</b>	<b>SDGs Directly Impacted</b>
Online K12 Supplementary Education	Education Technology	 
Online Higher Education and Skill Development	Formal Education	
Education Institute Financing	Education Financing	

Opportunity areas such as **online (low-tech) upskilling platforms for the unorganised workforce** have the potential for strong development impact albeit with unproven commercial viability as a standalone business and have been highlighted as a white space in the sector.

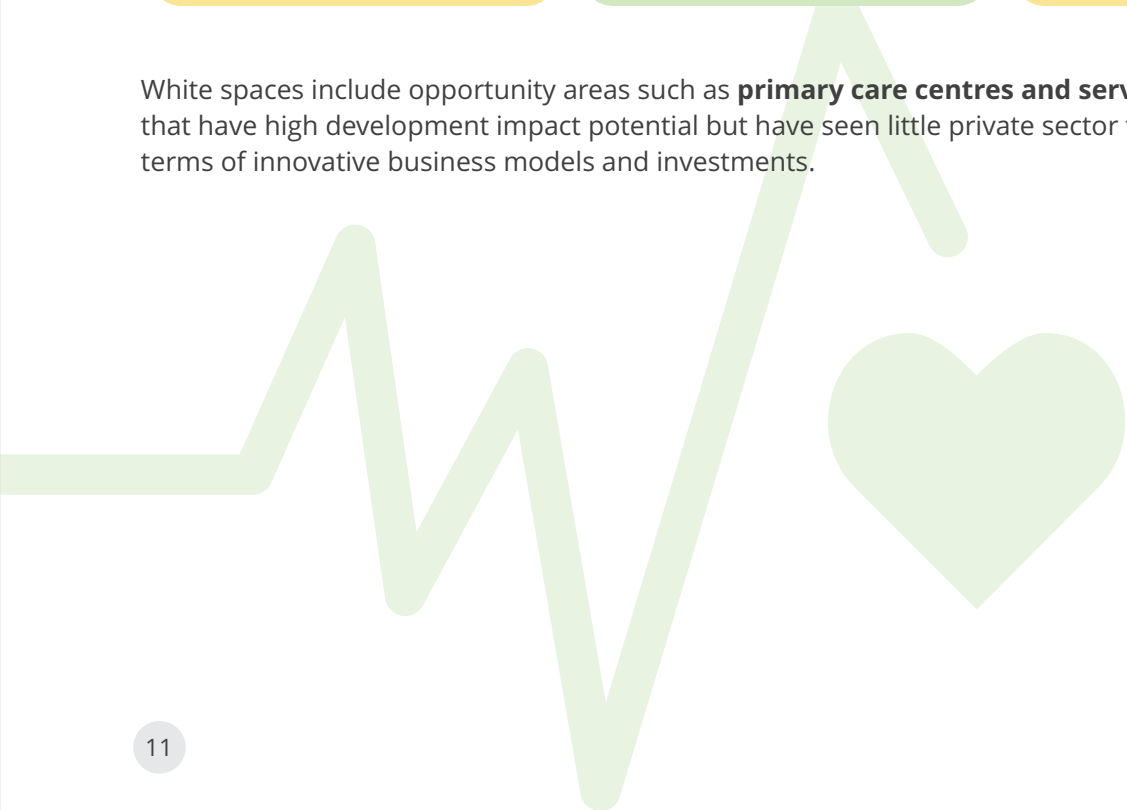


# Healthcare

Focus on Healthcare has seen a surge after the outbreak of COVID-19 pandemic with growing public sector financing and an equally responsive private sector including civil society organizations coming together to address immediate and anticipated long-term effects. Areas such as digital healthcare have especially seen innovations fuelled by increased investor attention, a trend that is likely to continue in the long term. Overview of our findings for the Healthcare sector are as follows:

<b>Market Size</b>	USD 372 billion by 2022 <sup>13</sup>	
<b>Investment Activity</b>	PE & VC Investments in Healthcare and Healthcare Technology in 2019 were c. USD 3.62 billion, 16.3% higher than in 2018 <sup>14</sup>	
<b>Investment Opportunity Areas Identified</b>	<b>Subsectors</b>	<b>SDGs Directly Impacted</b>
Low-Cost Hospital Satellite Centres/Care Units in Non-Metros	Healthcare Delivery	
Tech-enabled Remote Care Services	Healthcare Delivery	
Affordable Medical Devices and Consumables	Medical equipment and supplies	
Active Pharmaceutical Ingredient Manufacturing	Biotechnology & Pharmaceuticals	

White spaces include opportunity areas such as **primary care centres and services in rural areas** that have high development impact potential but have seen little private sector traction both in terms of innovative business models and investments.



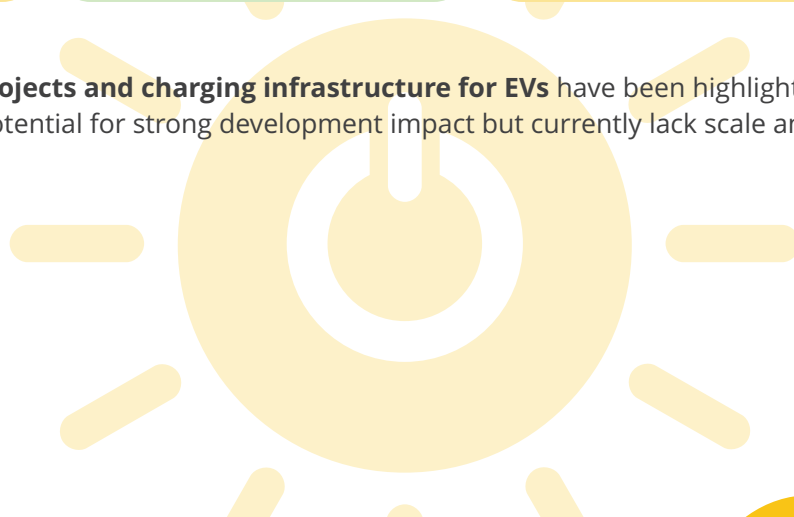


## Renewable Resources & Alternative Energy

India's geographical location renders it as favourable for executing RE projects leveraging solar, wind and other sources. GoI has updated its target from 175 Giga Watt (GW) to be achieved by 2022 (through funding and investment gap of USD 100 billion<sup>15</sup>) to 450 GW to be achieved by 2030. Participation of the private sector is imperative to mobilize the requisite capital flows and to achieve such a target. Overview of our findings for the RE sector are as follows:

<b>Market Size</b>	As on April 30, 2020, the installed RE capacity stood at 87.26 GW <sup>16</sup>	
<b>Investment Activity</b>	By the first half of 2020, the energy sector had received USD 1.8 billion across 8 PE Investments, 7 of which were in RE <sup>17</sup>	
<b>Investment Opportunity Areas Identified</b>	<b>Subsectors</b>	<b>SDGs Directly Impacted</b>
Rooftop Solar for Residential, Commercial and Industrial Energy Needs	Solar Technology & Project Developers	
Manufacturing of EVs	Electric Vehicle (EV)	
EV Based Services for Logistics, Hyperlocal Delivery and Micro-Mobility	Electric Vehicle	
Solutions for Reducing Variability in RE Power Generation, Achieving Greater Grid Stability and Ensuring Round-the-Clock Energy Generation and Supply	Wind Technology & Project Developers	

IOAs such as **floating solar projects and charging infrastructure for EVs** have been highlighted as white spaces as they have a potential for strong development impact but currently lack scale and commercial viability.







# Food & Beverages (F&B)

Nearly 60 percent of rural households in India depend upon agriculture and allied activities for their livelihoods, making it critical to enhance the income-generating capacities of the farming communities.<sup>18</sup> Govt has an ambitious plan to double farmers' income by 2022, and the private sector can play a key role in supporting innovative business models that can address gaps around market access, improve technical capabilities around climate-resilient farming practices, digitization and strengthening of agricultural value chains, among others. Overview of our findings for the F&B sector are as follows:

### Market Size

Estimated to reach USD 1,183 billion by 2023, growing at a compound annual growth rate (CAGR) of 12.2%<sup>19</sup>

### Investment Activity

F&B sector received USD 883 million across 83 PE and VC deals in 2019<sup>20</sup>

### Investment Opportunity Areas Identified

Digital platforms to service input (seeds, nutrition and pest control) needs of farmers and increase their market reach

Tech-enabled supply chains for fresh farm produce to create linkages between farmers' produce and retail stores/end consumers

Food processing of farm produce to reduce wastage and diversify offerings

Production and delivery of dairy products

### Subsectors

Food Retailers & Distributors

Food Retailers & Distributors

Processed Food

Meat, Poultry and Dairy

### SDGs Directly Impacted



**Efficient storage infrastructure for agricultural produce to reduce post-harvest losses and risk mitigation products to safeguard farmers from price fluctuations** have been shortlisted as white spaces that have strong scale potential but fewer market-proven business models.





## Financials

The COVID-19 pandemic has highlighted the need to create financial safety nets, especially for vulnerable populations that have little recourse in hard times, pushing them into adopting negative coping mechanisms. The pandemic has also highlighted the need to facilitate accessible and flexible credit lines to revive Micro, Small and Medium Enterprises (MSMEs) evidenced by a slate of measures announced by GoI to that effect. Overview of our findings for the Financials sector are as follows:

### Market Size

Between FY16 and FY20, credit extended by Banking, Financial Services and Insurance (BFSI) sector surged to USD 1936.3 billion.<sup>21</sup> Market size for Fintech is estimated to be at USD 92 billion by 2021<sup>22</sup>

### Investment Activity

Total investments in the BFSI sector, including VC investments in Non-Banking Financial Companies (NBFCs), was USD 9.1 Billion in 2019, up by 20% from 2018<sup>23</sup>

### Investment Opportunity Areas Identified

MSME financing through digital and offline channels

Fintech platforms for facilitating payment transactions

Asset lean acceptance infrastructure for last-mile banking connectivity

### Subsectors

Consumer Finance

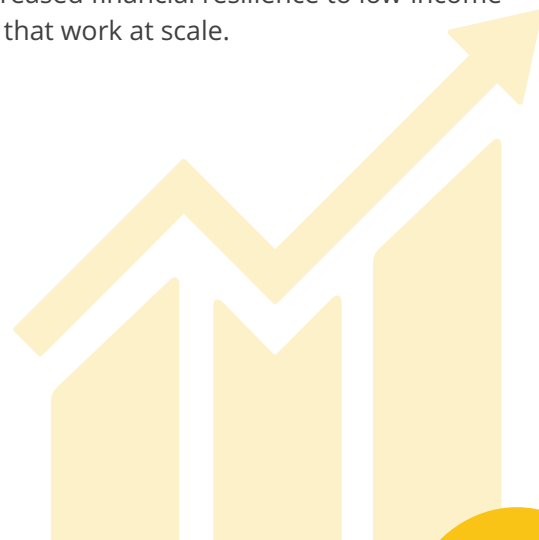
Consumer Finance

Consumer Finance

### SDGs Directly Impacted



**Digital and offline insurance for low-income segments** has been identified as a white space for its potential to provide socio-economic protection and increased financial resilience to low-income consumers but with fewer commercially viable models that work at scale.



## Next steps

The Investor Map for India is an attempt by UNDP and Invest India to highlight potential business opportunities with a conducive policy environment that can create a high development impact. The Investor Map will be used to drive the discourse for policy-level interventions to enhance the ecosystem to encourage private sector investors to mobilize and drive commercial capital into the identified SDG-relevant sectors.

Further, the convenings and facilitation platforms enabled by the application of insights from the Investor Map are anticipated to drive an informed and strategic movement toward making the 2030 SDG agenda central to private sector's initiatives.

## Sources:

- UNCTAD (2014). World Investment Report 2014. Switzerland: United Nations. Available at: [https://unctad.org/system/files/official-document/wir2014\\_en.pdf](https://unctad.org/system/files/official-document/wir2014_en.pdf).
- UNCTAD (2020). World Investment Report 2020. Switzerland: United Nations. Available at: [https://unctad.org/system/files/official-document/wir2020\\_en.pdf](https://unctad.org/system/files/official-document/wir2020_en.pdf).
- data.worldbank.org. (n.d.). Population, total - India, World | Data. Available at: <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=IN-1W>.
- Niti.gov.in. (2018). Sustainable Development Goals | NITI Aayog. Available at: <https://niti.gov.in/index.php/verticals/sustainable-dev-goals>
- www.mospi.gov.in. (n.d.). Role of MOSPI in SDGs | Ministry of Statistics and Program Implementation | Government Of India. Available at: <http://www.mospi.gov.in/role-mospi-sdgs#:~:text=The%20Ministry%20of%20Statistics%20and>
- EY (2020). Are you supporting tomorrow's deals with yesterday's operations? ivca.in. Available at: <https://ivca.in/wp-content/uploads/2020/09/IVCA-EY-PEVC-Roundup-for-Aug-2020.pdf>.
- EY (2020). In today's frenetic world, how does private equity set the pace? ivca.in. Available at: <https://ivca.in/wp-content/uploads/2020/02/IVCA-EY-PEVC-roundup-for-January-2020.pdf>
- sdgindiaindex.niti.gov.in. (n.d.). SDG India Index and Dashboard | iTech Mission. Available at: <https://sdgindiaindex.niti.gov.in/#/>.
- List of sector experts, organizations consulted for the development of the India Investor Map report can be found under Annex I
- Sustainability Accounting Standards Board. (2012). Find Your Industry - Sustainability Accounting Standards Board. Available at: <https://www.sasb.org/find-your-industry/>
- IBEF (2020b). Growth of Education Sector in India - Infographic. www.ibef.org. Available at: <https://www.ibef.org/industry/education-sector-india/infographicpresentation#:~:text=India%20has%20over%20250%20million>.
- Invest India analysis
- Babu, G. (2019). PE, venture capital deals in healthcare, health tech firms grew 16% in 2019. Business Standard India. 30 Dec. Available at: [https://www.business-standard.com/article/companies/pe-venture-capital-deals-in-healthcare-health-tech-firms-grew-16-in-2019-119123000655\\_1.html#:~:text=%C2%ABBack-](https://www.business-standard.com/article/companies/pe-venture-capital-deals-in-healthcare-health-tech-firms-grew-16-in-2019-119123000655_1.html#:~:text=%C2%ABBack-)
- www.ETEnergyworld.com (n.d.). Another \$100-bn investment required to meet 175 GW RE target: MNRE Secy - ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economicstimes.indiatimes.com/news/renewable/another-100-bn-investment-required-to-meet-175-gw-re-target-mnre-secy/73806002>
- www.ibef.org. (n.d.). Renewable Energy Industry in India: Overview, Market Size & Growth | IBEF. Available at: <https://www.ibef.org/industry/renewable-energy.aspx#:~:text=Power%20generation%20from%20renewable%20energy>
- PWC (2020c). Deals in India: Mid-year review and outlook for 2020 - pause and consolidation. Available at: <https://www.pwc.in/assets/pdfs/services/deals/deals-in-india-mid-year-review-and-outlook-for-2020-pause-and-consolidation.pdf>.
- KPMG. (2020). Agriculture and irrigation - KPMG India. Available at: <https://home.kpmg/in/en/home/insights/2020/08/catalysing-the-national-infrastructure-pipeline-project-india/agriculture.html>
- Markets, R. and (n.d.). India Agriculture Market Report 2018-2023. www.prnewswire.com. Available at: <https://www.prnewswire.com/news-releases/india-agriculture-market-report-2018-2023-300709483.html#:~:text=The%20agriculture%20industry%20in%20India>.
- EY (2020). In today's frenetic world, how does private equity set the pace? ivca.in. Available at: <https://ivca.in/wp-content/uploads/2020/02/IVCA-EY-PEVC-roundup-for-January-2020.pdf>
- IBEF (2020). Banking August 2020. Available at: <https://www.ibef.org/download/Banking-August-2020.pdf>.
- www.investindia.gov.in. (n.d.). BFSI – Fintech & Financial Services. Available at: <https://www.investindia.gov.in/sector/bfsi-fintech-financial-services>.
- www.ey.com. (n.d.). 2019, A record year for PEVC investments on the back of large investments in infrastructure: IVCA-EY report on a Y-o-Y basis, investments grew 28%. Available at: [https://www.ey.com/en\\_in/news/2020/03/record-year-for-pevc-investments-on-the-back-of-large-investments-in-infrastructure](https://www.ey.com/en_in/news/2020/03/record-year-for-pevc-investments-on-the-back-of-large-investments-in-infrastructure)



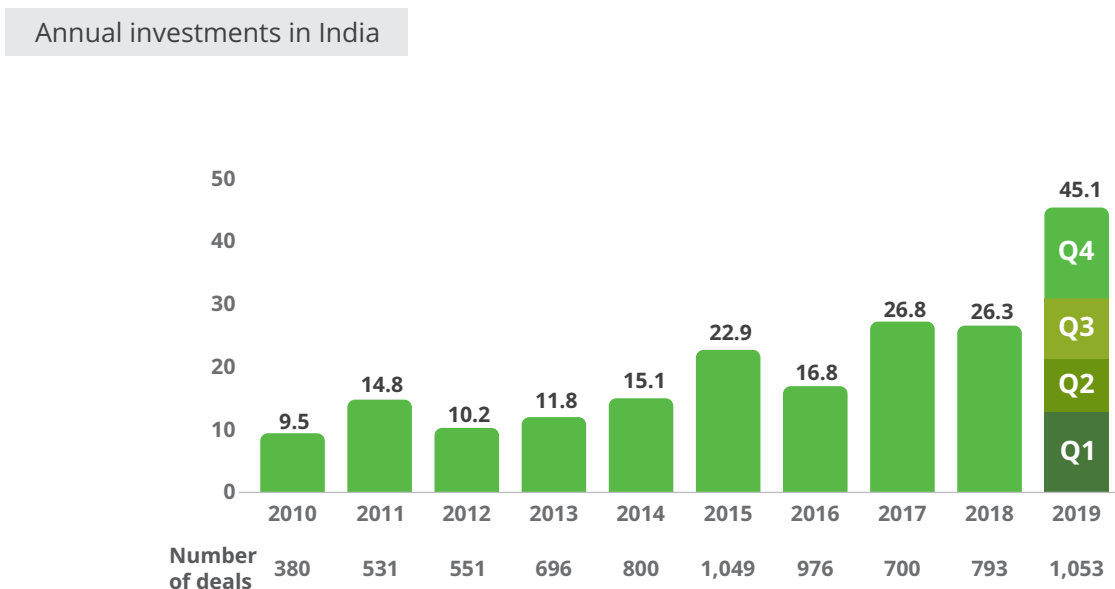
# Private Investment Landscape

India's large consumer base, progressive economic reforms in key sectors and Govt's brand-building initiatives have supported its maturation into an attractive investment destination. Opening up key sectors such as defence, pharmaceuticals and media to FDI in 2015 and easing regulations in sectors such as single-brand retail and private banking have also helped encourage multinationals to enter India and set up operations and invest.

Between 2000 and 2020, FDI equity inflow in India reached ~USD 470 billion, with maximum contribution in sectors like services, computer software and hardware, telecommunications, construction, trading and automobile sectors<sup>24</sup>. Foreign Portfolio Investors/Foreign Institutional Investors (FPIs/FIIs) have been the prime drivers of India's financial markets investing ~USD 174.55 billion between 2001 and 2020.

Furthermore, 2019 saw a total of 200 exit-transactions, valued at ~USD 12.8 billion, signifying investor confidence in the Indian ecosystem and healthy public markets. These exits were dominated by sectors such as consumer technology, information technology and information technology-enabled services (IT and ITES), and BFSI, with the top 10 exits accounting for 70 percent of the total exit value. Most funds have generated healthy returns on their investment across most sectors, with consumer technology, IT/enterprise tech and BFSI reporting the highest multiples on invested capital. Returns have seen an upward trend over the past years, increasing from an average of about 3x in 2014-15 to nearly 4x in 2018-19.<sup>25</sup>

**Figure 1: Annual PE investments in India in USD billion**



Source: Bain & Company and IVCA (2020). India Private Equity Report 2020. Bain & Company.  
Available at: [http://ivca.in/wp-content/uploads/2020/05/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://ivca.in/wp-content/uploads/2020/05/bain_report_india_private_equity_report_2020.pdf).



Pre-pandemic estimates by industry experts showed that 60 percent of India's GDP is fuelled by domestic consumption, a sign of increasing per capita disposable income which is expected to grow into a USD 6 trillion opportunity for India by 2030. Though the COVID-19 pandemic has challenged India's growth, the country's growing income and consumption will continue to attract global PE/VC capital, as these funds shift their focus from Organisation for Economic Co-operation and Development (OECD) countries to emerging markets. According to expert consultations, sectors such as financial services, consumer/retail, healthcare, e-commerce and technology are likely to benefit most from this growing interest.

In the wake of the pandemic, the need for India to focus on sustainable development has become especially important. To ensure that development is equitably carried out, investors must focus not only on maximising their returns but also on the positive and negative social and environmental impacts of their investment decisions. India is already a prominent destination for impact-oriented capital. The quantum of impact investment was over USD 10.8 billion between 2010 and 2019, growing at a CAGR of 26 percent and tripling the average deal size from USD 5 million in 2010 to USD 17 million in 2019.<sup>26</sup> Majority of these deals were in the form of equity investment, followed by debt and a combination of debt, equity and blended instruments. Most of the impact investors

earned returns higher than 15 percent. As of 2019, most impact investments in India were focused in SDG-relevant sectors such as financial inclusion, clean energy, education, agriculture and healthcare.

However, there is a need to draw in commercial capital towards priority sectors, especially education, agriculture, healthcare, among others that currently lack adequate large-scale investment momentum and interest, despite being critical to achieving the country's development targets and aiding India to become a USD 5 trillion<sup>27</sup> economy by 2025. As per Preqin (a company that provides financial data and information on the alternative assets market), global PE/VC funds hold dry powder worth ~USD 2.5 trillion (committed, but unallocated funds). This figure aligns closely with the estimates for SDG funding gap for emerging markets like India as highlighted by the UNCTAD 2014 World Investment Report.

This report highlights IOAs that are aligned with SDG-relevant sectors to build a case for private sector investors to mobilize funds towards sectors that have potential for healthy returns as well as for high development impact. Bridging the investment gap in these highlighted areas in India, home to nearly one-fifth of the world's population, will set the tone for achieving UN SDGs, which the international community agreed to fulfil by 2030.

## Sources:

24. [www.ibef.org](https://www.ibef.org/economy/investments#:~:text=In%202019%2C%20FPI%20investment%20in), (n.d.). Investment in India. Available at: <https://www.ibef.org/economy/investments#:~:text=In%202019%2C%20FPI%20investment%20in>
25. Bain & Company and IVCA (2020). India Private Equity Report 2020. Bain & Company. Available at: [http://ivca.in/wp-content/uploads/2020/05/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://ivca.in/wp-content/uploads/2020/05/bain_report_india_private_equity_report_2020.pdf).
26. Impact Investors' Council and Asha Impact (2020). The India Impact Investing Story- Assessing a decade of Capital plus Innovation for Impact; Available at: [http://ashaimpact.com/Admin/CMS/PDF/IIC%20Asha%20Impact%20Report\\_The%20India%20Impact%20Investing%20Story\\_June%202020.pdf](http://ashaimpact.com/Admin/CMS/PDF/IIC%20Asha%20Impact%20Report_The%20India%20Impact%20Investing%20Story_June%202020.pdf).
27. EY (2020b). How India is emerging as one of the leading destinations for global PE/VC capital. [www.ey.com](https://www.ey.com/en_in/private-equity/how-india-is-emerging-as-one-of-the-leading-destinations-for-global-pe-vc-capital). Available at: [https://www.ey.com/en\\_in/private-equity/how-india-is-emerging-as-one-of-the-leading-destinations-for-global-pe-vc-capital](https://www.ey.com/en_in/private-equity/how-india-is-emerging-as-one-of-the-leading-destinations-for-global-pe-vc-capital).



# Introduction to Investor Maps and Methodology Deployed

The SDG Investor Map is a dynamic tool containing a range of market-specific investment opportunities for SDG-aligned capital deployment. Developed by UNDP Country Offices, SDG Investor Maps are underpinned by a

methodology that surfaces IOAs from national economic and social development priorities. In India, UNDP has collaborated with Invest India for the production of the first SDG focused Investor Map for India.

**Figure 2: Four-stage process to develop SDG Investor Maps**

## Methodology



**Note:** A more detailed 8-step methodology within this 4-level funnel has been developed, including secondary research as well as interviews and consultations with investors, companies, governments and a range of other relevant stakeholders.

The methodology consists of a four-stage process that draws from a combination of in-depth desk research and focused in-country stakeholder consultations. Through an iterative research-intensive process, the objective is to

identify and validate where there is overlap between development need and policy priority and refine the opportunity into a specific IOA. The approach and methodology consist of the following:

## STAGE 1

### Define the national priority starting point

Firstly, distil and compare national development needs and national policy priorities to identify sectors where there is demonstrable political/financial commitment to stimulate development and investment. Useful documentation to inform this includes Voluntary National Reviews, national strategy documents for development-related priorities, government annual plans and investment promotion plans for policy priorities.

## STAGE 2

### Identify priority subsectors to focus on

Secondly, prioritize subsectors where there is development need and policy/investment momentum. The documentation analysed here is more sector-specific, including the SDG Index reports that document a country's progress on SDGs and sector reports from investment promotion agencies.

## STAGE 3

### Identify priority subregions to focus on

Third, identify subregions where there is both high development need within each subsector, and strong political/financial momentum to spur potential subsector growth. Emerging sectors, subsectors and subregions are validated through focused consultations with cooperation agencies, national development banks, stakeholders in key ministries, and investment promotion agencies.

## STAGE 4

### Derive more specific IOAs

Fourth, gather intelligence through primary and secondary research (primarily investors, think tanks, industry associations, among others) to identify scalable business models with the potential to address critical development needs identified in stages 1-4. Each 'IOA' anchors around a proven commercial approach with strong potential for achieving at-market or above-market returns and a clear link to the development challenge addressed in relevant subsectors and subregions. The 'case' for each IOA is made through datapoints across seven categories ranging from the need case to economic, enabling and risk factors, the potential development impact of the investment including the returns achieved by sampled investors in each IOA. This information makes IOAs adequately granular to be actionable yet broad enough to serve as inputs to investors for their portfolio origination process.



### Framework for selection of IOAs:

IOAs, identified through research and consultations, were tested on three key criteria to see if they are:

1. Fundamentally marketable, i.e., where a private actor may be able to achieve at-market or above-market return
2. Sufficiently at-scale for investments to be able to achieve depth and duration of the potential impact
3. Largely already proven in-market, i.e., by a transaction that has taken place, and return/impact begun to be calculated

While framing the opportunity areas, it was ensured that areas identified are also sufficiently specific to the realm of an 'opportunity area', i.e., a field within which diverse kinds of deals/transactions could take place, but broad enough for an investor to decide what kind of financial vehicle is best suited to deploy. The specific business models within those areas which might have a strong development impact have been highlighted. However, these models are suggestive and multiple business models could emerge within each opportunity area as investments increase and the companies mature and adapt to the changing consumer needs.

**Figure 3: Key data points captured for Investment Opportunity Areas**



Source: UNDP Investor Map research

\*\* The Impact Management Project (IMP) is a global standard for organizations to build consensus on how to measure, assess and report impacts on environmental and social issues.



# Development Needs, Policy Momentum and SDG-enabling Sector Prioritization for India

The global pandemic has led to a suspension of economic activity and the impact on global growth is apparent in expert projections. As of June 2020, the International Monetary Fund (IMF) projects a 4.9 percent contraction in world's GDP due to the 'Great Lockdown',<sup>28</sup> leaving 170 countries with lower GDP per capita by the end of 2020. The World Trade Organization (WTO) expects a decline by 13-32 percent in global trade, contingent upon the length of the pandemic and the protracted lockdown policy that most governments will have to adopt.

The UNCTAD's 'Trade and Development Report 2020' recommends a recovery plan that addresses pre-existing conditions such as inequality, weak investments, insufficient employment opportunities, that have exacerbated the impact of the pandemic across the globe and especially in developing economies.<sup>29</sup>

Despite several timely and comprehensive measures to combat the effects of the lockdown,

the impact is being felt in India as well, particularly on populations in low resource settings that have little ability to combat the socio-economic impact of an event of this size and nature.

It is thus necessary to develop an SDG-enabling Investor Map to view India's development needs and target SDGs in light of COVID-19 and lay out the linkages between them; a sentiment that was reflected in the numerous consultations held throughout the process of developing the map for India.

The Investor Map development process started with the identification of the SDGs where the development need is the highest and therefore where private sector investments are necessary to plug financing gaps. For this purpose, India's performance on each SDG was reviewed. This was done at the State level, with each State being evaluated on its performance on the relevant SDGs as per NITI Aayog's SDG India Index 2019.<sup>30</sup>

The key SDGs where the development gap is the highest have been listed in Figure 4.

**Figure 4: India's Performance by SDG, NITI Aayog's SDG India Index 2019-20**



Source: UNDP Investor Map research



The key SDGs requiring the most attention are **SDG 1** (No Poverty), **SDG 2** (Zero Hunger) and **SDG 5** (Gender Equality). Despite lifting over 270 million people out of poverty in 10 years and recording the fastest reductions in the Multi-Dimensional Poverty Index, India is still home to over 30 percent of children living in extreme poverty, (highest in South Asia) in 2016, according to UNICEF<sup>31</sup>. India was ranked 102 in the Global Hunger Index and 112 on the World Economic Forum's Global Gender Gap index.

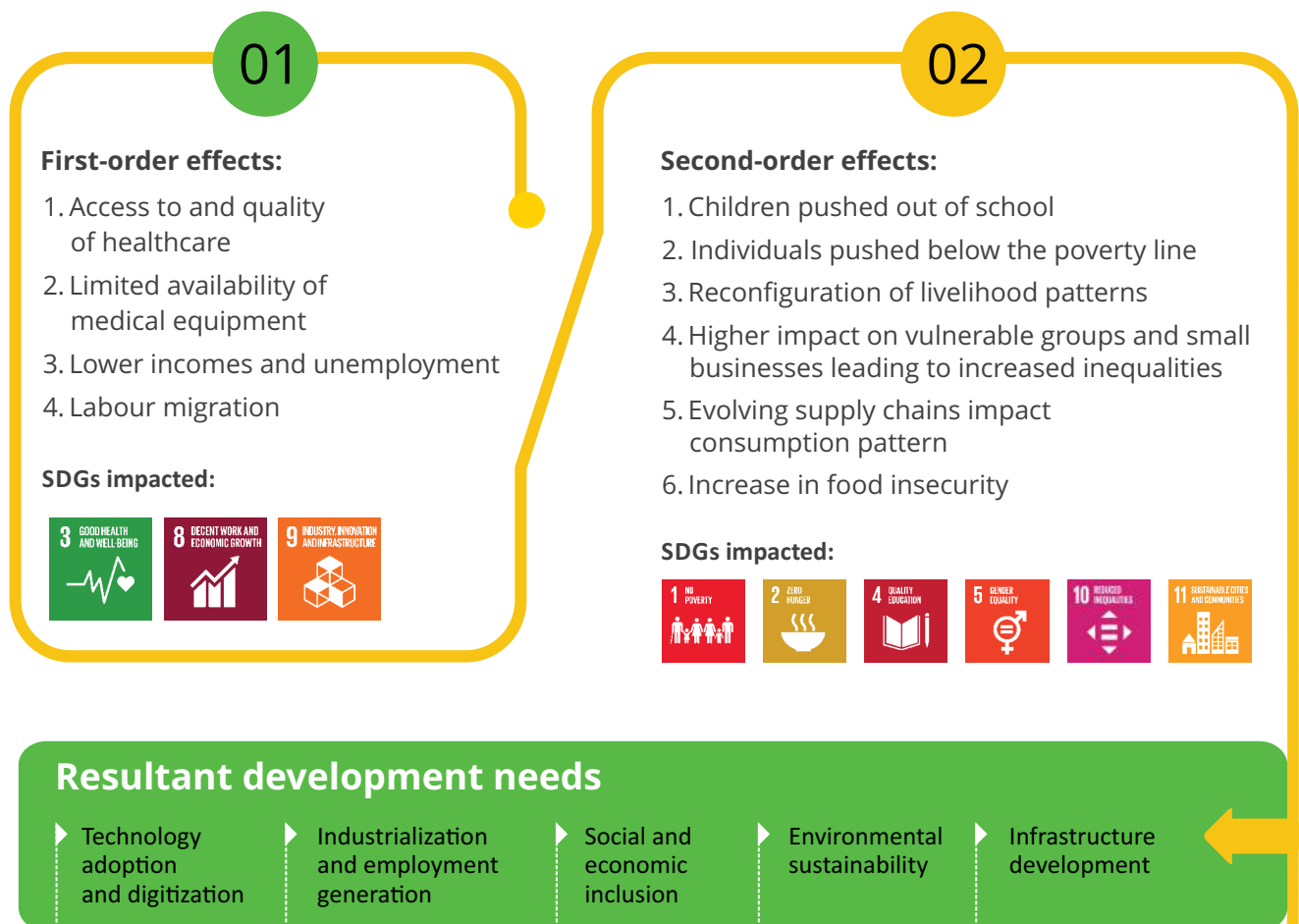
Other SDGs where India has made progress but still need attention include **SDG 3** (Good Health and Well-Being), **SDG 4** (Quality of Education), **SDG 8** (Decent Work and Economic Growth), **SDG 10** (Reduced Inequalities), **SDG 11** (Sustainable Cities and Communities), **SDG 12** (Responsible Consumption and Production), **SDG 13** (Climate Action and Peace) and **SDG 16** (Justice and

Strong Institutions). Progress on each of these SDGs is interlinked with multiple other SDGs and to ensure that the gains made across the SDGs are not lost due to the pandemic, investment and development focus should build on the links between SDGs and the plausible development areas highlighted by the pandemic.

To ensure that the impact of COVID-19 is incorporated as part of the methodology for the Investor Map development process, first and second-order effects of the pandemic were researched and validated with expert consultants. The resultant analysis showed that while the pandemic and commensurate isolation requirements have directly impacted SDGs 3 and 8, second-order effects have included a significant and persistent impact on SDGs 1, 2, 5, 4, 10 and 11.

**Figure 5: Interlinked impact of COVID-19 on SDG progress**

### COVID-19 effects



Source: UNDP Investor Map research

## Policy momentum and sector prioritization

41 policy priorities have been identified for India's development by NITI Aayog in its **Strategy for New India @ 75**. Of these 41 policy priority areas, private sector participation has been specifically invited in 35 policy areas. Juxtaposing these 35 policy priorities with their ability to

meet India's key development needs identified in Figures 4 and 5, helped identify the focus policies for this study; policies with sufficient scope for private sector participation as well as strong potential to meet development needs. The focus policy areas have been highlighted in Figure 6.

**Figure 6: Policy areas with High Development needs and Policy Momentum**

	S.No.	Shortlisted Policy Area with private investment momentum	Related SDGs**
<b>OVER-ARCHING POLICY AREAS</b>	1	Growth	SDGs 1, 8, 17
	2	Balanced Regional Development: Aspirational Districts	SDGs 1, 2, 3, 4, 5, 6, 7, 9, 10
	3	Gender	SDGs 1, 2, 3, 4, 5
	4	Modernizing City Governance for Urban Transformation	SDGs 1, 3, 5, 6, 8, 10, 11, 12
	5	Sustainable Environment	SDGs 1, 2, 6, 7, 11, 12, 13, 14, 15
	6	Optimizing Use of Land Resources	SDGs 1, 2, 15
	7	Employment and Labour Reforms	SDGs 5, 8, 10
<b>SECTOR-SPECIFIC POLICY AREAS</b>	8	Nutrition	SDGs 1, 2, 3, 5, 10
	9	Smart Cities for Urban Transformation	SDGs 1, 5, 6, 8, 9, 10, 11, 12
	10	Doubling Farmer's income	SDGs 1, 2, 8, 9, 10, 12, 13
	11	Digital Connectivity	SDGs 1, 4, 5, 9
	12	Housing for All	SDGs 1, 5, 6, 11
	13	School Education	SDGs 3, 4, 5, 8, 16
	14	Skill Development	SDGs 4, 5, 8, 10
	15	Financial Inclusion	SDGs 1, 8, 10, 16
	16	Human Resources for Health	SDGs 3, 5, 8
	17	Water Resources	SDGs 6, 11, 12, 14
	18	Public Health Management and Action	SDGs 2, 3, 6
	19	Comprehensive Primary Healthcare	SDGs 1, 3
	20	Universal Health Coverage	SDGs 1, 3
	21	Swachh Bharat Mission	SDGs 1, 6, 11

Source: UNDP Investor Map research



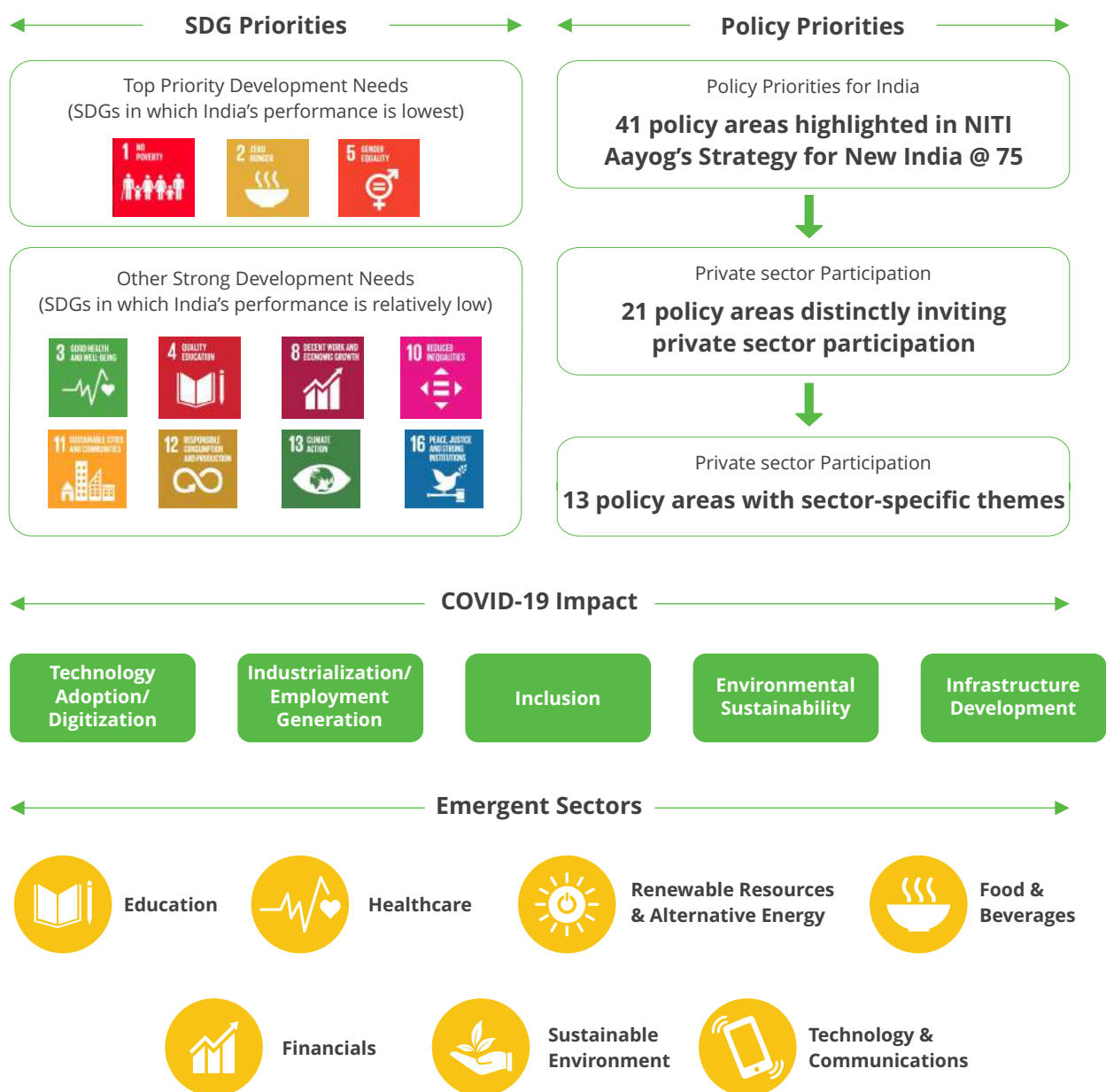
## Priority sectors

A parallel review of India's development needs and policy priorities revealed seven priority areas with highest potential to propel India towards attaining the prioritized SDGs, namely Healthcare, Education, Food & Beverages, Financial Inclusion, RE, Technology and Communications, and Sustainable Environment. These sectors were further pressure tested with

policy, government and private sector experts to understand the common ground between development needs, policy priorities and private sector investor interest.

The final list of priority sectors that constitutes the Investor Map for India is presented in Figure 7.

**Figure 7: Sector prioritization for Investor Map**



Source: UNDP Investor Map research



Development needs and policy landscape that contribute to the specific sector ecosystem, including distilling of subsectors have further been detailed in the respective sector chapters.

Expert consultations highlighted that technology is an enabler and should be an underpinning theme for all the other emergent priority sectors. As the focus is to highlight the IOAs that serve the last mile, low resource markets, it is important to recognize the role of technology in bridging the distance and the affordability gap that exists in taking essential services to last-mile customers.

## Industrial taxonomy used in the report

Sectors and subsectors selected for the India Investor Map are defined by a taxonomy aligned with SASB's SICS which helps categorize company and investor activity using a sustainability lens. SICS builds on and complements traditional classification systems by grouping companies into sectors and industries per a fundamental view of their business model, resource intensity and sustainability impacts, and sustainability innovation potential.

**Figure 8: Sustainable Accounting Standards Board's industrial classification used in the report**

<b>CONSUMER GOODS</b>	<ul style="list-style-type: none"> <li>• Apparel, Accessories &amp; Footwear</li> <li>• Appliance Manufacturing</li> <li>• Building Products &amp; Furnishings</li> <li>• E-Commerce</li> <li>• Household &amp; Personal Products</li> <li>• Multiline &amp; Specialty</li> <li>• Retailers &amp; Distributors</li> <li>• Toys &amp; Sporting Goods</li> </ul>
<b>FOOD &amp; BEVERAGES</b>	<ul style="list-style-type: none"> <li>• Agricultural Products</li> <li>• Alcoholic Beverages</li> <li>• Food Retailers &amp; Distributors</li> <li>• Meat, Poultry &amp; Dairy</li> <li>• Non-Alcoholic Beverages</li> <li>• Processed Foods</li> <li>• Restaurants</li> <li>• Tobacco</li> </ul>
<b>RESOURCE TRANSFORMATION</b>	<ul style="list-style-type: none"> <li>• Aerospace &amp; Defence</li> <li>• Chemicals</li> <li>• Containers &amp; Packaging</li> <li>• Electrical &amp; Electronic Equipment</li> <li>• Industrial Machinery &amp; Goods</li> </ul>
<b>EXTRACTIVES &amp; MINERALS PROCESSING</b>	<ul style="list-style-type: none"> <li>• Coal Operations</li> <li>• Construction Materials</li> <li>• Iron &amp; Steel Producers</li> <li>• Metals &amp; Mining</li> <li>• Oil &amp; Gas - Exploration &amp; Production</li> <li>• Oil &amp; Gas - Midstream</li> <li>• Oil &amp; Gas-Refining &amp; Marketing</li> <li>• Oil &amp; Gas-Services</li> </ul>
<b>HEALTHCARE</b>	<ul style="list-style-type: none"> <li>• Biotechnology &amp; Pharmaceuticals</li> <li>• Drug Retailers</li> <li>• Health Care Delivery</li> <li>• Health Care Distributors</li> <li>• Managed Care</li> <li>• Medical Equipment &amp; Supplies</li> </ul>
<b>SERVICES</b>	<ul style="list-style-type: none"> <li>• Advertising &amp; Marketing</li> <li>• Casinos &amp; Gaming</li> <li>• Hotels &amp; Lodging</li> <li>• Leisure Facilities</li> <li>• Media &amp; Entertainment</li> <li>• Professional &amp; Commercial Services</li> </ul>
<b>FINANCIALS</b>	<ul style="list-style-type: none"> <li>• Asset Management &amp; Custody Activities</li> <li>• Commercial Banks</li> <li>• Consumer Finance</li> <li>• Insurance</li> <li>• Investment Banking &amp; Brokerage</li> <li>• Mortgage Finance</li> <li>• Security &amp; Commodity Exchanges</li> </ul>



## INFRASTRUCTURE

- Electric Utilities & Power Generators • Engineering & Construction Services
- Gas Utilities & Distributors • Home Builders • Real Estate
- Real Estate Services • Waste Management • Water Utilities & Services

## TECHNOLOGY & COMMUNICATIONS

- Electronic Manufacturing Services & Original Design Manufacturing
- Hardware • Internet Media & Services • Semiconductors
- Software & IT Services • Telecommunication Services

## RENEWABLE RESOURCES & ALTERNATIVE ENERGY

- Biofuels • Forestry Management • Fuel Cells & Industrial Batteries
- Pulp & Paper Products • Solar Technology & Project Developers
- Wind Technology & Project Developers • Electric Vehicle<sup>1</sup>

## TRANSPORTATION

- Air Freight & Logistics • Airlines • Auto Parts • Automobiles
- Car Rental & Leasing • Cruise Lines • Marine Transportation
- Rail Transportation • Road Transportation

## EDUCATION/SKILLS DEVELOPMENT

- Education Financing<sup>1</sup> • Education Technology<sup>1</sup>
- Formal Education<sup>1</sup>

**Note:** 1. We have added sectors and subsectors which were not covered under SASB classification.

**Source:** Sasb.Org Sustainability Accounting Standards Board Sasb's Sustainable Industry Classification System (SICS). (n.d.).

**Available at:** <https://www.sasb.org/wp-content/uploads/2018/11/SICS-Industry-List.pdf>.



## Prioritizing states and regions for investments

As part of the methodology to develop the Investor Map for India, an analytical framework was developed to understand the States and regions in the country where SDG-enabling investments are most needed across the priority sectors. For this purpose, an analysis was conducted using the following frame:

- First, NITI Aayog's SDG Index that reports comprehensively on the progress made by India's States and Union Territories (UTs) towards implementing the 2030 SDG targets was studied to prioritize regions. The Index that classifies performance across four buckets in ascending order – Aspirant, Performer, Front Runner and Achiever was distilled to select States that fall under the Aspirant and Performer buckets indicating regions that lag on development indices for the relevant SDG
- Second, for the Aspirant and Performer States, policies specific to the five shortlisted sectors and relevant subsectors were

researched to understand policy momentum to invite private sector participation. Review of documents like Industrial Policies for States, sector-specific policies including incentives such as tax breaks, dedicated credit lines for small businesses working in the sector, were further analysed to select States with the most conducive environment for investments to flow in

- Third, to further qualify the analysis conducted under the First and Second steps, consultations with sector experts were conducted to validate the findings

As part of the regional analysis, it is well understood that investments will follow States with the most conducive environment and the States and regions that are already performing well will be prioritized to ensure commercial viability for the investments made. Hence, the analysis presented in the report for regional priorities is to spur investors to think about investments in models that concertededly work towards making solutions work for the last mile, low resource populations in regions where the need for development impact is the highest.

### Sources:

28. International Monetary Fund (2020). World Economic Outlook Update, June 2020: A Crisis Like No Other, An Uncertain Recovery. IMF. Available at: <https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020>.
29. unctad.org. (n.d.). COVID-19: UNCTAD warns of 'lost decade' if countries adopt austerity | UNCTAD. Available at: <https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2474>
30. sdgindiaindex.niti.gov.in. (n.d.). SDG India Index and Dashboard | iTech Mission. Available at: <https://sdgindiaindex.niti.gov.in/#/ranking>.
31. UNICEF. (n.d.). Nearly 385 million children living in extreme poverty, says joint World Bank Group – UNICEF study. Available at: [https://www.unicef.org/media/media\\_92856.html](https://www.unicef.org/media/media_92856.html)





**EDUCATION**





# Education



## 1. Sector overview

India has the world's largest youth population<sup>32</sup> with over half of its population of c.1.4 billion<sup>33</sup> under the age of 25. With a billion people aged between 15 and 64<sup>34</sup>, the country will be home to the world's largest workforce by 2027. India also has the largest school-going population in the world of over 250 million students<sup>35</sup>. Education and skills development of India's large and growing human capital is imperative for the country's socio-economic growth. As highlighted by the Global Education Monitoring (GEM) report, the 2030 deadline for achieving the SDGs will be possible only if India achieves significant progress in the Education sector<sup>36</sup>.

### 1.1. Sectoral development needs

A review of key policy documents, human development reports and stakeholder consultations highlighted the most pressing sectoral development needs in India:

#### 1.1.1. Universal access and retention (SDG 4)

a. The enrolment ratios for the primary level are close to 100 percent. Besides, the Gross Enrolment Ratios (GER) for secondary education have also increased.<sup>37</sup> However,

GER for pre-primary and tertiary education remain low.

b. As per Annual Survey of Education Report (ASER) 2017 that focused on youth between ages of 14 and 18, the average difference between enrolment levels of boys and girls at age 14 are declining and by 18 (when the state doesn't enforce compulsory education through the Right of Children to Free and Compulsory Education (RTE) Act, 2009, 32 percent girls are not enrolled, compared to 28 percent boys.<sup>38</sup>

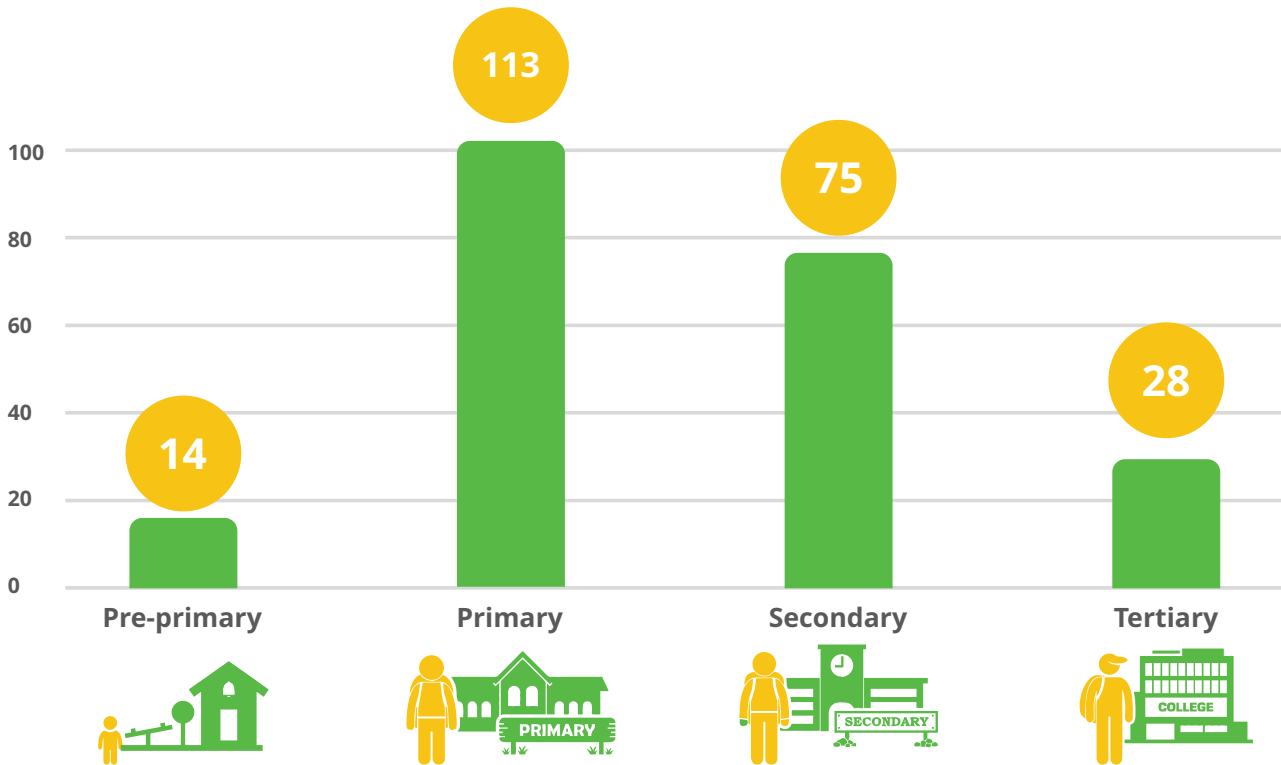


c. Data below shows a declining trend in GER as one progresses from primary to tertiary

education, implying an increasing number of drop-outs (declining retention).

**Chart 1: Gross Enrolment Ratio in India, by the level of education, 2017**

**India Gross Enrolment Ratio, 2017**



Source: UNESCO Institute of Statistics

**1.1.2. Quality of school education (SDG 4)**

India has made considerable efforts to expand the school network since the 2009 RTE Act. However, there is a need to further improve the quality of education offered and the overall education resources and infrastructure.<sup>39</sup>

a. The inadequacy of resources is reflected in the fact that India has the highest pupil-teacher ratio among comparable countries and that 78.7 percent of rural government schools had no access to computers for pedagogical purpose in 2018.<sup>40</sup>

b. **Literacy and numeracy outcomes** in the country lag behind. Only c.50 percent of Grade V children can read Grade II level text and only c.28 percent can perform division.<sup>41</sup> More alarmingly, outcomes among certain student cohorts have even been declining as shown in Figure 9. The COVID-19 pandemic has further disrupted education for the most vulnerable student groups as such students are unable to attend school and often lack access to online learning, widening learning gaps.<sup>42</sup>

**Figure 9: Literacy and Numeracy Learning Outcomes in Rural India**

**Reading outcomes in Std. V and Std. VIII by school type, 2012, 2014, 2016 and 2018**

Year	2012	2014	2016	2018
% of children in Std. V who can read Std. II level text (Govt. & Pvt. Schools)	46.9	48.0	47.9	50.5
% of children in Std. VIII who can read Std. II level text (Govt. & Pvt. Schools)	76.5	74.7	73.1	73.0

**Arithmetic outcomes in Std. V and Std. VIII by school type, 2012, 2014, 2016 and 2018**

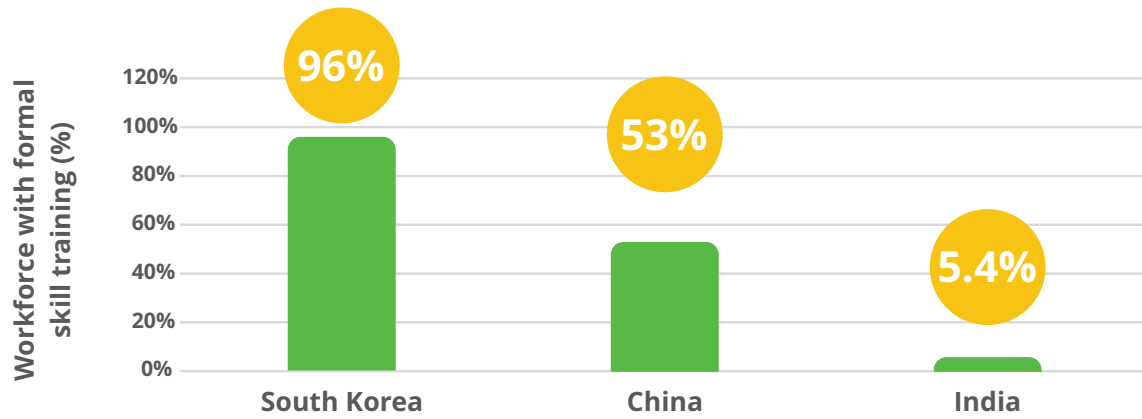
Year	2012	2014	2016	2018
% of children in Std. V who can do division (Govt. & Pvt. Schools)	24.9	26.1	26.0	27.9
% of children in Std. VIII who can do division (Govt. & Pvt. Schools)	48.1	44.2	43.3	44.1

Source: Annual Status of Education Report 2018

**1.1.3. Skills development and employability of the workforce (SDG 4 and 8)**

a. Over 80 percent of India's workers are employed in the unorganised sector, the highest proportion among South Asian economies.<sup>43</sup> Only 5 percent of the Indian workforce has had formal training in skills (compared to 96 percent in South Korea) and less than a fifth of Indian graduates are considered immediately employable.<sup>44</sup>

b. Annual output per worker (Public-Private Partnership (PPP) terms) in India (USD 21 thousand) was 49 percent lower compared to the world average (USD 44 thousand) in 2019.<sup>45</sup> Accenture estimated that the skill gap cost India USD 1.97 trillion in GDP growth over 10 years in 2019.<sup>46</sup> COVID-19 has further increased the urgency to productively engage and reskill the workforce due to disruptions across key employment generating industries such as tourism, agriculture and automotive.<sup>47</sup>

**Chart 2: Workforce that has undergone formal skill training**

Source: Bawa, R.S.& N. (2015). No jobs, no skills: What a sorry state. @businessline.

Available at: <https://www.thehindubusinessline.com/opinion/no-jobs-no-skills-what-a-sorry-state/article9545114.ece#>





## 1.2. Policy momentum

NITI Aayog's Strategy for New India @ 75 lays out the goals of universal access and retention, improvement in learning outcomes and increased employability through vocational training in school education. According to Union Budget 2020-21, Government allocated USD 8 billion (0.3 percent of GDP) for the Department of School Education and Literacy.<sup>48</sup> The New Education Policy 2020 was introduced to improve early childhood care and education, increase foundational literacy and numeracy skills, improve GER in higher education from 26.3 percent to 50 percent by 2035, include vocational modules in the education curriculum for improved workforce preparedness and ensure universal access to school education. Further, in a bid to promote India as a global destination for premium education at affordable costs, the policy allows top foreign universities to set up campuses in India. A legislative framework facilitating such entry will be put in place, and such universities will be given special dispensation regarding regulatory, governance and content norms on par with other autonomous institutions of India.<sup>49</sup> Skilling, as a corollary sector to Education and key to the human capital needs for India, has also been at the forefront of policy momentum in India. The budget allocated to the Ministry of Skills Development and Entrepreneurship more than doubled between 2015 and 2019. Furthermore, Gol has launched a slew of initiatives to promote skills development in the country, including 'Skill India' initiative (launched in 2015) which aims to train 400 million Indians by 2022.<sup>50</sup> 'Skills Acquisition and Knowledge Awareness for Livelihood Promotion' (SANKALP) and 'Skill Strengthening for Industrial Value Enhancement' (STRIVE) schemes were approved by the Cabinet Committee on Economic Affairs (CCEA), Gol, in 2017 with an outlay of USD 1 billion.<sup>51</sup>

A detailed list of supportive policies, enabling private sector participation in the Education sector is documented in Annexure II.

## 1.3. Private sector participation

The gaps in the education system can be addressed by private sector participation, particularly through increased capital flows to enhance quality and improve employability. However, despite the large market size, commercial private investment interest in the sector has been historically limited when compared with sectors such as banking and healthcare. Private investment in skills development and education has historically been by way of private philanthropy and international grants. More than a third of the Corporate-Social-Responsibility (CSR) spending in India goes towards Education and Skilling, with many foundations providing grants to education institutes.<sup>52</sup> However, with individual donations and corporate contributions drying up amid the COVID-19 pandemic,<sup>53</sup> funding for traditional CSR activities could be reduced by 30-60 percent.<sup>54</sup> International aid for education to India has also been volatile in recent years, reducing by 26 percent in 2017.<sup>55</sup> There is a strong urgency for domestic private participants to bring in investments and new technologies into the sector.

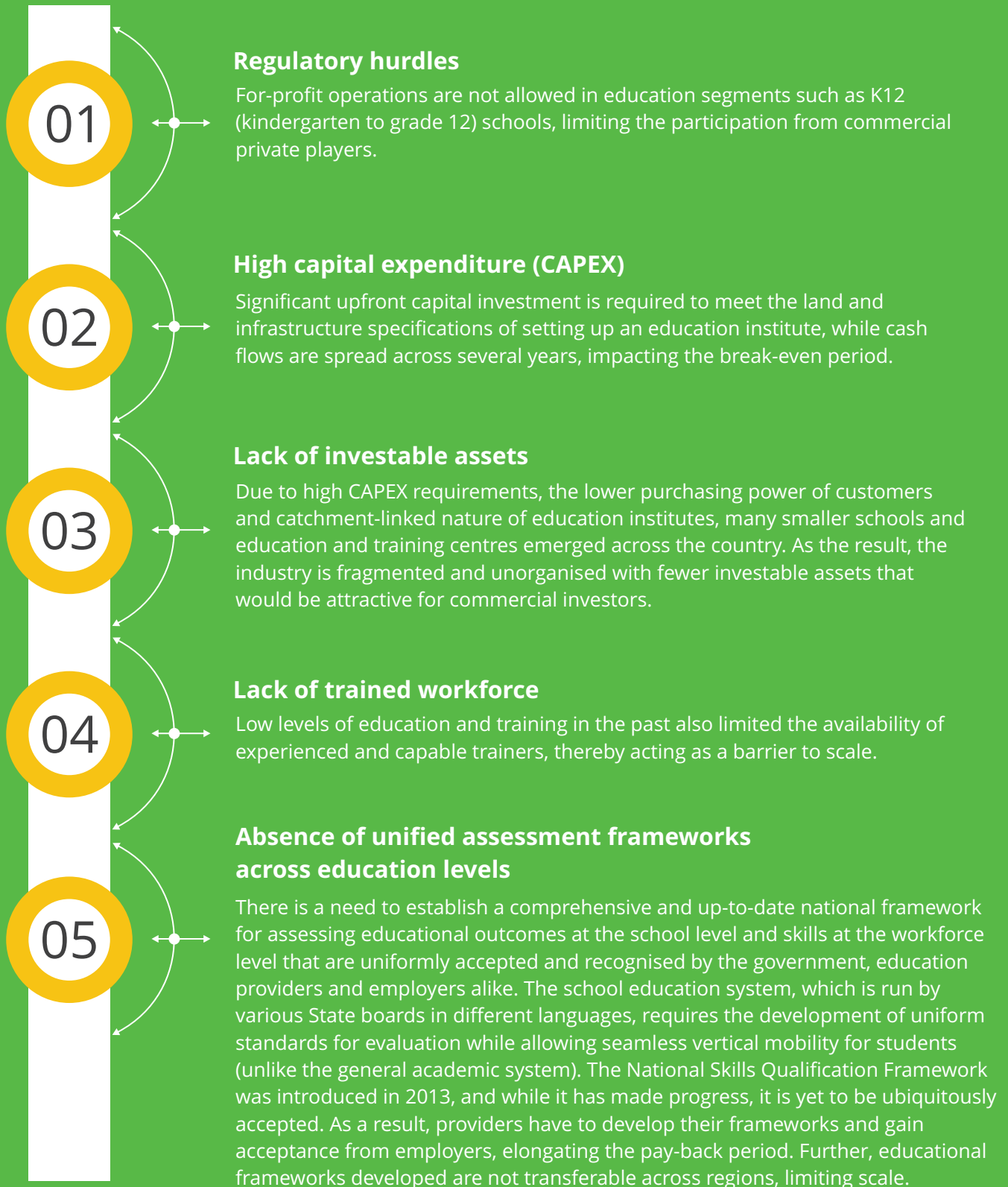
With successful exits made by early-stage investors, especially for EdTech business models, there is an increased allocation of funds in the space by private sector investors. Between April 2000 and March 2020, the education sector attracted FDI worth USD 3.24 billion. Due to the pandemic, the use of EdTech platforms to address social distancing norms and to ensure the continuation of education is gaining importance. Early-stage investments, especially Venture financing in the education space amounted to USD 80 million in the first six months of 2020, compared to 65 million invested throughout 2019.<sup>56</sup> The total PE/VC investment in the Education sector by the end of 2019 is estimated to be around USD 500 million.<sup>57</sup>





## Bottlenecks for private sector investments in the Education sector

The following bottlenecks to private commercial investment in the education sector were highlighted in consultation with investors:



## Tailwinds driving private investment in recent years

Despite these bottlenecks, the emergence of technology and new business models has unlocked the potential in the Education sector. Technology has helped businesses overcome catchment barriers to expand their reach, consolidate fragmented market segments and better utilise limited resources to improve the quality of education. As a result, the number of deals in the sector has skyrocketed, mostly driven by investments in EdTech. EdTech start-ups gathered 20 percent of overall VC investments in India in the first half of 2020.<sup>58</sup> Private investor interest in EdTech continued to remain resilient during the COVID-19 related volatility with ~18 EdTech start-ups raising funds amid the pandemic. The disclosed value of education transactions in 2020 up till September have already surpassed all previous years and EdTech deals constitute >95 percent of the transaction value for the education deals.<sup>59</sup> If these models are successful in reaching the last mile, they can help bridge the quality and financing gap in the sector, impacting over 400 million students across education levels.

### 1.4. Priority subsectors

Through a review of subsectoral development needs, policy priorities and deep-dive consultations with sector experts and investors, the following themes emerged as areas which address key development needs through business models:

1. Use of technology to improve access and learning outcomes in K12 education
2. Use of technology to impart vocational, practical and digital skills
3. High-quality tertiary education
4. Skills development of the unorganised workforce (especially vulnerable communities)
5. High quality and affordable education institutes
6. Education financing



Consultations with sector experts, investors and industry bodies helped test the abovementioned themes for alignment with development needs, policy priorities and viability for commercial investments. Experts' suggestions and evidence from secondary sources show that although some new universities have come up, institutional investment in high-quality tertiary education has remained low. Besides, lack of investment opportunities and high fragmentation limit private sector participation in skills development segment for the unorganised workforce. This area requires policy momentum to unite efforts across stakeholders (employers, workers and training centres).

**Education technology and education financing** are subsectors that lie at the intersection of development and policy priorities, as well as commercial private interest, and have therefore been shortlisted for the Investor Map. Increasing pre-primary and higher education enrolment ratios, improving quality of education at the K12 level and imparting employment-oriented skills at the post-K12 level emerged as key development themes business models should seek to address. On the other hand, brick and mortar education models that may address these themes such as vocational training centres and affordable private schools do not offer attractive commercials and operating environment for private sector participation.



Figure 10: Subsector Shortlist for the Education Sector

		Alignment to development needs and policy priorities		
Shortlisted subsectors		High (subsectors highlighted as 'top' priorities by development experts)	Medium (subsectors mentioned as 'priority' by development experts)	Low (subsectors not mentioned by development sector experts)
Private investor interest	Conducive for private sector participation (subsectors with PE investments)	<ul style="list-style-type: none"> <li>● <b>Subsector: EDUCATION TECHNOLOGY*</b> Online K12 supplementary education Online higher education and professional skilling</li> <li>● <b>Subsector: EDUCATION FINANCING*</b> Institute Financing</li> </ul>		
	Significant barriers to scale (subsector with commercial bottlenecks to investment)		<ul style="list-style-type: none"> <li>● <b>Subsector: FORMAL EDUCATION*</b> Coaching centres for non-Tier 1 cities</li> </ul>	
	Low scope for commercial investor participation (subsectors with regulatory barriers)	<ul style="list-style-type: none"> <li>● <b>Subsector: FORMAL EDUCATION*</b> K12 School Chains</li> <li>● <b>Subsector: INFORMAL EDUCATION: SKILLS DEVELOPMENT*</b> Vocational Training Centres</li> <li>● <b>Subsector: EDUCATION TECHNOLOGY*</b> Online upskilling platforms for unorganised workforce</li> </ul>		<ul style="list-style-type: none"> <li>● <b>Subsector: EDUCATION FINANCING*</b> Student Financing</li> </ul>

**Note:** \*Subsector not included in SASB  
**Source:** UNDP Investor Map research

### 1.5. Region ecosystem for the sector

There are no specific physical requirements (such as terrain, resources, etc.) for businesses in the Education sector to thrive in a particular State. The only limiting factor is the availability of trainers. However, with education technology, even that barrier has been overcome. Therefore, the priority regions for education coincide with

those with the highest development need and market size.

Between 45 to 60 percent of the enrolment in Daman and Diu, Andhra Pradesh, Rajasthan, Gujarat, Mizoram, Punjab, Karnataka, Telangana, Uttarakhand, Meghalaya and Nagaland are in accordance with 2019 Unified District Information System for Education (U-DISE).<sup>60</sup>

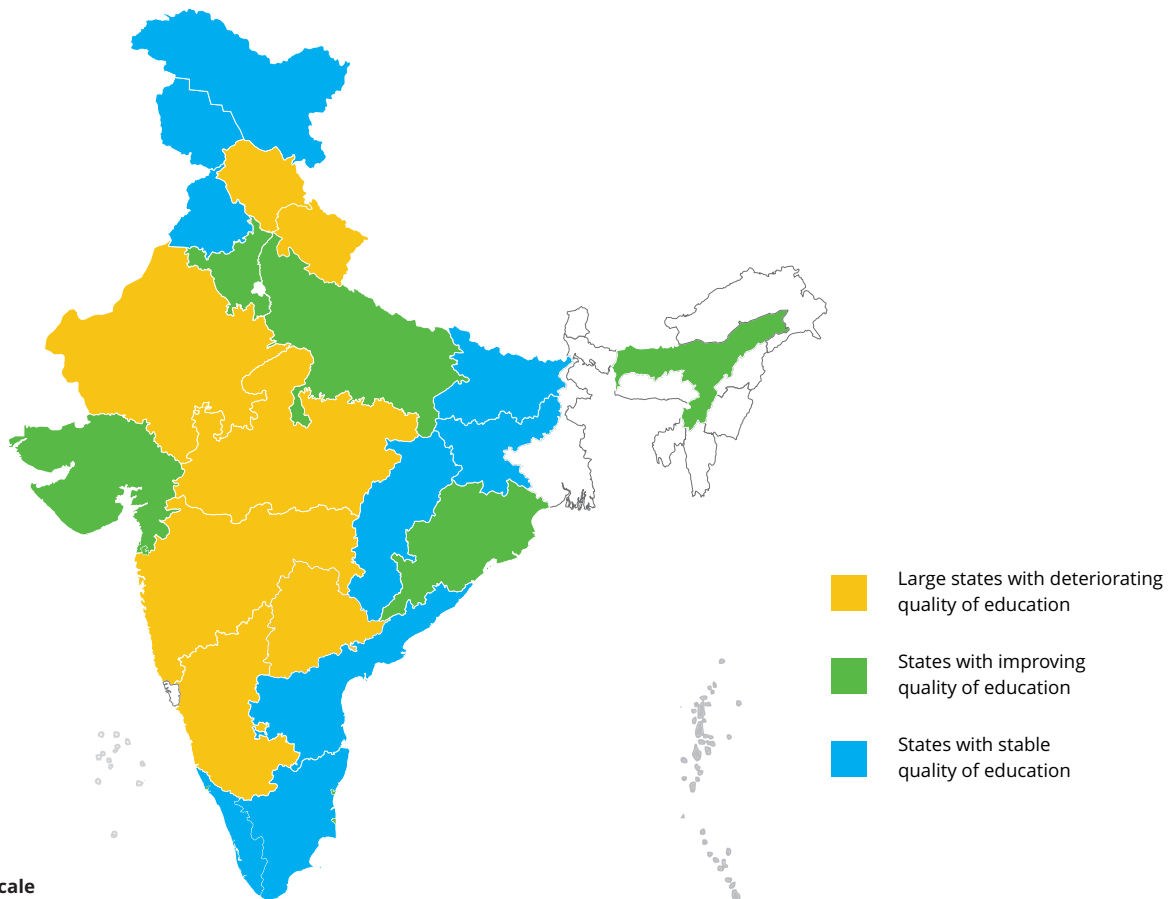
This provides an opportunity for private sector investors to fund business models that cater to the infrastructure and curriculum needs of these schools either through financing or through low cost, technology-driven models that can work and scale in low resource settings.

Further, given the success of EdTech models in urban and peri-urban areas, there is an opportunity to extend differentiated knowledge products to rural, underserved and rural populations. Internet connectivity and mobile phone penetration are important factors which impact various EdTech initiatives. India has over 900 million mobile phone users and 452 million

internet users (99 percent of internet users use mobile phones to access data).<sup>61</sup> The increasing ubiquity of mobile phone and internet access can be leveraged to offer education content and skill training. Majority of EdTech players currently focus their operations in urban areas which do not face constraints of connectivity, as well as affordability. However, to fully realise the potential of such businesses there is a need to develop localised, vernacular based models and promote the development of Information and Communications Technology (ICT) infrastructure to resolve rural-urban divide and ensure last-mile connectivity.

**Figure 11: Quality of Education by State**

**State-wise Performance on School Education Quality\*\*, 2019**



Map not to scale

Source: UNDP Investor Map research





For post-K12 business models, identifying States with the highest employment (availability of jobs) and lowest employability (skills level and participation rate of the current workforce) will indicate the skill gap. Both these factors are important aspects of the skill equation as skills development will be most effective when trainees can seek relevant employment. According to the India Skills report of 2019, Andhra Pradesh, Bihar, Delhi, Gujarat, Haryana, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh and West Bengal are states with the highest hiring activity.<sup>62</sup> The overlapping states, Bihar, Uttar Pradesh and Delhi have a high skill gap that can be addressed through skilling models. (State-wise performance of India on SDG 4 and indicators are documented in Annexure IV)

### 1.6. Investment Opportunity Areas - Overview

While IOAs such as online (low-tech) upskilling platforms for the unorganised workforce and student financing came up as IOAs with a potential for strong development impact, the commercial viability of such models remains unproven. Business models in these 'white spaces' currently face significant commercial

hurdles and need to develop further before they attract large-scale commercial private investments.

Online supplementary K12 education and Education Financing on the other hand not only have the potential to address key development needs but also have demonstrated interest from a range of private sector investors. Companies in these IOAs have been able to demonstrate profitability and offer successful exits to early investors. Continued commercial private interest is expected in these 'mature investment opportunity areas' and these opportunities have been covered in detail as a part of the Investor Map.

While models in the online higher education and professional skilling space are still relatively nascent, they have gained significant traction from venture capital investors over the past few years. Investment activity in this 'emerging opportunity area' is expected to continue growing in the 3-5 years horizon. These areas have also been included as a part of the Investor Map. *(Please refer to Annexure III for detailed analysis of the shortlisting process followed to arrive at the final IOAs)*





**Figure 12: Investment Opportunity Areas Shortlist for the Education Sector**

Subsector	 <b>Education Technology</b>			 <b>Education Financing</b>
<b>Opportunity Areas</b>	<b>Online K12 supplementary education</b>	<b>Online higher education and professional skilling</b>	<b>Online upskilling platforms for unorganised workforce</b>	<b>Institute Financing</b>
<b>Investors identified area as fundamentally marketable?</b>	✓	✓	?	✓
<b>Scale Potential</b>	<b>c.250 million</b> school-going children <sup>1</sup>	<b>c.65 million</b> students and working professionals <sup>2</sup>	<b>c.400 million</b> workers to be trained by '22 <sup>3</sup>	<b>c.63 million</b> students enrolled in 'budget private schools' <sup>4</sup>
<b>Proven in-market as evidenced by investors interest?</b>	Models have <b>demonstrated profitability and attracted Private Equity investments</b> , albeit only recently	Promising models have <b>attracted venture capital</b> , but have not yet been proven as profitable	Few commercial models	Models have <b>demonstrated profitability and attracted Private Equity investments</b>
<b>Opportunity Type</b>	Mature IOA	Emerging IOA	White spaces: Strong scale potential but not successful business models	Mature IOA
<b>Emerging Business Model(s)</b>	<ul style="list-style-type: none"> <li>▶ Low-cost, mobile based B2C software solutions in the vernacular to improve literacy and numeracy outcomes</li> <li>▶ Scalable B2B software solutions to improve literacy and numeracy outcomes in low-cost private schools and public schools</li> </ul>	<ul style="list-style-type: none"> <li>▶ Affordable degree and non-degree courses to impart employability-oriented skills delivered through an online/mobile-based SaaS platform</li> </ul>	<ul style="list-style-type: none"> <li>▶ Outcomes linked, mobile-technology based skills development platforms with employer tie-ups</li> </ul>	<ul style="list-style-type: none"> <li>▶ Credit solutions to low-cost education institutions to expand and upgrade facilities and infrastructure</li> </ul>
<b>SDGs impacted</b>				

**Sources:**

- www.ibef.org. (n.d.). Education & Training Sector in India: Education System, Growth & Market Size | IBEF. Available at: <https://www.ibef.org/industry/education-sector-india.aspx#>.
- 35 million students enrolled in higher education – Department of Higher Education, M. of H.R.D. (2016). All India Survey on Higher Education (2015-2016). Available at: [https://www.mhrd.gov.in/sites/upload\\_files/mhrd/files/statistics-new/AISHE2015-16.pdf](https://www.mhrd.gov.in/sites/upload_files/mhrd/files/statistics-new/AISHE2015-16.pdf);
  - 29 millions skills gap by 2030: Careers Desk, Indian Express (2020). Skill gaps affecting hiring across sectors. [online] The Indian Express. Available at: <https://indianexpress.com/article/jobs/skill-gaps-affecting-hiring-across-sectors-6193029/#:~:text=In%202019%2C%20several%20new%2Dage>.
- Pradhan, B. (2015). Narendra Modi wants to train 400 million people to avert demographic mess. Mint. Available at: <https://www.livemint.com/Politics/11kPLkrAvrsHmLjHULjx9l/Narendra-Modi-wants-to-train-400-million-people-to-avert-dem.html>.
- Centre for Civil Society and EdelGive Foundation (2018). FACES OF BUDGET PRIVATE SCHOOLS IN INDIA Report 2018. New Delhi. Available at: <https://ccs.in/sites/default/files/attachments/faces-of-bps-in-india-report2018.pdf>.
- 35 million students enrolled in higher education – Department of Higher Education, M. of H.R.D. (2016). All India Survey on Higher Education (2015-2016). Available at: [https://www.mhrd.gov.in/sites/upload\\_files/mhrd/files/statistics-new/AISHE2015-16.pdf](https://www.mhrd.gov.in/sites/upload_files/mhrd/files/statistics-new/AISHE2015-16.pdf)



## 1.7. Education Investment Opportunity Areas Deep Dive

### 1.7.1. Online K12 supplementary education

India has made considerable efforts to expand the school network since the RTE Act, 2009, but the quality of the education remains a significant challenge. Only c.50 percent of Grade V children can read Grade II level text and only c.28 percent can perform division.<sup>63</sup> In addition, outcomes among certain student cohorts have even been declining. There is also a strong need for increased technology adoption in Indian schools

because of two key reasons. Firstly, it is imperative to impact digital skills to students to enable them for success in the 21st century. Secondly, in a resource-constrained environment with low availability of teachers, technology can help reach a larger pool of students.

Online education models have the potential to significantly improve educational outcomes across student cohorts through personalizing student learning, improving student engagement, refining learning assessment and tracking, maximizing the reach of educational programmes. Lower-cost mobile-based models

#### 1.7.1. Online K12 supplementary education - Market Insights



##### Overview:

- » To address the gaps in quality of education in K12 schools, investors can focus on companies offering low cost, mobile-based B2C software solutions in the vernacular to improve literacy and numeracy outcomes or scalable B2B software solutions to improve literacy and numeracy outcomes in low-cost private schools and public schools



##### Need case:

- » Learning outcomes in schools have been declining in India due to a lack of resources. Technology models have the potential to improve outcomes with minimal resources
- » This IOA could contribute directly to **SDG4 (Quality Education)**, particularly 4.1. (Improving learning outcomes), and indirectly to **SDG8, SDG9** and **SDG10**



##### User or beneficiary:

- » Primary and secondary school students are not meeting minimum literacy and numeracy outcomes (estimated to be c.50% of the 250 million school children)



##### Economic factors:

- » Early investments in B2C learning platforms have yielded >60% Internal Rate of Return (IRRs), however as the sector matures, the IRRs are expected to be moderated. Overall, investors expect to make a **30% return** from EdTech investments for a 3-5-year time horizon in India
- » Companies in this vertical have taken **5-8 years** to turn profitable as they had to incur high sales costs and go through a few academic cycle to demonstrate results to drive adoption



##### Enabling factors:

- » The vertical has a strong partner environment with significant interest from commercial investors
- » Strong policy momentum to improve learning outcomes and increase adoption of technology in school education with GoI launching initiatives such as PM eVIDYA and SWAYAM



##### Risk factors:

- » The model's commercial viability has not been proven at a large scale, especially for models targeting lower income cohorts. High-touch sales models may hinder the economics of low-cost solutions, limiting expansion to lower income groups. Lack of basic digital infrastructure (such as tablets, smartphones and internet connectivity) is also a hurdle
- » Lack of digital literacy and low access to quality digital infrastructure and internet connectivity has limited adoption in public schools. However, COVID-19 has brought an out-look shift in favour of digital models
- » The various education boards and complex regulatory environment limits the scalability of solutions from one state to another



##### Impact management:

- » Investments falling under this IOA in their current form are likely to benefit stakeholders (**IMP classification B**), given that this business model yields an important and intended outcome that can improve the quality of education for an underserved group. Models that target rural areas, vernacular populations, public schools or 'budget' private schools can impact the most underserved groups to contribute to solutions (IMP classification C)

Source: UNDP research for India Investor Map

which can be adopted by the public school system and low cost private schools have a strong potential to create deep and lasting impact. Several companies in this space have already raised significant capital and even demonstrated profitability.<sup>64</sup> In terms of investment timeframe, business models under this IOA provide favourable returns in medium-term (5 to 15 years), given the high cost of customer acquisition for Business-to-Consumer (B2C) models that requires heavy deployment on the ground. Similarly, for Business-to-Business (B2B) models, the business model is required to navigate multiple levels of sanctions and required buy-in from school management, teachers, among others. An event like the COVID-19 pandemic has pushed for a quicker turnaround in the adoption of digital education models leading experts to believe that the investment timeframe may get shorter in the future. In terms of returns, particularly for the B2C models in the K12 EdTech space have provided more than average market returns with investors expecting to make a 30 percent return in a medium-term. Early investors in the space have also realised a 7x return (>60 percent IRR). However, as valuations in the sector soar, investors expect that returns to stabilize though they are anticipated to remain well above the average market returns.<sup>65</sup>

Therefore, online K12 supplementary education has been identified as a key IOA.

### 1.7.2. Online higher education and professional skilling

India has a large share of youth in its population but only 2.3 percent of the Indian workforce has had formal skills training. Govt's skill gap analysis concludes that by 2022, another 109 million or so skilled workers will be needed in key sectors of the economy.<sup>66</sup> Skill gap was estimated to have

cost India USD 1.97 trillion in GDP growth over 10 years by 2019.<sup>67</sup> Skills training has thus found a strong place in the Government's priority list. The government has set a target of skilling 400 million people by 2022 and launched many initiatives aimed at realising this objective. COVID-19 has further increased the need to productively engage and reskill the workforce. There is a strong need for affordable skilling platforms that can skill India's future workforce. To this end, eSkill India (National Skills Development Corporation's e-learning aggregator) partnered with private players to provide online skill development courses amid the COVID-19 pandemic.<sup>68</sup>

The area has also seen growing private sector interest with various institutes now offering their degrees online and some online skilling platforms raising significant capital.<sup>69</sup> The investment timeframe for models in this space is medium-term (5 to 15 years) since skilling platforms need to demonstrate employment outcomes that take at least two to three enrolment cycles. Online platforms have further costs of customer acquisition, increasing the capital requirements at the start of the business to enable rapid growth. Online skilling models are relatively new in India where the investments are at an early stage and IRRs have not been reported even though some companies have reported a jump in revenue. Many providers have not yet posted a profit and the space is also experiencing a high volume of consolidation activities, especially by the larger players. Investors remain positive about the IOA generating returns close to 30 percent, as is the trend with EdTech platforms in India.

Therefore, **online higher education and professional skilling** has been identified as a key IOA.


#### 1.7.2. Online higher education and professional skilling - Market Insights




##### Overview:

» To address the skills gap in India, investors can focus on companies offering affordable degree and non-degree courses to impart employability-oriented skills delivered through an online/mobile-based platform




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**Need case:**

- » Skills gap can cost India USD 1.97 trillion in GDP growth. COVID-19 has further increased the need to productively engage and reskill the workforce due to disruptions in high employment generating industries
  - » This IOA could contribute directly to **SDG4 (Quality Education) and SDG8 (Decent Work and Economic Growth)**, particularly 4.4. (By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship), and indirectly to **SDG5, SDG9 and SDG**
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**User or beneficiary:**

- » **Direct:** The unemployed and underemployed population that has completed schooling and/or employees at risk of replacement through automation
  - » **Indirect:** Economy growth and worker productivity, and companies seeking skilled workers
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**Economic factors:**

- » Overall, investors expect to make a **30% return** from EdTech investments for a 3-5-year time horizon in India. However, most online higher education/skilling models are nascent and have not posted a profit yet
  - » Companies in this vertical are expected to take **5-10 years** from their year of establishment to yield attractive returns due to high customer acquisition costs and lead time to demonstrate outcomes due to the length of academic cycles
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**Enabling factors:**

- » Strong policy momentum towards skills development with initiatives such as 'Skill India'
  - » Favourable regulations as higher educational institutions in the country have been allowed certificate, diploma and degree programmes in online mode under the University Grants Commission (Online Courses) Regulations, 2018 (3.12). In 2020, the government also announced plans to allow 100 top universities to launch online courses
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**Risk factors:**

- » Stakeholder Participation Risk: The impact of the model may be limited to urban areas and high-income students as lower income students may not possess the required financial capacity and digital exposure, leading to lower adoption and/or high drop-out rates
  - » The model faces external risks too as lack of job opportunities, especially as the economy recovered from the effects of a pandemic, and recognition from employers for traditional degrees may limit outcomes and thereby the depth of impact
  - » The models are relatively new and the commercial viability of such models has not yet been proven
- 

**Impact management:**

- » Investments falling under this IOA in their current form are likely to benefit stakeholders (**IMP classification B**), given that this business model yields an important and intended outcome that help mitigate the skills gap in the country. However, most online models today focus on white-collar workers as the skills required for blue-collar workers are challenging to impart online, limiting impact on the most underserved communities

**Source:** UNDP research for India Investor Map

### 1.7.3. Education institute financing

NITI Aayog has suggested that central and State funding on education (across all levels) should be increased to at least 6 percent of GDP, instead of the current spending of 3 percent.<sup>70</sup> Due to inadequate funding in the public education system, the country relies on c.450,000 low-cost and 'budget' private schools to cater to over 60 million of its low to middle-income students. These are small schools with inadequate infrastructure that charge less than 60-70 USD a year. Majority of 'budget' private schools operate as stand-alone entities with limited institutional support in terms of budget, managerial expertise and robust operational systems. As a result, the learning outcomes have been low for all schools, government or private, except for a

handful of private schools. For example, an ASER 2019 survey shows that only 65.1 percent of Class 5 students in private schools can read Class 2 text.<sup>71</sup>

COVID-19 pandemic has led to a catch-22 situation for these 'budget' private schools as it further increased the need for them to upgrade their offerings and adopt new technologies while limiting their revenue flows through disruption in fee collections. In this scenario, the need for financing such institutions assumes even greater importance.


While the non-profit structure that is mandated in school education limits equity investments in schools, providing debt funding to improve the quality of education in schools is imperative to

**improve the declining learning outcomes in India.** Many companies, especially Non-Banking Financial Companies (NBFCs) have emerged in this domain, which have been successful in not only providing much needed capital for improvements to these 'budget' private schools but also in offering attractive returns to private investors. The investment timeframe for business models in this space is short term with companies having turned a profit in less than 5 years. Specializing in a single sector has also helped companies achieve profitability with shorter turnaround time with fewer Non-


Performing Assets (NPAs). Early-stage investors have exited with 5X returns from Education Finance NBFCs. Late-stage investors are expected to make lower returns, but investors still expect to make above industry average returns driven by healthy profit margins demonstrated by companies and the headroom for growth in the large and unorganised 'budget' private schools segment.<sup>72</sup>

Given its strong potential to meet India's development need, a favourable policy momentum and significant private sector interest, Education Financing is a key IOA.


### 1.7.3. Education Institute Financing - Market Insights

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**Overview:**
  - » To address the gaps in infrastructure and quality of education in K12 schools, investors can focus on companies offering credit solutions to 'budget' private schools, enabling these schools to upgrade their infrastructure and deliver superior quality education and learning outcomes


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**Need case:**
  - » 'Budget' private schools have mushroomed in India. While these schools offer an educational avenue for lower/middle-income students, they offer poor quality education due to a dearth of resources, contributing to the declining literacy and numeracy outcomes in the country. Financing can help these schools upgrade their offerings and provide quality education to lower/middle-income students
  - » This IOA could contribute directly to **SDG4 (Quality Education)**, particularly 4.a. (Build and upgrade education facilities), and indirectly to **SDG8, SDG9** and **SDG10**


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**User or beneficiary:**
  - » Over 60 million lower/middle-income students enrolled in 'budget' private schools
  - » The model can also have a positive impact on the entrepreneurs/owners of the schools, who are struggling to stay afloat due to disruptions in fee collections amid the COVID-19 pandemic


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**Economic factors:**
  - » Private equity investments in the education sector returned a healthy **21.5% IRR**. Investments in education financing has provided IRRs of >30% to early investors
  - » Enrolment in private schools continues to grow as they gain share over public schools
  - » Companies in this vertical have achieved scale and profitability in **<5 years** due to the large number of schools and strong demand. Specializing in a single sector has also helped companies achieve profitability faster


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**Enabling factors:**
  - » Government's policy on the not-for-profit school structure disincentivizes equity investments in education. Therefore, there is a strong need for education financing companies
  - » The vertical has a strong partner environment for this vertical with participation from commercial as well as impact investors and foundations

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**Risk factors:**
  - » Lack of incentives for low-cost private schools to upgrade facilities due to the not-for-profit school structure. Affordable private schools charge a fee of <USD 60-70 a year, leaving little room for further investments. Further, upgrading facilities need not necessarily translate into improved education quality and better learning outcomes
  - » Highly unorganised market with a limited credit history and lower levels of awareness around financing options may affect uptake and proportion of NPAs. NPAs may increase due to collection troubles during the pandemic as borrower's capacity to pay will be tested during COVID-19 for the first time

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**Impact management:**
  - » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), given that this business model yields an important and intended outcome that can improve the quality of education for an underserved group

Source: UNDP research for India Investor Map





## 1.8. Education White Spaces Deep Dive

### 1.8.1. Online upskilling platforms for unorganised workforce


Even though globalization has benefited the middle to high-income white-collar workers, employment needs of a majority of the population, especially those that form part of the informal sector (i.e., over 90 percent of India's workforce or ~400 million people) were not adequately addressed. Such unorganised and untrained workforce resulted in low levels and quality of productivity for India (in comparison to countries like US and China). India's labour productivity per person employed (in PPP terms) stood at USD 4,941 in 1990 (China's USD 3,323; US's USD 79,437) and at USD 13,637 in 2015 (China's USD 23,809; US's USD 117,970).<sup>73</sup>

With the emergence of digital platforms targeted at blue and grey-collar service workers, systemic inefficiencies can be eliminated, while boosting productivity and creating value for the economy. Such platforms offer soft and hard-skill training and placement support to workers, thereby attempting to semi-formalize India's informal workforce. Although, the potential of digital

platforms (for the unskilled and semi-skilled workforce) can be harnessed to facilitate the delivery of social protection mechanisms, in addition to other opportunities, business models should include employer-tie up to incentivize the uptake of these models by the informal sector, and also help build a revenue model whereby commissions can be received from employers.

GoI introduced National Policy on Skill Development, 2015 to provide a framework for skill development activities in India, and has encouraged private sector participation, especially through the PPP model. However, as a purely commercial venture, this segment of the business has not been able to attract investors as it continues to face systemic hurdles such as lack of employment/placement opportunities, lower awareness among employers, the low purchasing power of the target audience and unfavourable cost economics. However, given its strong potential to meet India's development needs, this space has been recognized as a white space which may attract private investment if there are gains in policy momentum and innovations to build low cost technology-based models.


#### 1.8.1. Online upskilling platforms for unorganised workforce - Market Insights

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**Overview:**

» To help address the skills development needs, specifically for India's unorganised workforce, improving their employment prospects and level of income earned, by imparting soft and hard skills training through online/offline mobile-based platforms

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**Need case:**

» Such models can help in formalizing the unorganised sector and improve India's productivity levels

» This IOA could contribute directly to **SDG4 (Quality Education)** and **SDG8 (Decent Work and Economic Growth)**, particularly 4.4. (By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship), and indirectly to **SDG5, SDG9** and **SDG11**

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**User or beneficiary:**

» **Direct:** The unemployed and underemployed population forming part of unorganised workforce. Employers would benefit as they would be able to hire trained workforce, thereby eliminating time-cost involved in training workers

» **Indirect:** Improved productivity levels for India

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**Risk factors:**

» The models are relatively new and the commercial viability of such models has not yet been proven

» Systemic hurdles such as lack of employment/placement opportunities, lower awareness among employers and low purchasing power of target audience also affect commercial viability of these models

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**Impact management:**

» Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), given that this business model yields an important and intended outcome that help mitigate the skills gap in the country for an underserved population (unorganised workforce), while also contributing to improvement in India's productivity levels

Source: UNDP research for India Investor Map

## Sources:

32. Jack, I. (2018). India has 600 million young people – and they're set to change our world | Ian Jack. the Guardian. Available at: <https://www.theguardian.com/commentisfree/2018/jan/13/india-600-million-young-people-world-cities-internet>.
33. Un.org. (2017). Population. Available at: <https://www.un.org/en/sections/issues-depth/population/>.
34. Sharma, M. (2017). India's burgeoning youth are the world's future. Livemint. Available at: <https://www.livemint.com/Opinion/2WSy5ZGR9ZO3KLDMGijq2j/Indias-burgeoning-youth-are-the-worlds-future.html>.
35. www.ibef.org. (n.d.). Education & Training Sector in India: Education System, Growth & Market Size | IBEF. Available at: <https://www.ibef.org/industry/education-sector-india.aspx#>
36. UNESCO (2016). Global Education Monitoring Report. Available at: <https://en.unesco.org/gem-report/report/2016/education-people-and-planet-creating-sustainable-futures-all>.
37. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
38. ASER Centre (2017). The twelfth Annual Status of Education Report (ASER 2017: Beyond Basics). asercentre.org. Available at: <http://img.asercentre.org/docs/Publications/ASER%20Reports/ASER%202017/aser2017pressreleasenationalenglishfinalrevisedjan23.pdf>.
39. UNESCO. 2020. Global Education Monitoring Report 2020: Inclusion and education: All means all. Paris: UNESCO. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000373718/PDF/373718eng.pdf.multi>
40. ASER Centre (2019). Annual Status of Education Report -2018 (Rural). asercentre.org. Available at: <https://img.asercentre.org/docs/ASER%202018/Release%20Material/aserreport2018.pdf>.
41. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
42. Special Correspondent (2020). Coronavirus lockdown | COVID-19 widened educational divide: UNESCO report. The Hindu. 24 Jun. Available at: <https://www.thehindu.com/education/coronavirus-lockdown-covid-19-widened-educational-divide-unesco-report/article31907857.ece>.
43. ILO (2018). Women and men in the informal economy: A statistical picture, Third Edition. Geneva: ILO. Available at: [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms\\_626831.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_626831.pdf).
44. BBC News. Making Indian labour more employable. (2015). 17 Jul. Available at: <https://www.bbc.com/news/world-asia-india-33550853>.
45. ILOSTAT. (n.d.). Labour productivity. Available at: <https://ilostat.ilo.org/topics/labour-productivity/>.
46. www.fortuneindia.com. (n.d.). Skill gap can cost India \$1.97 trillion in GDP growth: Accenture. Available at: <https://www.fortuneindia.com/macro/skill-gap-can-cost-india-197-trillion-in-gdp-growth-accenture/102841>.
47. www.ilo.org. (n.d.). Sectoral impact, responses and recommendations (COVID-19 and the world of work). Available at: <https://www.ilo.org/global/topics/coronavirus/sectoral/lang-en/index.htm>.
48. www.ibef.org. (n.d.). Education & Training Sector in India: Education System, Growth & Market Size | IBEF. Available at: <https://www.ibef.org/industry/education-sector-india.aspx#>
49. Ministry of Human Resources Development, Gol (2019). Draft National Education Policy 2019. Available at: [https://www.mhrd.gov.in/sites/upload\\_files/mhrd/files/Draft\\_NEP\\_2019\\_EN\\_Revised.pdf](https://www.mhrd.gov.in/sites/upload_files/mhrd/files/Draft_NEP_2019_EN_Revised.pdf).
50. BloombergQuint. (n.d.). Budget 2019 Must Tackle Missed Skill Development Targets Even As Ministry's Funds Go Unutilised. Available at: <https://www.bloombergquint.com/union-budget-2019/budget-2019-must-tackle-missed-skill-development-targets-even-as-ministrys-funds-go-unutilised>.
51. www.ibef.org. (n.d.). Education & Training Sector in India: Education System, Growth & Market Size | IBEF. Available at: <https://www.ibef.org/industry/education-sector-india.aspx#>
52. CRISIL (2019). The CRISIL CSR Yearbook 2019. Available at: <https://www.crisil.com/content/dam/crisil/crisil-foundation/generic/rs-50000cr-the-crisil-csr-yearbook-2019-new.pdf>.
53. FSG. (2020). The Impact of COVID-19 on CSR Funding for Indian NGOs. Available at: <https://www.fsg.org/blog/impact-covid-19-csr-funding-indian-ngos>.
54. Nanda, P.K. (2019). International aid for education to India down 26%, shows UN data. Available at: <https://www.livemint.com/education/news/international-aid-for-education-to-india-down-26-shows-un-data-1558027674962.html>.
55. UNESCO. 2020. Global Education Monitoring Report 2020: Inclusion and education: All means all. Paris: UNESCO. Available at: <https://unesdoc.unesco.org/ark:/48223/pf0000373718/PDF/373718eng.pdf.multi>
56. PWC (2020). Deals in India: Mid-year review and outlook for 2020 – pause and consolidation. PWC. Available at: <https://www.pwc.in/assets/pdfs/services/deals/deals-in-india-mid-year-review-and-outlook-for-2020-pause-and-consolidation.pdf>
57. www.ibef.org. (n.d.). Education & Training Sector in India: Education System, Growth & Market Size | IBEF. Available at: <https://www.ibef.org/industry/education-sector-india.aspx#>
58. Majumdar, R. (2020). Ed-tech startups witness massive jump in VC investments in H1 2020. Available at: <https://www.livemint.com/news/india/ed-tech-startups-witness-massive-jump-in-vc-investments-in-h1-2020-11593341966216.html>.
59. S&P Capital IQ data
60. <https://centralsquarefoundation.org/State-of-the-Sector-Report-on-Private-Schools-in-India.pdf>
61. IAMAI and Nielsen (2019b). India Internet 2019.
62. Confederation of Indian Industries, UNDP, Wheebox, Peoplestrong and All India Council for Technical Education (2019). India Skills Report 2019. Available at: [https://wheebox.com/static/wheebox\\_pdf/ISR\\_Report\\_2019.pdf](https://wheebox.com/static/wheebox_pdf/ISR_Report_2019.pdf).
63. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
64. Byju's turns in net profit for FY19, revenue up nearly three-fold. (n.d.). The Economic Times. Available at: <https://tech.economictimes.indiatimes.com/news/internet/byjus-swings-to-profitability-in-fiscal-2019-revenue-almost-trebles/72857182>.
65. UNDP research for India Investor Map
66. International Labour Organization (2019e). Inclusive Future of Work Republic of India. ilo.org. Available at: [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms\\_732868.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_732868.pdf).
67. www.fortuneindia.com. (n.d.). Skill gap can cost India \$1.97 trillion in GDP growth: Accenture. Available at: <https://www.fortuneindia.com/macro/skill-gap-can-cost-india-197-trillion-in-gdp-growth-accenture/102841>.
68. Moneycontrol. (n.d.). COVID-19 impact | NSDC chief says e-learning course enrollments grew 162% in April over March. Available at: <https://www.moneycontrol.com/news/business/economy/nsdc-ceo-says-e-learning-programmes-grew-162-in-april-amid-covid-19-lockdown-5349761.html>.
69. S. S. (2020). Edtech Startup Harappa Grabs James Murdoch's First Investment In India. Inc42 Media. Available at: <https://inc42.com/buzz/edtech-startup-harappa-grabs-james-murdochs-first-investment-in-india/>.
70. NITI Aayog Strategy for New India @75, SDG India Index, New Education Policy, MHRD policy briefs
71. Central Square Foundation and Omidyar Network (2020). State of The Sector Report: Private Schools in India. centralsquarefoundation.org. Available at: <https://centralsquarefoundation.org/State-of-the-Sector-Report-on-Private-Schools-in-India.pdf>.
72. UNDP research for India Investor Map
73. Goyal, M. (n.d.). How online startups are reshaping the informal jobs sector in India. The Economic Times. Available at: <https://economictimes.indiatimes.com/small-biz/startups/how-online-startups-are-reshaping-the-informal-jobs-sector-in-india/articleshow/55514767.cms>.



# HEALTHCARE



# Healthcare



## 1. Sector overview

India's progress on SDG 3 (Good Health and Well-Being) was given a score of 61 out of 100 on the SDG India Index since a number of States have scope for improvement on their health-related targets<sup>74</sup>. Govt has taken progressive steps to improve citizen access to good quality and affordable healthcare. Concerted efforts have led to significant milestones such as elimination of polio, maternal and neonatal tetanus, among others. Similarly, strides have been made to reduce imbalances in health indicators such as under-five mortality rate that has reduced significantly from 74 in 2005-6<sup>75</sup> to 26 in 2018<sup>76</sup>. Govt has also taken steps to bolster health insurance coverage for low-income groups, particularly those from the unorganised sector through Pradhan Mantri Jan Arogya Yojana (PM-JAY), also referred to as the Ayushman Bharat Mission. PM-JAY aims to expand health insurance coverage for nearly 100 million Bottom of the Pyramid (BoP) population and create access to secondary and tertiary care procedures.<sup>77</sup>

With these progressive steps, there is also a stronger need to identify gaps in inter-State and intra-State performance on health indicators with a particular focus on low-income segments and populations in low resource settings. The rising burden of non-communicable diseases (NCDs) along with the persisting challenges presented by communicable diseases further creates resource constraints both for policymakers as well as healthcare practitioners. For example, child and maternal undernutrition are still the single largest risk factor in India, responsible for 15 percent of the total disease burden in 2016<sup>78</sup>. At the same time, NCDs, including cardiovascular conditions, chronic obstructive respiratory diseases, diabetes, mental health conditions and cancers are now the leading causes of health loss in India, with 55 percent morbidity and premature mortality attributable to these conditions<sup>79</sup>.

Opportunities for the private sector participation in India is made evident by the fact that 80 percent of service delivery in healthcare is through business models supported by the private sector. The healthcare industry in India is expected to reach USD 372 billion by 2022 providing significant opportunities for healthcare enterprises and investors<sup>80</sup>. Leveraging Govt's commitment to further healthcare delivery through adequate incentives and regulations for private entities can provide a level and competitive playing field to strengthen private sector participation. The COVID-19 pandemic has also led to increasing dependence upon digital platforms to ensure delivery of healthcare services further providing opportunities to the private sector to innovate disruptive solutions that harness the increasing mobile phone and internet coverage to reach customers beyond Tier I and Tier II cities.



## 1.1. Sectoral development needs

A review of key policy documents, human development reports and expert consultations highlighted the most pressing sectoral development needs for the Healthcare sector that offer opportunities for policy and private sector intervention:

### 1.1.1. Resource scarcity

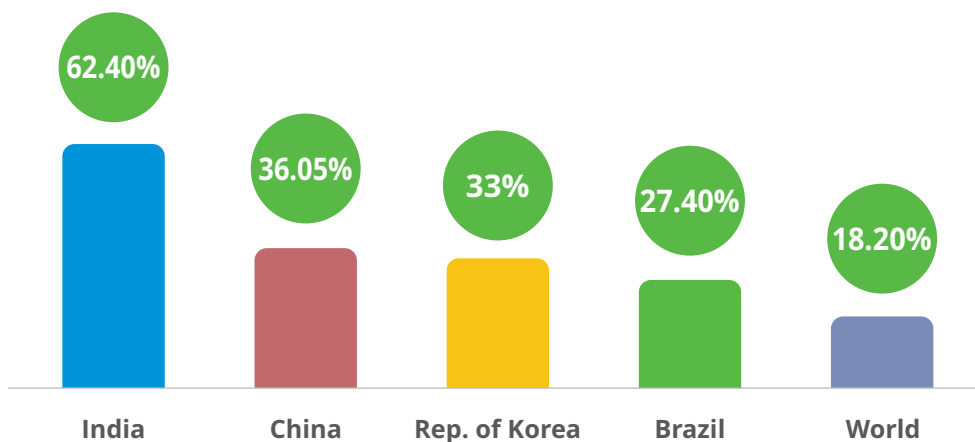
A lack of both human and capital resources constrains healthcare delivery in India. In 2018, India had only 0.9 physicians for 1,000 people<sup>81</sup>. In 2017-18, India's Government Health Expenditure was 1.26 percent of GDP<sup>82</sup> compared to the world average of 5.9 percent<sup>83</sup>. While the Govt's expenditure increased over the past decade from 1.12 percent in 2009-10 to 1.6 percent of GDP in 2020, there is a significant scope for improvement to ensure optimal

spending towards the Healthcare sector. The resultant gap makes for a viable opportunity for the private sector, making them the predominant healthcare provider in India.

### 1.1.2. Cost of healthcare

There has been a significant shift in health insurance coverage with 28.7 percent of households with at least one member covered in 2015-16, up from 4.8 percent in 2005-6<sup>84</sup>. However, Out-Of-Pocket (OOP) expenditure on healthcare remains high at 62.4 percent of total expenses, compared with the world average of 18.2 percent<sup>85</sup>. Besides, a lack of clear regulations has led to variations in quality and costs of private sector services further driving up the costs for the end consumer. High OOP medical expenses is a key factor affecting the financial resilience of households and has been found to push nearly 60 million Indians into poverty each year<sup>86</sup>.

**Chart 3: Out-Of-Pocket expenditure as a % of total health expenditure - India and peers compared**



Source: Data.worldbank.org

### 1.1.3. Regional disparities

Nearly 75 percent of dispensaries, 60 percent of hospitals and 80 percent of doctors are located in urban areas, highlighting the need to balance out the urban-rural access related disparity, according to a 2019 report released by KPMG and the Organisation of Pharmaceutical Producers of India (OPPI). According to NITI Aayog's State Health Index Report 2019 (Healthy States, Progressive India), the overall health index score of India's best-performing state is

more than two and a half times as that of the bottom-most performer<sup>87</sup>.

### 1.1.4. Changing disease burden

In India, NCDs such as heart disease, diabetes and respiratory diseases are expected to comprise 75 percent of all diseases by 2025, compared to 45 percent in 2010<sup>88</sup>. NCDs require attention at a very early stage and once developed, medication continues throughout the lifetime<sup>89</sup>, increasing



the burden on the healthcare system across the care continuum.

### 1.1.5. Gaps in healthcare delivery capacities

More than 64 percent of healthcare delivery in the private sector is done by small scale entities that are subscale with low capacities and efficiencies<sup>90</sup>. There is a need to consolidate and integrate the fragmented service delivery market for providing better quality services at scale, particularly for the last-mile population segments. Global disruptions in supply chains have also impacted the sector where a massive rise in demand for protective health products created critical shortages. As the country looks to 'Make in India', there are likely to be several opportunities for local companies that need to be boosted through adequate investments and capacity building support<sup>91</sup>.

## 1.2. Policy momentum

The policy momentum in the Healthcare sector reveals a strong narrative that the GoI is working to build, simultaneously addressing different aspects of the sector that are currently fragmented. It also presents a strong opportunity for multiple stakeholders to collaborate to ensure development impact with commercial gains. The National Health Mission which aims at strengthening the overall public health system, together with other initiatives and schemes has laid down a strong foundation for the development of a robust health system.

Examples include 'Ayushman Bharat' that includes components such as Health and Wellness Centres (HWCs) to boost comprehensive primary and preventive care for underserved populations; and the PM-JAY insurance schemes to cover the bottom 40 percent of the population for secondary and tertiary care. As these initiatives are implemented, opportunities for private sector participation at different levels of the healthcare continuum are given, especially in rural, underserved markets that remain an untapped opportunity.

More specifically, to boost private sector participation, GoI has introduced key policies and financial incentives spanning different sub-segments of the Healthcare sector such as Telemedicine, Medical Tourism, Hospitals and Diagnostic centres, Pharmaceuticals and drugs, medical devices, equipment and supplies and medical insurance. A detailed list of supportive policies, enabling private sector participation in the Healthcare sector are documented in Annexure II.

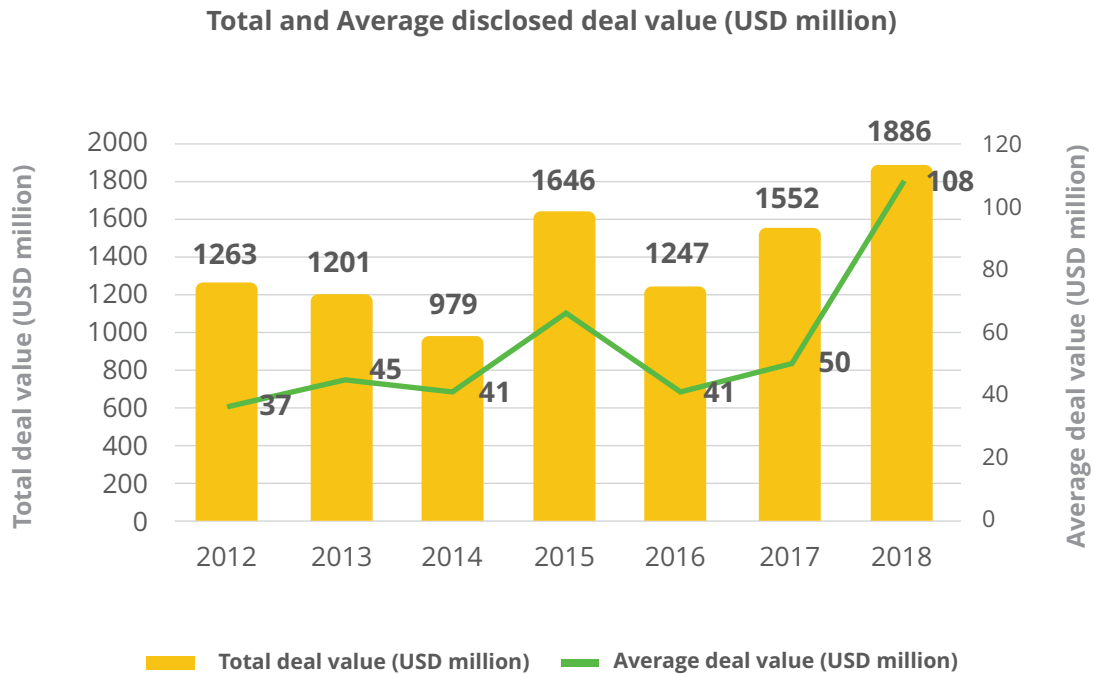
## 1.3. Private sector participation

There continues to be considerable need for augmentation from the private sector to complement GoI's efforts to achieve its goals in the Healthcare sector. Private sector healthcare operators are already the primary service providers and have raised significant capital from commercial investors as shown in Chart 4.





**Chart 4: Total Reported Transaction Value (USD Million) of Healthcare, India, 2012-2018**



Source: Praxis Global Alliance

The Healthcare sector also saw significant exit activity for PEs in 2019 with the sector being one of the top five sectors with the highest exits made by investors. From 2015 through 2019, healthcare subsectors with the largest deal values were pharmaceuticals (USD 2.16 billion), hospitals (USD 1.63 billion) followed by wellness products (USD 397 million), clinics (USD 337 million), biotech (USD 226 million), MedTech (USD 61 million) and diagnostics (USD 40 million)<sup>92</sup>. Besides, multiples on invested capital for exits in the sector averaged at 3.4 between 2012 and 2019 compared to the average of 3.5 across sectors. Specifically, in the overall technology related investments, HealthTech was second only to Fintech in terms of deal value and shared the second spot with EdTech for deal

volume, Fintech being the first<sup>93</sup>. It is also important to note that Insurtech models, that leverage digital platforms to provide and service insurance products, including for healthcare, has also seen investment activity with USD 41.8 million invested through 7 deals. If these Insurtech models can scale to underserved populations in low resource settings, significant development impact can be achieved with exponential scale potential.

Investments in the Healthcare sector continue to be an interesting space for investors. Going forward, the business models supported by investors can look more concertedly at expanding the market reach to rural areas and address challenges around the fragmented healthcare system.

# Bottlenecks for private sector investments in the Healthcare sector

Historically the following bottlenecks limited the expansion of private healthcare provision to less-affluent population groups. Consultations with experts and secondary research suggest the following as the key reasons hindering optimal private sector participation:

01

## High capex and cost of operations for healthcare delivery

Healthcare is a capital-intensive business because of the real estate involved in setting up facilities as well as the cost of medical equipment, hiring qualified staff and updating medical technologies.

02

## Lack of affordable domestic medical devices

75 percent of the current demand for medical devices is met through imports, increasing the cost of healthcare delivery<sup>94</sup>.

03

## Cost, availability and quality of drugs

According to estimates by the Central Drugs and Standards Control Organization (CDSCO), around 84 percent of the Active Pharmaceutical Ingredients (APIs) for drugs manufactured in India are imported, driving up the cost of drugs<sup>95</sup>. Expenditure on drugs is one of the largest constituents of OOP payments and accounts for 40 percent of overall healthcare expenditure for low-income households<sup>96</sup>. In addition, while spurious and substandard drugs as a percentage of total drug supply have reduced over the years, the quality of drugs remains a persistent issue. As of September 2020, 1.6 percent of the total drug supply was found to be substandard<sup>97</sup>. The complex drug retail and distribution network accentuated by hurdles such as low consumer affordability, lack of storage facilities further increases the cost to consumers and limits accessibility<sup>98</sup>.

04

## Low purchasing power and high Out-Of-Pocket expenditure

High cost of healthcare delivery coupled with low purchasing power and/or low insurance adoption amongst lower-income groups have limited access to private healthcare models.

05

## Low availability of healthcare professionals outside urban centres

According to estimates, urban centres are home to almost 80 percent of the doctors despite having less than 30 percent of the total population. Scarcity of high quality trained medical professionals for different cadres such as specialist doctors and trained nurses has limited the reach of healthcare delivery models.



In addition, the COVID-19 pandemic has highlighted the need to improve the healthcare system in India that needs to balance out the regional disparities and advance access to quality healthcare services. Advancements in the healthcare sector have far-reaching economic repercussions binding the quality of healthcare to the economic status of the country. With the private sector constituting a key market share in the sector, there are collaborative opportunities for building and scaling sustainable business models.

### **Tailwinds driving private investments in the sector**

With new social distancing norms and increased uptake of digital platforms to access services, there are immense opportunities for business models like Telemedicine to address access related challenges across population segments.

Policy initiatives such as India's telemedicine guidelines issued in March 2020 have clarified regulations for start-ups and investors clearing a pathway for spurring innovations and scale-up of successful business models. In addition, diagnostics and Point of Care services are slated to reach over USD 535 million by 2023<sup>99</sup>, with a focus on India's elderly population. This push for domestic production was bolstered through post-pandemic fiscal measures with GoI announcing a ~USD 935 million Production Linked Incentive (PLI) scheme to boost local bulk drug manufacturing in July 2020. The government also notified a scheme to promote bulk drug parks. For selected parks, financial assistance to the tune of 70 percent of the project cost of common infrastructure facilities will be provided.<sup>101</sup> Further, the PLI scheme will also promote domestic manufacturing of medical devices and will encourage private sector participation by providing incentives such as pay-out of 5 percent of incremental sales over the base year of 2019-20 for identified segments of medical devices.<sup>102</sup>

Domestic production and asset-light models such as telemedicine, micro-hospitals and retail clinics will help to improve the affordability of healthcare services. The roll-out of GoI's 'Ayushman Bharat', a national health protection scheme that aims to cover 100 million poor and

vulnerable families<sup>103</sup> may stimulate demand for healthcare products, providing players with an entry point to the non-urban Indian market. Also, changes in consumer behaviour due to the COVID-19 pandemic such as increased time spent on healthcare consumer apps are reshaping use cases and opportunities for disruptive technology-based business models in the healthcare sector.<sup>104</sup>

Finally, investors see Healthcare as an attractive sector in India. According to Bain's Private Equity report for 2020, market disruptions caused by COVID-19 will likely see growth in select sectors such as Healthcare with significant investment opportunities. In addition, even though the investments in healthcare have spiked in the short term due to the immediate surge in demand, the Bain's report suggests the growth momentum continue especially in subsectors such as Digital Healthcare.<sup>105</sup>

### **1.4. Priority subsectors**

Through a review of the subsectoral development needs and policy priorities, following are the key development themes that emerged as priority areas for the Healthcare sector with particular emphasis on increasing access to and reducing the cost of healthcare that business models should seek to address:

1. Low-cost delivery of Healthcare at last mile
2. Use of technology to improve accessibility and affordability of healthcare delivery
3. Affordable healthcare equipment and supplies
4. Managed care including insurance
5. Life sciences innovations
6. Alternative medication systems and wellness products

Consultations with sector experts, investors and industry bodies helped test the abovementioned themes for alignment with development needs, policy priorities and viability for commercial investments. Experts' suggestions and evidence from secondary sources show that there are significant commercial hurdles in primary healthcare infrastructure development and training of healthcare professionals, especially in rural areas, and in research and development. Besides, while several wellness platforms have



gained private sector traction, these models tend to cater to high-income cohorts and do not immediately address India's most pressing development needs. Other themes such as managed healthcare services, life sciences innovations were also filtered out due to the absence of viable business models operating at scale.

Healthcare Delivery and affordable Medical Equipment are subsectors that lie at the intersection of development and policy priorities, and commercial private interest and have therefore been shortlisted for the Investor Map.

Investing in Affordable Pharmaceuticals can also help in spurring of opportunities for small and medium enterprises (SMEs) that are engaged in manufacturing and production related activities in this subsector. Though the Pharma sector already has significant private investments, the development of affordable medication is difficult since these companies import the APIs. Given the existing price caps and thin margins, more affordable solutions are most likely possible if APIs can be manufactured in the country and at competitive price thresholds.

**Figure 13: Subsector shortlist for the Healthcare sector**

		Alignment to development needs and policy priorities		
Shortlisted subsectors		High (subsectors highlighted as 'top' priorities by development experts)	Medium (subsectors mentioned as 'priority' by development experts)	Low (subsectors not mentioned by development sector experts)
Private investor interest	Conducive for private sector participation (subsectors with PE investments)	<ul style="list-style-type: none"> <li>● <b>Subsector: HEALTHCARE DELIVERY</b> Tertiary care outside Tier-1 cities Specialty Centres Decentralized preventive, primary and secondary care centers</li> <li>● <b>Subsector: MEDTECH</b> Telemedicine/digitally-enabled remote treatment</li> <li>● <b>Subsector: AFFORDABLE HEALTHCARE EQUIPMENT &amp; SUPPLIES</b> B2B hospital equipment (ventilators, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: LIFE SCIENCES</b> APIs manufacturing Drugs manufacturing</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: HEALTHCARE DELIVERY</b> Primary care infrastructure</li> <li>● <b>Subsector: MEDTECH</b> Content platforms</li> <li>● <b>Subsector: MANAGED CARE</b> Medical insurance products</li> </ul>
	Significant barriers to scale (subsector with commercial bottlenecks to investment)	<ul style="list-style-type: none"> <li>● <b>Subsector: LIFE SCIENCES</b> Vaccine manufacturing Drug development and research</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: MEDTECH</b> Data management in healthcare</li> </ul>	
	Low scope for commercial investor participation (subsectors with regulatory barriers)		<ul style="list-style-type: none"> <li>● <b>Subsector: AFFORDABLE HEALTHCARE EQUIPMENT &amp; SUPPLIES</b> B2B diagnostic equipment B2B Consumables B2B2C services e.g., stents B2C: Medical devices</li> </ul>	

**Notes:** \*Subsector not included in SASB

\*\*SASB subsector biotechnology and pharmaceuticals were broken into 2; while affordable pharmaceuticals were not highlighted as a top priority, API manufacturing has gained significant momentum during the COVID-19 pandemic due to its impacts on India's self-sufficiency and the sectors value chains. Therefore, API manufacturing has been included for further analysis.

**Source:** UNDP Investor Map research





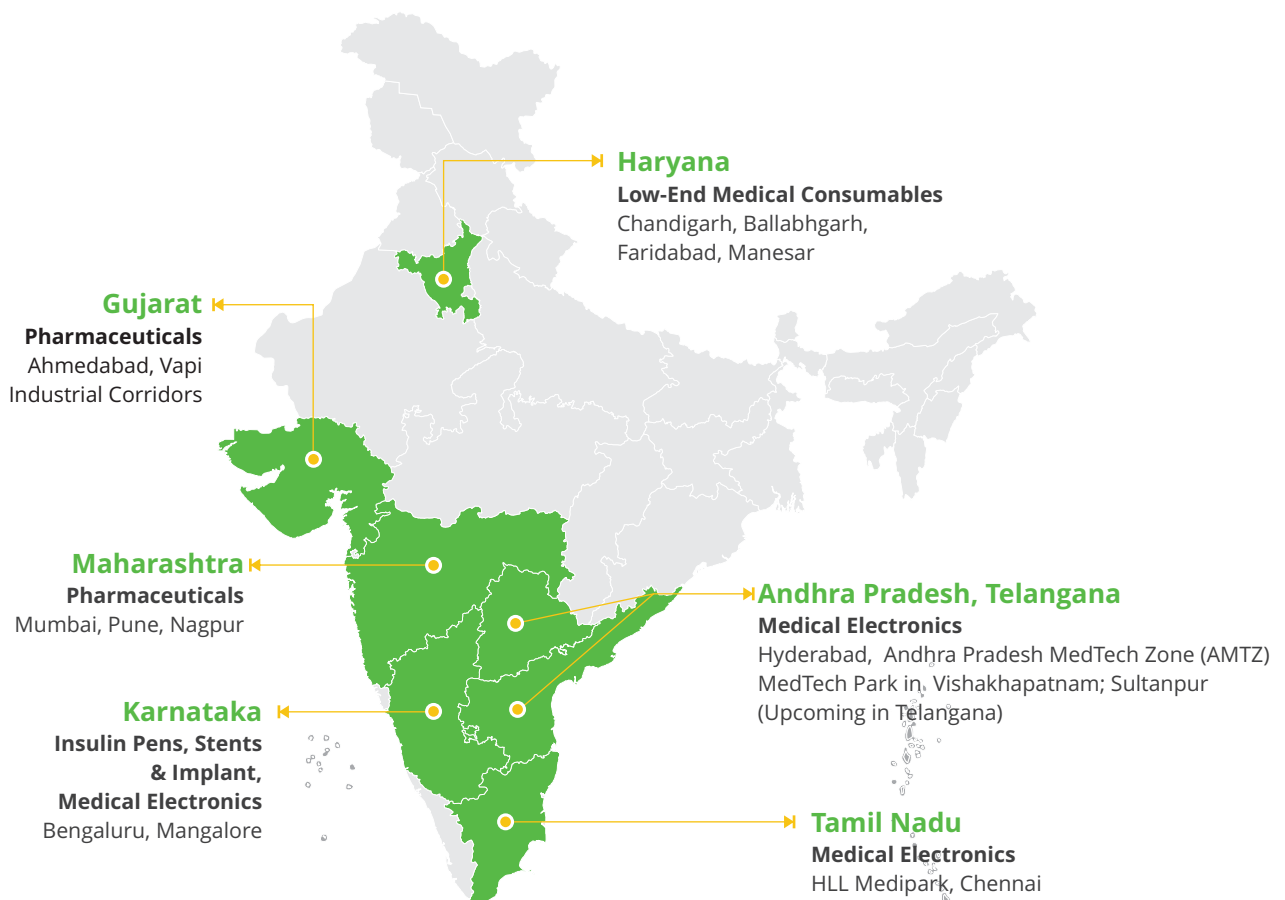
## 1.5. Region ecosystem for the Healthcare sector

Identification of priority regions for investments in Healthcare was gleaned from understanding the parallels between development need, a conducive environment created by policy momentum as well as already existing private sector participation in different regions of the country.

For identifying regions that have a conducive environment for private sector participation in the Healthcare sectors, national and State level investment promotion plans were reviewed. There are approximately 800 domestic Medical Devices manufacturers in India, with an average

investment of ~USD 2.7 million and an average turnover of ~USD 6.9 million. These manufacturers broadly exist in six Medical Devices manufacturing 'clusters' in the country. These clusters have 'Medical Device Parks' developing around them and States have also committed to set-up dedicated industrial parks where efficient domestic manufacturing at lower costs. In 2019, Andhra Pradesh, Telangana, Tamil Nadu and Kerala have got in-principle approval from Gol for new medical devices parks.<sup>106</sup> However, there is little investment momentum in bolstering manufacturing and production capacities in the States where the development need is the highest that the following section describes.

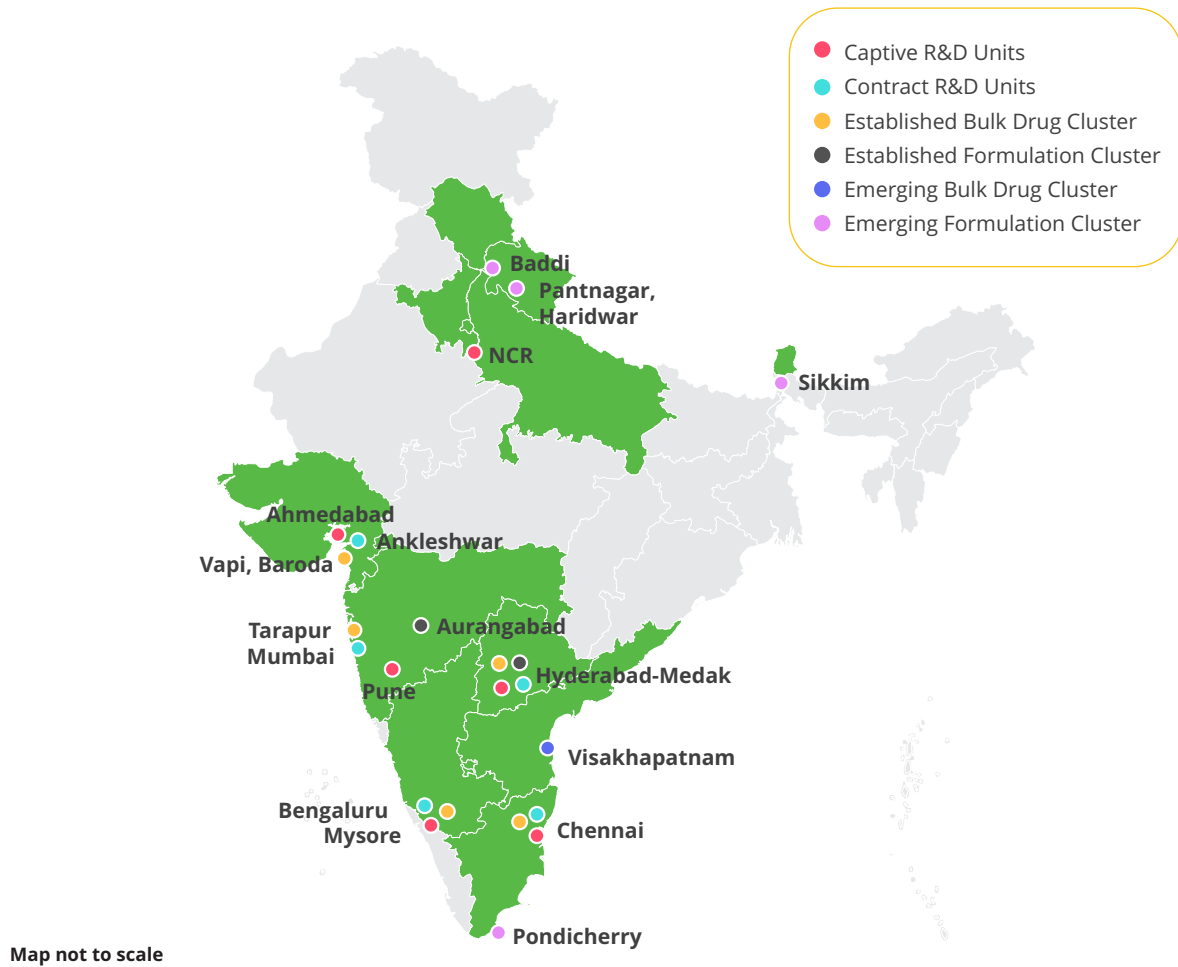
**Chart 5: Manufacturing clusters for medical devices in India**



Map not to scale

Source: Invest India  
<https://www.investindia.gov.in/sector/medical-devices>

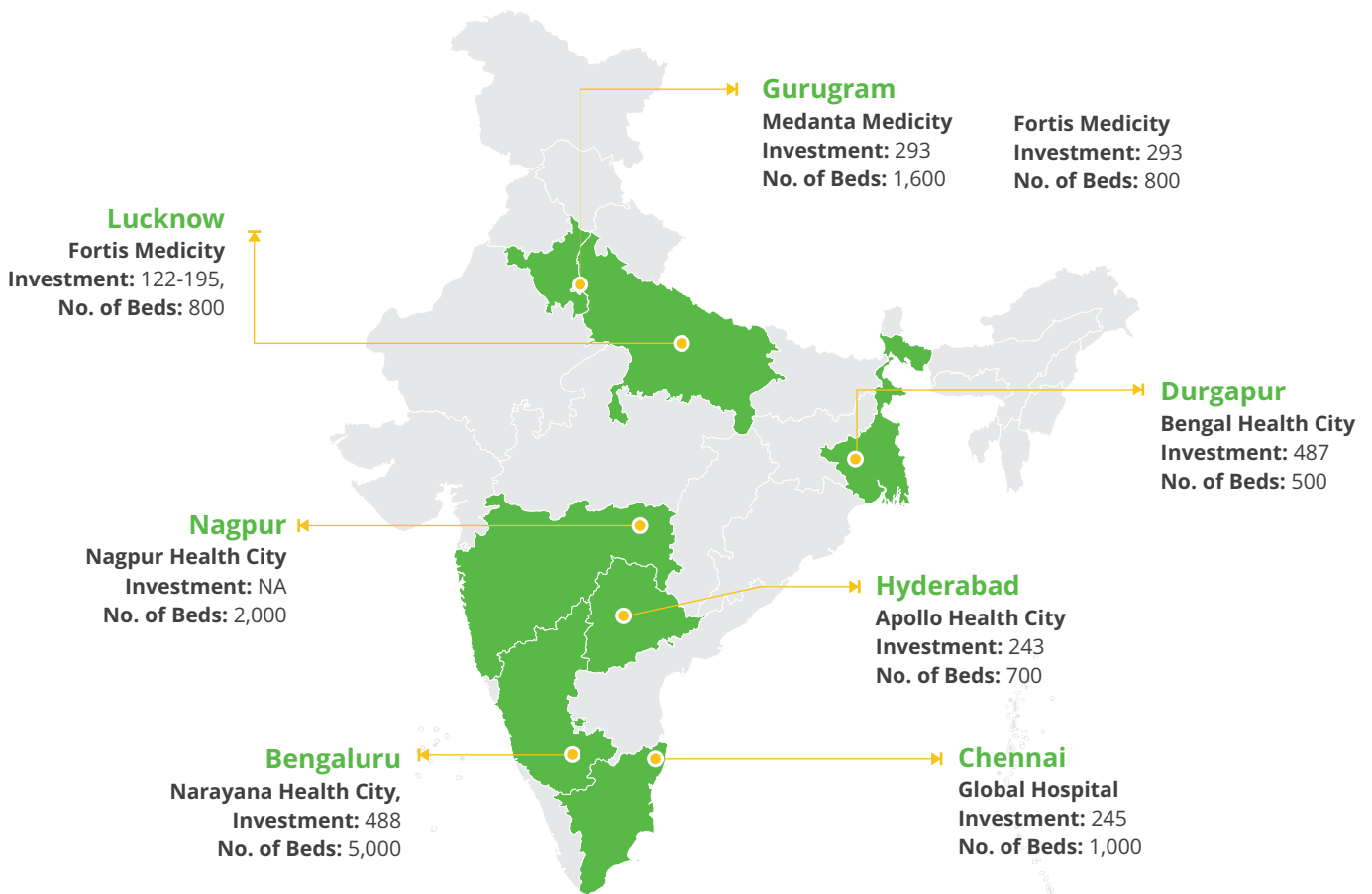
**Chart 6: Pharmaceutical Clusters in India**



Source: Invest India  
<https://www.investindia.gov.in/sector/pharmaceuticals>

A 2018 Brookings study observes that many states lie below the national level figure of 0.55 beds per 1,000 population. These include Bihar, Jharkhand, Gujarat, Uttar Pradesh, Andhra Pradesh, Chhattisgarh, Madhya Pradesh, Haryana, Maharashtra, Odisha, Assam and Manipur. These 12 states together account for close to 70 percent of the total population in India.<sup>107</sup> Further, NITI Aayog's SDG Index ranks States on their performance on SDG 3 (Good Health and Well-Being) across four performance categories – Aspirant, Performer, Frontrunner and Achiever (lowest to highest). Specifically, for SDG 3, States' performance was measured on

indicators ranging from Maternal Mortality Ratio (MMR), the proportion of institutional deliveries to family planning methods and total physicians and nurses per 10,000 population. 19 States fall in the Aspirant or Performer categories and require policy and investment momentum to address regional imbalances in healthcare access.<sup>108</sup> On the other hand, there are States like Kerala that have outperformed on most of the targets set out by GoI for SDG 3 relevant indicators. For example, against a countrywide target of 45 physicians, nurses and midwives per 10,000 population, Kerala reported 112.


**Chart 7: Medi-cities in India**


Map not to scale

Source: Invest India  
<https://www.investindia.gov.in/sector/healthcare>

Gol's policy design and implementation also have a regional focus. For example, the production linked incentive scheme to boost local bulk drug manufacturing will provide financial assistance to the tune of 70 percent of the project cost of common infrastructure facilities for selected parks. It will be increased to 90 percent of the total costs in the case of Northeast states and hilly states (Himachal Pradesh, Uttarakhand, Union Territory of Jammu & Kashmir, and Union Territory of Ladakh).<sup>109</sup>

Overall, while there is a significant investment momentum in different regions of the country, around manufacturing and production of pharma and medical equipment, there is a scope for further investment, particularly in the space of healthcare delivery through quality services. As seen in Chart 7, most of the medi-cities are based in urban areas and last-mile populations

have fewer choices in accessing care. These gaps are exacerbated in States that lag on SDG healthcare indices. (State-wise SDG Maps and Indicators are documented in Annexure IV)

## 1.6. Investment Opportunity Areas - Overview

Consultations with experts and the research methodology to develop the investor map helped identify IOAs such as improving primary healthcare services in rural areas that came up with the potential for high development impact. However, the commercial viability of such models remains unproven even though there are start-ups that have ventured into this space. Business models in these 'white spaces' currently face significant commercial hurdles and need to develop further before they attract large-scale commercial private investments. There are

emerging business models in this area since the potential for scale is immense, as seen in Figure 14 with models that can leverage tech-enabled platforms and asset lean models to reach the last mile.

On the other hand, low-cost hospital satellite centres and care units in Tier II and Tier III cities

have seen significant investor momentum with established brands setting up multi-speciality units serving secondary and tertiary care. This also helps plug in the access gap by reducing the distance that a rural household will need to cover to access quality healthcare. India needs 3 million beds to reach the WHO mandated ratio, and the potential to scale satellite network

**Figure 14: Investment Opportunity Areas Shortlist for Healthcare Sector**

Subsector	Affordable Healthcare Delivery			Affordable Medical Equipment and Supplies*	Affordable Pharmaceuticals
Opportunity Areas	Primary care in rural areas	Low-cost hospital satellite centres/ care units in non-metros	Tech-enabled remote care services (such as Telemedicine)	Affordable medical equipment and consumables	Active Pharmaceutical Ingredients manufacturing**
Investors identified area as fundamentally marketable?	?	✓	✓	✓	✓
Scale Potential	Primary care market is valued at <b>USD 13 bn<sup>1</sup></b>	The hospital industry is estimated to be worth <b>USD 62 bn<sup>1</sup></b>	Telemedicine market is expected to worth <b>USD 5.5 bn<sup>2</sup></b>	Estimated market size of medical devices industry in India is <b>USD 11 bn<sup>2</sup></b>	India's bulk drugs market (APIs and intermediaries) is worth <b>USD 13 bn<sup>3</sup></b>
Proven in-market as evidenced by investors interest?	Models not yet commercially viable	A number of <b>existing players are adopting</b> these models, but models have not yet been proven as profitable	Promising models have <b>attracted venture capital</b> , but have not yet established profitability	Models have <b>demonstrated profitability and attracted private equity investments</b>	Models have <b>demonstrated profitability and attracted private equity investments</b>
Opportunity type	White space: strong scale potential but not successful business models	Emerging	Emerging	Mature	Mature
Emerging business model(s)	▶ Primary and preventive care centres in rural areas	▶ Technology-enabled, asset-light scalable satellite centres/small care units that offer secondary and tertiary care ▶ Technology-enabled, asset-light scalable specialist care centres	▶ Scalable mobile-based software solutions and mobile workforce models that allow for remote/at-home medical consultation and symptom-management for chronic diseases	▶ Low-cost manufacturing and distribution of consumables and equipment for hospitals and care centres	▶ Manufacturing of APIs for affordable drugs for high-burden disease categories, such as Cardiovascular diseases, Diabetes and Tuberculosis and drugs included under the National List of Essential Medicines (NLEM)
SDGs impacted					

**Sources:**

1. Bajaj, Akriti. "Healthcare Industry in India – Invest in Healthcare Sector." [www.investindia.gov.in](http://www.investindia.gov.in), Available at: [www.investindia.gov.in/sector/healthcare#:~:text=The%20diagnostics%20industry%20in%20India](http://www.investindia.gov.in/sector/healthcare#:~:text=The%20diagnostics%20industry%20in%20India).
2. India Brand Equity Foundation. "Healthcare Industry in India, Indian Healthcare Sector, Services." Ibef.Org, Ministry of Commerce and Industry, 2019, Available at: [www.ibef.org/industry/healthcare-india.aspx](http://www.ibef.org/industry/healthcare-india.aspx).
3. KPMG. INDIAN API INDUSTRY - REACHING THE FULL POTENTIAL APRIL. Confederation of Indian Industry, 2020. Available at: <https://www.mycii.in/KmResourceApplication/65765.IndianAPIIndustryReachingthefullpotentialCIKPMGreport2020.pdf>

**Notes:**

\*Wearables and costly B2C medical devices have been excluded because they do not fit the "affordable" theme

\*\* API manufacturing has gained significant momentum during the COVID-19 pandemic due to its impacts on India's self-sufficiency and the sectors value chains. Therefore, API manufacturing has been included for further analysis



hospitals can close this significant gap. Companies in this space have been able to demonstrate profitability within a timeframe of 3 to 4 years.<sup>110</sup>

Tech-enabled remote care facilities are fast gaining momentum and are particularly important due to the increasing share of an ageing population in India.<sup>111</sup> There is a strong demand for these platforms especially for generic healthcare and has been accentuated due to the COVID-19 pandemic. In relation to the pandemic, digital healthcare is also seen as an area where demand has spiked in the short term and growth momentum will remain positive in the long term, thereby indicating the potential for strong returns on investments.<sup>112</sup>

Manufacturing, production and distribution of low-cost medical equipment and pharmaceuticals are established areas and have seen investment momentum in the past with favourable returns. These sectors are also slated to grow significantly with their contributions to increasing production and manufacturing capacities within India to lower dependence upon imports. Growing policy momentum aside, these investment opportunities also have available infrastructure that can be leveraged, such as existing manufacturing/production clusters, thereby making for an attractive investment timeframe. *(Please refer to Annexure III for detailed analysis of the shortlisting process followed to arrive at the final IOAs)*

## 1.7. Healthcare Investment Opportunity Areas Deep Dive

### 1.7.1. Low-cost hospital satellite centres/care units in non-metros

India's 'bed to people' ratio is lower than the WHO's recommended standard of 5 beds per 1,000 people and is only a third of the global average. This gap is wider in rural India. Moreover, a large section of the population travels more than 100 km to access basic healthcare, incurring high opportunity costs and loss of income.<sup>113</sup> India has made efforts to plug the gap in access to basic quality healthcare facilities by encouraging the private sector to set up infrastructure in and beyond Tier I cities. Part of the encouragement is also driven by the massive demand for healthcare services, with nearly 62.4 percent of total healthcare expenditure as OOP.

Under Universal Health Coverage, insurance schemes such as 'Ayushman Bharat' are being driven to contain risks related to economic shocks in accessing healthcare by last-mile populations. Such insurance coverage has improved the purchasing capacity of lower-income groups, thereby providing a larger addressable market for the healthcare centres. By September 2020, the scheme enrolled 23,334

hospitals as part of its network.<sup>114</sup> Also, to encourage the private sector to establish hospitals in smaller cities, the government has provided various incentives to hospitals such as a tax holiday for private healthcare providers in non-metros for a minimum of 50 bedded hospitals. New hospitals with 100 beds or more that are set up in rural areas are entitled to a 100 percent deduction on profits for 5 years.<sup>115</sup>

An increasingly favourable regulatory framework, accelerated due to vulnerabilities exposed by COVID-19 pandemic, is encouraging many private hospital chains to expand into Tier II and Tier III cities<sup>116</sup> and the hospital industry is expected to reach USD 132 billion by 2023 from USD 61.8 billion in 2017.

In terms of investment timeframe, an Ernst & Young (EY) study estimates that a 200-bed hospital can break-even in 3 years, assuming an 85 percent utilization rate.<sup>117</sup> However, the current utilization rates reported by hospitals are c.60-70 percent. Thus, returns for hospital chains are expected to be between 5-15 percent depending on the size of the facility and the occupancy rate. High valuations have lowered returns in the past, but the valuations are expected to be moderated going forward.<sup>118</sup>

Therefore, low-cost hospital satellite centres/care units have been shortlisted as IOAs.



### 1.7.1. Low-cost hospital satellite centres/care units in non-metros - Market Insights

- Overview:** » Technology-enabled, asset-light scalable satellite centres/small care units that offer secondary and tertiary care or specialist care centres that can help improve access to healthcare outside Tier I and Tier II cities
- Need case:** » India has 1 hospital bed per 879 people including private hospitals, which is only a third of the global average. A large section of the population travels more than 100 km to access basic healthcare. According to estimates, urban centres are home to almost 65% of the country's hospital beds despite having less than 30% of the total population  
» This IOA could contribute directly to **SDG3 (Good Health and Well-Being)**, particularly 3.8.1. (Coverage of essential health services), and indirectly to **SDG1, SDG5, SDG8, SDG10 and SDG11**
- User or beneficiary:** » **Direct:** Patients in areas where public healthcare system does not provide adequate coverage. India needs 3 million hospital beds to meet WHO's minimum prescribed ratio  
» **Indirect:** Providing broader treatment options to more Indians can help reduce the strain on an underfunded public health network
- Economic factors:** » The hospital industry is expected to reach USD 132 billion by 2023 from USD 61.8 billion in 2017; growing at a compounded annual growth rate of 16-17%  
» Returns for hospital chains are expected to be between 5-15% depending on the size of the facility and the occupancy rate  
» It is likely to take at least 3-5 years for a greenfield project to break-even
- Enabling factors:** » Government has provided various financial incentives for hospitals in smaller cities  
» Strong policy momentum driven by a number of strategic interventions in National Health Mission and the national disease control programmes
- Risk factors:** » **Execution Risk:** Hospitals have just started to adopt the model and so the unit economics are not proven, and this may affect the breadth of impact. Given the tight margins, the economic viability is attractive only to existing chains that can share resources among the different hospitals to improve margins. This may limit the success potential for smaller hospitals  
» **Stakeholder Participation/External Risk:** The model will be most impactful when accompanied with continued efforts to ensure universal health coverage by the Government under Ayushman Bharat. In the absence of the scheme, the impact may be limited to those who can already afford private healthcare services
- Impact management:** » Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that this business model yields an important and intended outcome that can improve access to healthcare in non-metros

Source: UNDP research for India Investor Map

### 1.7.2. Tech-enabled remote care services

In 2018, India had only 0.9 physicians per 1,000 people as compared to the global average of 1.6 per 1,000.<sup>119</sup> Besides, 60 percent of hospitals, 75 percent dispensaries and 80 percent of doctors are serving only 28 percent of India's total population, living primarily in urban areas.<sup>120</sup> The growing disease burden, especially for NCDs is not competitively met with strong healthcare infrastructure and skilled medical professionals with the gap widening for rural, last mile, low resource populations. The Rural Health Statistics (2018-2019) indicate that in the case of Primary

Health Centres (PHC)s, there was a shortfall of 47.9 percent for female health assistant and 59.8 percent for male health assistants. A significant percentage of sanctioned posts were found to be vacant at all levels.

Telemedicine can bridge the rural-urban divide to access medical facilities and personnel, extending low-cost consultation and diagnosis facilities to the remotest of areas via internet and telecommunication. The pandemic-induced lockdown saw a surge in teleconsultation, especially after the issuance of the long pending telemedicine guidelines by the Ministry of Health

and Family Welfare (MoHFW), in collaboration with NITI Aayog and Board of Governors (BoG), Medical Council of India (MCI). In March 2020, the government's revised telemedicine guidelines were notified under the Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002.<sup>121</sup> The guidelines made relaxations to the way Telemedicine is practiced and made it legal to provide

teleconsultation and prescription for medicines by medical practitioners, with certain restrictions. To boost the growth of this space, the Government is offering a 250 percent deduction for approved expenditure incurred on operating technology-enabled healthcare services such as telemedicine.<sup>122</sup>

### 1.7.2. Tech-enabled remote care services - Market Insights



#### Overview:

- » Investors can focus on scalable mobile-based software solutions and mobile workforce models that allow for remote/at-home medical consultation and symptom management for chronic diseases to improve access to healthcare



#### Need case:

- » According to estimates, urban centres are home to almost 80% of the doctors despite having less than 30% of the total population. Telemedicine can bridge the rural-urban divide in terms of medical personnel, extending low-cost consultation and diagnosis facilities to the remotest of areas via internet and telecommunication, especially in the backdrop of a changing disease burden towards non-communicable diseases
- » This IOA could contribute directly to **SDG3 (Good Health and Well-Being)**, particularly 3.8.1. (Coverage of essential health services), and indirectly to **SDG1, SDG5, SDG8, SDG9, SDG10** and **SDG11**



#### User or beneficiary:

- » **Direct:** Populations in areas with lower access to healthcare, particularly rural and communities living in remote areas
- » **Indirect:** Public healthcare system, as telemedicine solutions will allow the public healthcare system to cope with demand



#### Economic factors:

- » Telemedicine market in India is expected to reach **USD 5.5 billion** by 2025
- » 80% of the investors surveyed reported a median IRR of 10-20% in healthcare investments in India. Industry experts suggest that telemedicine can offer **>20% returns**
- » Companies in this vertical are expected to take **<5 years** to turn profitable due to low infrastructure requirements



#### Enabling factors:

- » The vertical has a very strong partner environment with significant interest from commercial investors as well as existing healthcare providers
- » Strong policy and regulatory momentum towards telemedicine were fueled further by the COVID-19 pandemic. Govt has introduced a number of initiatives to leverage the potential of digital healthcare such as introducing the Aarogya Setu app (an open-source application for COVID-19 contact tracing, syndromic mapping and self-assessment) and revising the telemedicine practice guidelines to encourage the industry



#### Risk factors:

- » Limited connectivity in parts of the country where distance healthcare is most needed and limited digital literacy in the most vulnerable groups may limit impact
- » While the model is proven in urban areas, external factors such as limited connectivity and digital literacy of target populations might limit efficacy of service in more rural/remote areas
- » Telemedicine is a relatively new domain with nascent regulations and standards. As the models continue to operate, new challenges may emerge with respect to data collection and quality of service



#### Impact management:

- » Investments falling under this IOA in their current form are likely to contribute to solutions (**IMP classification C**), given that this business model yields an important and intended outcome that can improve the access and quality of healthcare across cohorts. Even if telemedicine platforms' adoption rates take time to increase at the last mile, they can help free up public and private healthcare capacity for all

Source: UNDP research for India Investor Map

If the market adoption of such platforms continues in a post-pandemic scenario, resulting in behavioural shifts in how people access healthcare, the Telemedicine model is here to stay. Pre-pandemic projections show that the Telemedicine market in India was expected to rise at a CAGR of 20 percent during FY16-20, reaching USD 32 million. However, the stimulus created due to the pandemic projects the telemedicine sector to grow at a CAGR of 31 percent between 2020 and 2025 and reach USD 5.5 billion. Of the USD 5.5 billion, 95 percent is projected to be constituted by telemedicine and e-pharmacy.<sup>123</sup> Major hospitals have adopted telemedicine, and the specialized companies now offer home care. In a similar vein, online platforms aggregating information about specialist medical professionals have seen an uptake in the past few years, recording a surge during the pandemic with similar trends being recorded for online diagnostics and testing. Also, Telemedicine and remote diagnostics are useful

for serving the ageing population in India that is expected to increase to 6 percent of the total population by 2021.<sup>124</sup>

In terms of investment timeframe, the business models for this IOA report a payback within a short term (<5 years) since the technology is readily available and major hospitals have already adopted the model within a short period. The COVID-19 pandemic has helped in doubling the growth in the number of online consultations indicating a demand side behaviour change that is likely to stay in the long term, building a strong value proposition both for consumers as well as service providers. Overall Health-tech remains a short to medium term bet. 80 percent of the investors surveyed reported a median IRR of 10-20 percent in healthcare investments in India according to Praxis Global Alliance's Healthcare Investor Sentiment Spotlight 2019.<sup>125</sup> Therefore, tech-enabled remote care services have been shortlisted as IOAs for the SDG Investor Map.

### 1.7.3. Affordable medical equipment and consumables

Over 75 percent of the current demand for medical devices is met through imports, thereby increasing the cost of healthcare delivery.<sup>126</sup> As a result, 20-25 percent of OOP healthcare expenses costs for patients is on medical technology.<sup>127</sup> Thus, to fully address the gaps in healthcare at last mile, there is a need for the medical device industry to focus on increased affordability.<sup>128</sup> The hurdle that India needs to cross is to manufacture and distribute medical devices that are cost-competitive, effective and of the requisite quality to increase penetration and democratize healthcare delivery at last mile. It is in this context that the 'Make in India' initiative becomes significant for the medical devices industry that has otherwise been suffering a cost of manufacturing disability of around 12 percent to 15 percent<sup>129</sup>.

To boost the growth of medical device industry and to improve self-sufficiency in MedTech as a part of the 'Make in India' initiative, GoI's PLI Scheme and the Scheme for Promotion of Medical Devices Parks (2020) offer investors

significant financial incentives to invest in manufacturing in India. Under the scheme, GoI earmarked ~USD 54 million for financing common facilities in the four parks in Andhra Pradesh, Telangana, Tamil Nadu and Kerala. Earlier in 2015, GoI had passed a motion to allow 100 percent FDI through automatic route for medical device manufacturing in India. According to the PLI scheme, an incentive over 5 percent of incremental sales over the base year 2019-20 will be provided on segments of medical devices identified. The Government is offering a reduction in customs duty and other taxes on life-saving equipment and income tax exemption for 15 years for domestically manufactured medical technology products.

The growth projections for the medical devices industry also validate it as a viable IOA with the market expected to reach USD 50 billion by 2025,<sup>130</sup> backed by an increase in ageing population, growth in medical tourism and declining cost of medical services due to indigenous manufacturing and production.<sup>131</sup> There are 750 to 800 domestic Medical Devices manufacturers in India, with an average




investment of USD 2.3 to 2.7 million and an average turnover of USD 6.2-6.9 million. An increasing number of multinational corporations (MNCs) are setting up their manufacturing bases in India.


The investment timeframe for business models in the medical devices space is medium-term

(5 to 15 years) since product development and building manufacturing capabilities requires a gestation period. In the past, companies have taken approximately 6 years to break even.<sup>132</sup> Based on benchmark deals, investors have been estimated to have made 3 to 3.5X return on a 6-year horizon.<sup>133</sup>

### 1.7.3. Affordable medical equipment and consumables - Market Insights


- 

Overview:

» Investors can invest in business models to help reduce the cost of healthcare in India, by focusing on the manufacturing and distribution of low-cost medical equipment and supplies for hospitals and care centres (B2B)
- 


Need case:

» c.75% of the current demand for medical devices is met through imports, increasing cost of healthcare delivery. According to PM-JAY estimates, out-of-pocket medical expenses are estimated to push 60 million Indians into poverty every year. Medical technology constitutes 20-25% of healthcare costs

» This IOA could contribute directly to **SDG3 (Good Health and Well-Being)**, particularly 3.8.2. (Proportion of households with large medical expenditures), and indirectly to **SDG1, SDG8, SDG9, SDG10** and **SDG11**
- 

User or beneficiary:


» **Direct:** Public and private hospitals, clinics and diagnostics centres catering to lower income groups

» **Indirect:** Patients, particularly those under the public healthcare system, who could benefit from more affordable healthcare services
- 

Economic factors:


» The medical devices market is expected to reach **USD 50 billion by 2025**

» Investors typically expect a return of **20-25%** in this space

» Companies in this vertical are expected to take **5-10 years** from their year of establishment to yield attractive returns
- 


Enabling factors:

» Strong policy momentum as India is looking to improve self-sufficiency in MedTech as a part of the 'Make in India' initiative

» Favourable financing environment with government-approved production-linked incentive (PLI) scheme for promoting domestic manufacturing of medical devices
- 

Risk factors:

» While B2C medical devices have traditionally scaled faster due to high pricing (albeit limited to higher income groups), B2B affordable devices will have to compensate through volumes. While a few such companies have been successful, the model has not yet been proven at a large scale. Capital-intensive business with high upfront cost driven by high-touch sales model, training and onboarding efforts and R&D costs to update technology may hamper commercial viability of the model

» Lack of trained professionals for in-country product design and R&D may limit scale. Medical devices require a mix of technologies such as engineering, electronics, material sciences and information technology. India has not been able to bridge the skills gap in some of these domains
- 

Impact management:

» Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that this business model yields an important and intended outcome that help reduce the cost of healthcare

» Affordable products which target the public healthcare system have the highest potential to serve the most underserved communities. These devices can significantly bring down the cost of healthcare in the resource-strapped public system, increasing the impact of the model to 'C' category

Source: UNDP research for India Investor Map



#### 1.7.4. Active Pharmaceutical Ingredients manufacturing

Localizing and democratizing API manufacturing in India can have far-reaching effects. For one, access to affordable drugs can help in addressing challenges around catastrophic OOP towards healthcare expenses. Additionally, with the transition of disease burden in India now towards chronic diseases, there is an increased demand for specialized drugs which are currently more expensive than acute drugs in India. The industry is well placed to address this need through affordable, high-quality drugs for chronic diseases and has the potential to create over 1 million additional jobs by 2030, boosting consumption in the economy.<sup>134</sup>

The regulatory environment has been historically complex taking 2 to 3 years and a deeply layered approval process with multiple stakeholders. Govt has been taking multiple measures to increase the ease of doing business such as introducing the Draft Pharmaceutical Policy 2017. Govt has also liberalized the FDI policies in the pharmaceuticals sector with 100 percent FDI – 74 percent under automatic route for brownfield projects and 100 percent for greenfield projects. Following the COVID-19 pandemic and the strategic initiatives thereof, Govt has also notified four schemes in July 2020 to promote domestic manufacturing of bulk drugs and medical devices, entailing a combined budgetary outgo of about ~USD 1.6 billion over multiple years. The schemes include production-linked incentives and assistance to production infrastructure creation. According to Fitch Ratings, the recent announcements by Govt to boost domestic manufacturing of APIs and Key Starting Materials

(KSMs) could improve backward integration over the next few years and curtail supply-chain disruption risk for Indian drug makers.<sup>135</sup>

Several financial incentives are provided to API manufacturers including a 15-year tax holiday for cluster developers/ participants, and Income Tax benefits for an initial period of 10 years for each product from its launch date. Also, in the case of fermentation-

based products, the rate of incentive is 20 percent for the first four years while for chemically synthesized products, the incentive is 10 percent for six years.

The projects for API manufacturing also show a very promising growth trajectory and is expected to expand and grow at a CAGR of around 8.6 percent during 2020–24, signifying its future potential and evolving global importance. It has contributed significantly to the global generics market fulfilling 20 percent of the global demand in generics in terms of volume, making India the largest provider of generic medicines globally. There have been more than 15 public offerings and significant M&A activity in companies developing and manufacturing APIs between 2014 and 2019<sup>136</sup>.

In terms of investment timeframe, the payback on investments in API manufacturing is a medium (5-15 years) term horizon since there is a high upfront capital expenditure. Besides, API manufacturers cannot typically charge higher prices to drug manufacturers due to high competition and pricing controls. The business, therefore, is a high-volume and a capped price business. As a result, companies can only break-even when they have built a significant scale. 80 percent of the investors surveyed reported a median IRR of 10-20 percent in healthcare investments in India according to Praxis Global Alliance's Healthcare Investor Sentiment Spotlight 2019.<sup>137</sup> Also, industry benchmarks indicate that pharmaceutical companies had an average annual Return on Capital Employed (ROCE) ratio of 10-20 percent.<sup>138</sup>





#### 1.7.4. Active Pharmaceutical Ingredients manufacturing - Market Insights

- Overview:** Manufacturing of Active Pharmaceutical Ingredients (APIs) for affordable drugs for high-burden disease categories, such as Cardiovascular diseases, Diabetes and Tuberculosis and drugs included under the National List of Essential Medicines (NLEM) can help improve consistent supply of medication in the country
- 
- Need case:**
- » 63.5% of the total OOP Expenditure (which, in turn, constitutes 62% of all healthcare expenditure in India), is on outpatient care. Of this, the largest expenditure (71%) is on medicines. A significant proportion of the country's population lacks access to essential medicines.
  - » Around 84% of the APIs for drugs manufactured in India are imported, driving up the cost of drugs and making the supply chain less resistant
  - » This IOA could contribute directly to **SDG3 (Good Health and Well-Being)**, particularly 3.8.2. (proportion of households with large medical expenditures), and indirectly to **SDG1, SDG8, SDG9, SDG10** and **SDG11**
- 
- User or beneficiary:**
- » **Direct:** Drug manufacturers struggling to produce drugs due to the government-imposed pricing caps on 376 drugs (8.6) and global supply chain disruptions
  - » **Indirect:** Patients, particularly those with chronic diseases, with a high OOP spending on medications due to lower price volatility as import-dependence decreases and more availability of affordable drugs due to more resilient supply chains
- 
- Economic factors:**
- » India's bulk drugs market (APIs and intermediaries) is **worth USD 13 billion**
  - » 80% of the investors surveyed reported a median **IRR of 10-20%** in healthcare investments. API manufacturing is expected to provide similar returns
  - » Companies in this vertical are expected to take **5-15 years** from their year of establishment to yield attractive returns
- 
- Enabling factors:**
- » Strong policy momentum with the Government approving a package of USD 1.3 billion in 2020 to boost the domestic production of bulk drugs and exports
  - » There are various financial incentives being provided to API manufacturers such as land and other infrastructural facilities at concessional rates, interest subsidies on bank loans, tax holidays, etc.
  - » Growing interest from private equity investors provides a strong partner environment for the vertical
- 
- Risk factors:**
- » **Execution Risk:** Due to the lack of raw material availability, it may not be possible to produce APIs at globally competitive rates. This risk is medium to high considering the cost of production in China is currently 20-30% lower than in India. Further, there is also an external risk where even if lower cost of production is achieved, pharmaceutical companies may not pass on the benefits to patients as their margins are already thinning
  - » Multiple regulatory bodies with cumbersome regulations and approval procedure increases operational complexity
- 
- Impact management:**
- » Investments falling under this IOA are likely to act to avoid harm (**IMP classification A**), given that outcome is likely to be positive because domestic manufacturing of APIs in an affordable manner can ensure consistent availability of drugs by offering a more resilient supply chain to the pharmaceutical industries but also generate employment. The model also has the potential to reduce the cost of medication, however, given the existing price caps and higher cost of in-country production (production of APIs costs 30% more in India as compared to China), domestic manufacturing may not have the desired impact on the price of medication

Source: UNDP research for India Investor Map

## 1.8. White spaces in the Healthcare sector

### 1.8.1. Primary care centres and services in rural areas

The investor map also seeks to identify potential 'white spaces' defined as opportunity areas that have the potential for high development impact but where either government-initiated policy momentum is low or private sector play is limited.

For the healthcare sector, improving primary healthcare services in rural areas came up with the potential for high development impact though the commercial viability of such models remains unproven. Business models in these 'white spaces' currently face significant commercial hurdles and need to develop further before they attract large-scale commercial private investments. However, the need case is very clear with significant gaps in the healthcare infrastructure and last-mile delivery of services to low-income households in low resource settings.

The government is the largest provider of healthcare in the country at the primary and secondary levels while it is the largest buyer of such services at tertiary and quaternary care levels. Private sector investments have been driven largely by a free market economy and the pricing of such services are influenced by investment costs. Consequently, these services have remained inaccessible by last-mile populations due to significant cost considerations. Primary healthcare services for rural and underserved areas need to ensure easy access without the fear of financial hardships.

Innovations in this space necessitate the building of low resource and affordable models that can significantly ease the healthcare OOP burden for low-income households.

In addition, technology can be a key enabler to service last-mile markets. India has over 900 million mobile phone users that can be leveraged to overcome brick and mortar infrastructure related challenges to provide services in remote areas. Non-profit and philanthropic organizations are already leveraging mobile phones to impart simple education and discussion programmes around healthcare best practices and such mediums can also be used to offer information services about rights and entitlements from the health delivery system.

Start-up business models are setting up primary healthcare clinics enabled with inbuilt webcams, and relevant clinical equipment to deliver standardized care, including bespoke clinical decision support system, and capability of deep learning-driven diagnosis, treatment and monitoring.<sup>139</sup> Such models can bridge the gaps between poor access, robust referral systems and continuation of care without creating financial barriers for consumers. Apart from connecting villagers to doctors, the cloud-based health management platform also has the potential to rope in the nearest medical stores/pharmacies to ensure better access to medications. Therefore, given the scale potential of primary healthcare in rural areas and the market opportunities present therein, 'Primary care centres and services in rural areas' has been selected as white space.

#### 1.8.1. Healthcare white space - Market Insights



##### Overview:

- » Investors can support business models that are working to create low cost primary healthcare infrastructure to improve access to basic services across the health continuum with potential to reduce OOP healthcare expenses, especially for low income segments in underserved regions of India



##### Need case:

- » There is a shortfall of 22% for Primary Healthcare Centres and 30% for Community Health Centres in the country with 0.9 physicians for every 1,000 population (WHO recommends a ratio of 1:1000)
- » 68.84% of the Indian population resides in rural areas whereas only 3% of the physicians are available in these areas
- » This IOA could contribute directly to **SDG 3 (Good Health and Well-Being)**, and indirectly to **SDG 1, SDG 8, SDG 9, SDG 10** and **SDG 11**



- User or beneficiary:**
- » **Direct:** Population across age groups with low access to low-cost healthcare services, especially living in rural parts of India
  - » **Indirect:** Private and public healthcare network
- 
- Risk factors:**
- » Financial sustainability without external aid (government subsidies, significant tax breaks/incentives) restricts expansion into all regions
  - » Quality of service may suffer in the absence of strong regulations that ensure consumer protection and high quality assurance
  - » Passing on digital literacy about interface/apps/software/technology to rural citizens is challenging
- 
- Impact management:**
- » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), given that these business models yield an important and intended outcome that can offer basic and affordable primary healthcare solutions to underserved populations with significant impact on household's socio-economic resilience

Source: UNDP research for India Investor Map

### Sources:

74. Niti Aayog and United Nations (2019). SDG India Index and Dashboard 2019-20. [online] niti.gov.in. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
75. Rchiips.org. 2020. National Family Health Survey (2015-16). Available at: <http://rchiips.org/nfhs/pdf/nfhs4/india.pdf>
76. Office of the Registrar General & Census Commissioner, India, Ministry of Home Affairs (2018). Sample Registration System Statistical Report 2018. [online] Available at: [https://censusindia.gov.in/Vital\\_Statistics/SRS\\_Report\\_2018/SRS-Statistical\\_Report\\_2018.pdf](https://censusindia.gov.in/Vital_Statistics/SRS_Report_2018/SRS-Statistical_Report_2018.pdf).
77. Health and Family Welfare, M., 2020. National Health Profile (NHP) Of India- 2019 :: Ministry Of Health And Family Welfare. Cbhidghs.nic.in. Available at: <http://www.cbhidghs.nic.in/showfile.php?lid=1147>
78. The Lancet (2015). The India State-Level Disease Burden Initiative | Public Health Foundation of India. [online] Phfi.org. Available at: <https://phfi.org/the-work/research/the-india-state-level-disease-burden-initiative/>.
79. Menon, G.R. and Kalaskar, S., et al(2019). National Burden Estimates of Healthy Life lost in India, 2017: an analysis using direct mortality data and indirect disability data. The Lancet Global Health, [online] 7(12), pp.e1675–e1684. Available at: [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(19\)30451-6/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(19)30451-6/fulltext).
80. Invest India analysis
81. Data.worldbank.org. 2020. Physicians (Per 1,000 People) | Data. Available at: <https://data.worldbank.org/indicator/SH.MED.PHYS.ZS>
82. Health and Family Welfare, M., 2020. National Health Profile (NHP) Of India- 2019 :: Ministry Of Health And Family Welfare. Cbhidghs.nic.in. Available at: <http://www.cbhidghs.nic.in/showfile.php?lid=1147>
83. Data.worldbank.org. 2020. Domestic General Government Health Expenditure (% Of General Government Expenditure) | Data. Available at: <https://data.worldbank.org/indicator/SH.XPD.GHED.GE.ZS?view=chart>
84. Rchiips.org. 2020. National Family Health Survey (2015-16). Available at: <http://rchiips.org/nfhs/pdf/nfhs4/india.pdf>
85. Data.worldbank.org. 2017. Out-Of-Pocket Expenditure (% Of Current Health Expenditure) | Data. [online] Available at: <https://data.worldbank.org/indicator/SH.XPD.OOPC.CH.ZS>
86. Pmjay.gov.in. 2020. About Pradhan Mantri Jan Arogya Yojana (PM-JAY) | Official Website Ayushman Bharat Pradhan Mantri Jan Arogya Yojana | National Health Authority. Available at: <https://pmjay.gov.in/about/pmjay>
87. Niti.gov.in. 2020. SDG India Index And Dashboard 2019-20. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf)
88. Advamed.org. 2017. Medical Device Industry In India: Evolving Landscape, Opportunities And Challenges. Available at: [https://www.advamed.org/sites/default/files/resource/medical\\_industry\\_in\\_india\\_the\\_evolution\\_of\\_the\\_landscape\\_opportunities\\_and\\_challenges\\_white\\_paper.pdf](https://www.advamed.org/sites/default/files/resource/medical_industry_in_india_the_evolution_of_the_landscape_opportunities_and_challenges_white_paper.pdf)
89. Barik, D. and Arokiasamy, P., 2016. Rising Health Expenditure Due To Non-Communicable Diseases In India: An Outlook. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5126101/>
90. Niti.gov.in. 2019. Health System For A New India: Building Blocks. Available at: [https://niti.gov.in/sites/default/files/2019-11/NitiAayogBook\\_compressed.pdf](https://niti.gov.in/sites/default/files/2019-11/NitiAayogBook_compressed.pdf)
91. Stakeholder consultations
92. Praxis Global Alliance. 2019. Healthcare Investor Sentiment Spotlight. Available at: <https://www.dropbox.com/s/o6vaek2i0o3o29l/Healthcare%20Investor%20Sentiment%20Spotlight%202019%20-%20Praxis%20Global%20Alliance.pdf?dl=0>.
93. Bain and Company, and IVC Association. India Private Equity Report 2020. Available at: [www.bain.com/globalassets/noindex/2020/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://www.bain.com/globalassets/noindex/2020/bain_report_india_private_equity_report_2020.pdf).
94. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
95. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
96. India, KPMG (2015). Healthcare in India: Current State and Key Imperatives. Available at: <https://Home.Kpmg/Xx/En/Home.Html1, 2015, assets.kpmg/content/dam/kpmg/in/pdf/2016/09/AHPI-Healthcare-India.pdf>.
97. Central Drugs Standard Control Organization. Drug Alert List for September 2020. Ministry of Health and Family Welfare, 2020, Available at: [cdsco.gov.in/opencms/opencms/en/Notifications/Alerts/](http://cdsco.gov.in/opencms/opencms/en/Notifications/Alerts/).
98. UNDP- Invest India stakeholder consultations
99. Research, Ken (2019). India POCT Market Revenue Is Expected to Reach Over INR 4,000 Crore by FY'2023: Ken Research. [www.Prnewswire.Com](http://www.prnewswire.com). Available at: [www.prnewswire.com/in/news-releases/india-poct-market-revenue-is-expected-to-reach-over-inr-4-000-crore-by-fy-2023-ken-research-811278939.html](http://www.prnewswire.com/in/news-releases/india-poct-market-revenue-is-expected-to-reach-over-inr-4-000-crore-by-fy-2023-ken-research-811278939.html).

101. Das, Sohini (2020). Govt Notifies Incentive Scheme for Local API Manufacturing to Cut Imports. Business Standard India, 22 July 2020, Available at: [www.business-standard.com/article/companies/govt-notifies-incentive-scheme-for-local-api-manufacturing-to-cut-imports-120072201580\\_1.html](http://www.business-standard.com/article/companies/govt-notifies-incentive-scheme-for-local-api-manufacturing-to-cut-imports-120072201580_1.html).
102. Invest India analysis for the Healthcare sector- 2020
103. Ayushman Bharat - National Health Protection Mission | National Portal of India. [www.India.Gov.In](http://www.India.Gov.In), Available at: [www.india.gov.in/spotlight/ayushman-bharat-national-health-protection-mission](http://www.india.gov.in/spotlight/ayushman-bharat-national-health-protection-mission).
104. Bain and Company, and IVC Association. India Private Equity Report 2020. Available at: [www.bain.com/globalassets/noindex/2020/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://www.bain.com/globalassets/noindex/2020/bain_report_india_private_equity_report_2020.pdf).
105. Bain and Company, and IVC Association. India Private Equity Report 2020. Available at: [www.bain.com/globalassets/noindex/2020/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://www.bain.com/globalassets/noindex/2020/bain_report_india_private_equity_report_2020.pdf).
106. Investindia.Gov.In (2018). Medical Devices. Available at: [www.investindia.gov.in/sector/medical-devices](http://www.investindia.gov.in/sector/medical-devices).
107. Ravi, Shamika, et al (March 2020). COVID-19 | Is India's Health Infrastructure Equipped to Handle an Epidemic?. Brookings, Available at: [www.brookings.edu/blog/up-front/2020/03/24/is-indias-health-infrastructure-equipped-to-handle-an-epidemic/](http://www.brookings.edu/blog/up-front/2020/03/24/is-indias-health-infrastructure-equipped-to-handle-an-epidemic/).
108. List of States in the Aspirant and Performer categories for SDG 3 is provided under Annexure IV
109. Das, Sohini (2020). Govt Notifies Incentive Scheme for Local API Manufacturing to Cut Imports. Business Standard India, 22 July 2020, Available at: [www.business-standard.com/article/companies/govt-notifies-incentive-scheme-for-local-api-manufacturing-to-cut-imports-120072201580\\_1.html](http://www.business-standard.com/article/companies/govt-notifies-incentive-scheme-for-local-api-manufacturing-to-cut-imports-120072201580_1.html).
110. UNDP research for SDG Investor Map for India
111. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
112. Bain and Company, and IVC Association. India Private Equity Report 2020. Available at: [www.bain.com/globalassets/noindex/2020/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://www.bain.com/globalassets/noindex/2020/bain_report_india_private_equity_report_2020.pdf).
113. Singh, S. and Badaya, S. (2014). Health care in rural India: A lack between need and feed. South Asian Journal of Cancer, [online] 3(2), pp.143-144. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4014652/>.
114. India Brand Equity Foundation. "Healthcare Industry in India, Indian Healthcare Sector, Services." Ibef.Org, Ministry of Commerce and Industry, 2019, Available at: [www.ibef.org/industry/healthcare-india.aspx](http://www.ibef.org/industry/healthcare-india.aspx).
115. India Brand Equity Foundation. HEALTHCARE Industry. Ministry of Commerce and Industry, 2019. Available at: <https://www.ibef.org/download/Healthcare-September-2019.pdf>
116. Porecha, Maitri. "Hospitals See Healthy Prospects in Tier-II Cities." @businessline, The Hindu, June 2019, Available at: [www.thehindubusinessline.com/news/hospitals-see-healthy-prospects-in-tier-ii-cities/article28067158.ece](http://www.thehindubusinessline.com/news/hospitals-see-healthy-prospects-in-tier-ii-cities/article28067158.ece).
117. EY. "Re-Engineering Indian Healthcare 2.0 Tailoring for Inclusion, True Care and Trust." FICCI, 2019. Available at: [http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0\\_FICCI.pdf](http://ficci.in/spdocument/23111/Re-engineering-Indian-healthcare-2.0_FICCI.pdf)
118. UNDP- Invest India stakeholder consultations
119. Data.worldbank.org. 2020. Physicians (Per 1,000 People) | Data. Available at: <https://data.worldbank.org/indicator/SH.MED.PHYS.ZS>
120. KPMG (2016). Report on Healthcare Access Initiatives. [online] indiaoppi.com. Available at: <https://www.indiaoppi.com/wp-content/uploads/2019/12/Report-on-healthcare-access-initiatives-For-web.pdf>.
121. Jalan, Trisha. Summary: India's Telemedicine Guidelines 2020. 31 Mar. 2020, Available at: [www.medianama.com/2020/03/223-summary-india-telemedicine-guidelines/](http://www.medianama.com/2020/03/223-summary-india-telemedicine-guidelines/)
122. India Brand Equity Foundation. "Healthcare Industry in India, Indian Healthcare Sector, Services." Ibef.Org, Ministry of Commerce and Industry, 2019, Available at: [www.ibef.org/industry/healthcare-india.aspx](http://www.ibef.org/industry/healthcare-india.aspx).
123. EY, and Indian Pharmaceutical Alliance. "Healthcare Goes Mobile: Evolution of Teleconsultation and e-Pharmacy in New Normal." 2020. Available at: [https://assets.ey.com/content/dam/ey-sites/ey-com/en\\_in/topics/health/2020/09/healthcare-goes-mobile-evolution-of-teleconsultation-and-e-pharmacy-in-new-normal.pdf](https://assets.ey.com/content/dam/ey-sites/ey-com/en_in/topics/health/2020/09/healthcare-goes-mobile-evolution-of-teleconsultation-and-e-pharmacy-in-new-normal.pdf)
124. www.makeinindia.com. (2017). Sector Survey: Medical Devices - Make In India. Available at: <https://www.makeinindia.com/article/-/v/sector-survey-medical-devices>
125. Praxis Global Alliance. 2019. Healthcare Investor Sentiment Spotlight. Available at: <https://www.dropbox.com/s/o6vaek2i0o3o29l/Healthcare%20Investor%20Sentiment%20Spotlight%202019%20-%20Praxis%20Global%20Alliance.pdf?dl=0>.
126. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
127. Velayanikal, Malavika. "Startups Seek a Cure for Costly Medical Devices." Livemint.Com, 2 Sept. 2019, Available at: [www.livemint.com/companies/start-ups/startups-seek-a-cure-for-costly-medical-devices-1567363624718.html](http://www.livemint.com/companies/start-ups/startups-seek-a-cure-for-costly-medical-devices-1567363624718.html).
128. Deloitte, and NATHEALTH. "Medical Devices Making in India - A Leap for Indian Healthcare." Deloitte, 2016. Available at: <https://www2.deloitte.com/content/dam/Deloitte/in/Documents/life-sciences-health-care/in-lshc-medical-devices-making-in-india-noexp.pdf>
129. Business Standard (2020a). Govt approves scheme to boost domestic manufacturing of medical devices. Press Trust of India. 21 March 2020. Available at: [https://www.business-standard.com/article/companies/govt-approves-scheme-to-boost-domestic-manufacturing-of-medical-devices-120032100989\\_1.html](https://www.business-standard.com/article/companies/govt-approves-scheme-to-boost-domestic-manufacturing-of-medical-devices-120032100989_1.html).
130. www.makeinindia.com. (2017). Sector Survey: Medical Devices - Make In India. Available at: <https://www.makeinindia.com/article/-/v/sector-survey-medical-devices>
131. India Brand Equity Foundation. "Healthcare Industry in India, Indian Healthcare Sector, Services." Ibef.Org, Ministry of Commerce and Industry, 2019, Available at: [www.ibef.org/industry/healthcare-india.aspx](http://www.ibef.org/industry/healthcare-india.aspx).
132. www.makeinindia.com. (2017). Sector Survey: Medical Devices - Make In India. Available at: <https://www.makeinindia.com/article/-/v/sector-survey-medical-devices>
133. S&P Capital IQ data
134. KPMG (2020d). INDIAN API INDUSTRY - REACHING THE FULL POTENTIAL. Confederation of Indian Industry. Available at: <https://www.mycii.in/KmResourceApplication/65765.IndianAPIIndustryReachingthefullpotentialCIKPMGreport2020.pdf>
135. Bohra, S. (2020). India's Incentives for Domestic API Production Could Cut Supply Risk. Fitchratings.com. Available at: <https://www.fitchratings.com/research/corporate-finance/india-incentives-for-domestic-api-production-could-cut-supply-risk-10-08-2020#:~:text=Fitch%20Ratings%2DMumbai%2FSingapore%2D>.
136. S&P Capital IQ data
137. Praxis Global Alliance. 2019. Healthcare Investor Sentiment Spotlight. Available at: <https://www.dropbox.com/s/o6vaek2i0o3o29l/Healthcare%20Investor%20Sentiment%20Spotlight%202019%20-%20Praxis%20Global%20Alliance.pdf?dl=0>.
138. Rughani, K. (2020). Thematic Report -Pharmaceutical. hdfcsec.com. HDFC Securities. Available at: <https://www.hdfcsec.com/hsl.docs/ /HSL-Thematic-Pharma-Stock-Picks-280520-202005281521532768561.pdf>.
139. Craft Driven Market Research (2018a). Karma Clinic: Bridging Gap between Rural & Affordable Healthcare Service. www.craftdrivenresearch.com. Available at: <https://www.craftdrivenresearch.com/karma-clinic-healthcare-startup/>.





# FOOD AND BEVERAGES





# Food and Beverages



## 1. Sector overview

India is essentially an agrarian economy. The market size of agriculture and allied services stood at ~USD 283.68 billion in 2018<sup>140</sup>. Pre-pandemic estimates expected the sector to grow at a CAGR of 12.2 percent between 2018 and 2023, reaching USD 1,183 billion by 2023<sup>141</sup>. Moreover, agriculture employs about half of India's workforce (~58 percent<sup>142</sup> of rural households depend on agriculture for their livelihood) and is, therefore, a primary source of income for a significant number of Indian households.

India's soil varieties support a high yield for a wide range of crops. With an annual output of average 260 million tonnes<sup>143</sup>, India is among the largest producers of fruits and vegetables in the world. Despite such high yield, India ranked 103 out of 2018's Global Hunger Index<sup>144</sup>, largely a result of high levels of wastage which have arisen due to issues with the agricultural supply chain.

Despite the agricultural sector's prominence, it contributes less than 20 percent to GDP.<sup>145</sup> GoI recognizes the productivity related challenges in agriculture and aims to double farmers' incomes by 2022. This target requires farmers' income to grow at 10.4 percent annually<sup>146</sup> from the previous CAGR of 3.31 percent from 1994-2016. GoI data suggests that expansion of area under horticulture crops by 4 million hectares can help in generating 8 million new employment opportunities, creating opportunities for the growth of the sector.<sup>147</sup> There is also a need to create alternative channels of employment for rural populations (including rural women) currently employed in agriculture, enabling them to transition into sectors with greater financial resilience. From the private sector investment point of view, most of the investments in the agriculture sector are drawn largely from public sources, with private investment accounting for only a minimal proportion.

GoI has introduced the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020 and the Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020 to transform Indian agriculture by offering farmers the freedom to sell anywhere and to attract private investment in Indian agriculture.



## 1.1. Sectoral development needs

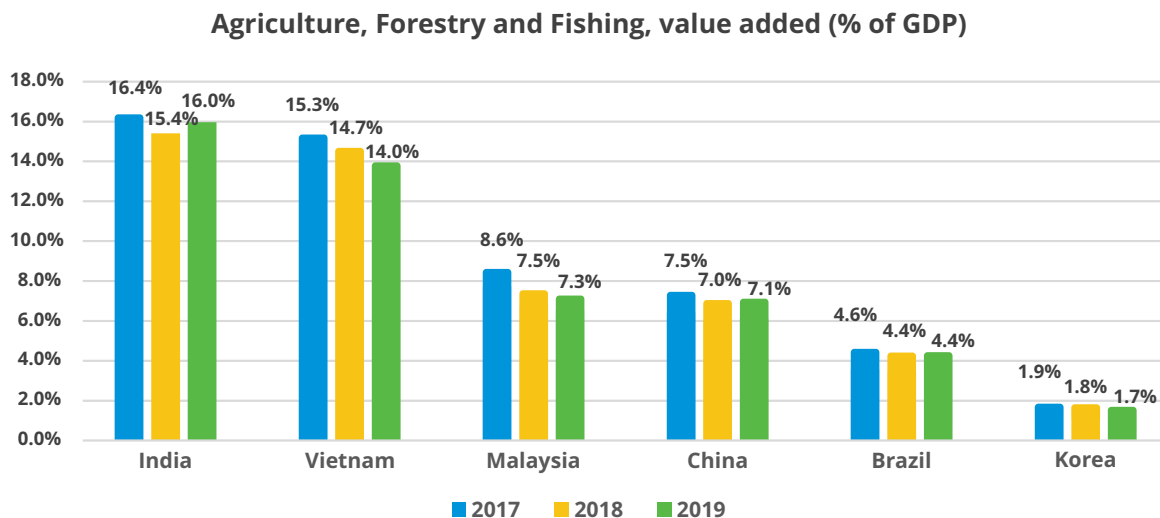
A review of key policy documents, human development reports and stakeholder consultations highlighted the following sectoral development needs for F&B in India:

### 1.1.1. Food security (SDG 2)

As per SDG India Index report by NITI Aayog<sup>148</sup>, India's progress on SDG 2 (Zero Hunger) is currently low with a cumulative score of 35 out of 100 (score of 20 states and 3 UTs is under 50 points). However, experts believe that food production will continue to keep pace with projected grain requirements.

In 2019, India ranked 72 among 113 countries assessed by the Global Food Security Index (GFSI), based on four parameters – affordability, availability, quality and safety<sup>149</sup>.

### Chart 8: Agriculture, Forestry and Fishing, value-added as a percentage of GDP compared for peer economies<sup>151</sup>



Source: World Bank national accounts data (n.d.). Agriculture, forestry, and fishing, value added (% of GDP) - India, Brazil, China, Korea, Rep., World, Malaysia | Data. data.worldbank.org.

Available at: <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=IN-BR-CN-KR-1W-MY-V> [Accessed 27 Oct. 2020].

- Furthermore, demand side factors favour the expansion of area under fruits and vegetables, and livestock products for better income yield. Though research has also shown that diversification to fruits and vegetable segment is likely to benefit small and medium farmers more than large ones
- Before the pandemic, India was expected to become the fifth largest consumer by 2030, with Indian annual household consumption growing threefold<sup>152</sup>. Post COVID-19, such

estimates may get impacted in the short term (due to sudden spike/decline in demand for some categories of food), however, this should normalise in the long term with an adequate push for improving India's productivity in the F&B sector

### 1.1.3. Agricultural supply chain (SDG 2)

- India's agriculture industry saw annual post-harvest losses amounting to USD 7 billion<sup>153</sup> due to supply chain inefficiencies such as

limited connectivity, lack of transparency, spurious products, inadequate infrastructure (including storage facilities) and demand-supply mismatch. To strengthen the agriculture supply chain, private investment in this space must increase.

#### 1.1.4. Price security for farmers (SDG 12)

- There exists a large gap between farm harvest prices (FHP) and retail prices. In a good production year, prices tend to fall below the minimum support prices, thereby leading to low income for farmers and agrarian distress. Mechanisms need to be developed to ensure remunerative prices for farmers, in both 'good' and 'bad' monsoon years
- According to the Committee on Doubling of Farmers' Income (formed to coordinate with different ministries as well as among various departments within the agriculture ministry), farmers' share in consumer's price varies between 15 to 40 percent<sup>154</sup>. Various participants in the agriculture value chain capture farmers' margins, without offering any value addition. Re-examining the role of such participants is imperative for ensuring that farmers earn the right price for their produce, even during a bumper crop

#### 1.1.5. Impact of COVID-19

Compared to the dip in the growth of other sectors in the first quarter of FY 2020-21, Agriculture and allied sectors clocked a growth of 3.4 percent primarily due to bumper rabi harvest.<sup>155</sup> However:

- The pandemic and nationwide lockdown, have resulted in farmers experiencing a shortage of labour and equipment, causing many to abandon their crops or resort to delayed harvesting by more than a month



- Complex supply chains, involving multiple actors between farm gate to the consumer, were severely affected due to restricted transport facilities resulting in trucks full of produce being stranded in the middle of interstate highways. MSMEs working in food processing struggled to procure raw materials during this period due to both restricted access to markets as well as a severe liquidity crunch
- Furthermore, businesses such as sweet shops, tea-shops and restaurants had to close down operations, which lead to a sudden and steep fall in demand for farm produce, including dairy products. As per market estimates, this led to a 30 percent decline in milk sales, which impacted farm incomes of ~75 million dairy farmers<sup>156</sup>
- Although COVID-19 crisis is not permanent, it has magnified the existing challenges facing India's food ecosystem. Taking stock of challenges in the sector, some of which have been highlighted in this report, can help both the government and businesses to create stronger and resilient supply chains, thereby supporting smallholder farmers who are critical to the food supply chain

## 1.2. Policy priorities

To achieve its priority goal of 'Doubling of farmers' income' by 2022, Gol has undertaken several initiatives to uplift the agriculture sector. Under Union Budget 2020-2021<sup>157</sup>, USD 40.06





billion has been allocated to the segment comprising of Agriculture and allied activities, and Irrigation and Rural Development for holistic advancement of India's Agriculture. Further, to support business enterprises in this segment, Reserve Bank of India (RBI) circular<sup>158</sup> on Priority Sector Lending (PSL) includes activities covered under Agriculture under three sub-categories viz. Farm credit, Agriculture infrastructure and Ancillary activities. To further strengthen the agriculture sector and enable farmers to reap benefits of their produce by selling it at the right price, Gol announced its plans to strengthen Electronic National Agriculture Market (eNAM) (which aims to create a unified national market for agricultural commodities) and dismantle Agricultural Produce Market Committees (APMCs), which required farmers to sell through mandis, instead of selling to end-consumers directly. Gol also amended the Essential Commodities Act (2020) to deregulate food items like cereals, pulses and onion and ease the imposition of stock limit on agricultural produce. This will help in making the agriculture sector more competitive, ensuring better price realisation and removal of stock limits on all agri-commodities to offer farmers the freedom to produce, distribute and supply, resulting in economies of scale.

To transform Indian agriculture and promote private investment, Gol has proposed four farm bills to boost the agriculture sector, make it more competitive, and to create a better value proposition for the farming community. At the time of writing this report, Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020 (which promotes contract farming, under which farmers will produce crops as per contracts with corporate investors for a mutually agreed remuneration) and the Farmers' Produce Trade and Commerce (Promotion and Facilitation) Act, 2020 (which aims to liberate farmers allowing them to sell anywhere) were passed by the parliament.

A list of key policy initiatives driving the growth of the F&B sector in India is available in Annexure II.

### 1.3. Private sector participation

The private corporate sector accounts for less than 2.5 percent of investments in agriculture sector<sup>159</sup>, which is essentially a result of challenges faced by investors due to the Government's strict control over the sector. Moreover, India's Agriculture Orientation Index (i.e., agriculture share of government expenditures, divided by the agriculture share of GDP), has been lower than 1 (stood at 0.45 in 2018<sup>160</sup>). Thus, there is a high burden of investment in agriculture on farmers who are already in financial distress. To achieve the target of doubling farmers' income by 2022, farmers need to fund an investment gap of USD 6 billion while Gol would have to invest USD 14 billion<sup>161</sup>.

The burden of investment solely by farmers in the agriculture sector can be reduced by offering a more conducive policy environment to encourage private participation. Under its current policy initiatives, Gol has allowed 100 percent FDI in the marketing of food products and food product e-commerce under the automatic route. There is an increasing interest in the F&B sector that ranked fourth out of the top 10 sectors with PE and VC deal values of USD 881 million recorded through 83 deals in 2019<sup>162</sup>. To further private sector participation, National Bank for Agriculture and Rural Development (NABARD), in 2019, announced an investment of USD 100 million venture capital fund for equity investment in agriculture and to encourage rural-focused start-ups<sup>163</sup>. Amendment of the Essential Commodities Act in 2020 is also slated to improve private sector/FDI in the sector, especially in cold storage, as well as modernisation of the food supply chain. Through its National Logistics Policy, Gol announced the establishment of warehouses under PPP model leading to a significant increase in warehouse capacity by 2023. To facilitate private investment in dairy processing and cattle feed infrastructure, an outlay USD 2 billion<sup>164</sup> was announced for Animal Husbandry Infrastructure Development Fund. The Model Agriculture Produce and Livestock Marketing (Promotion and Facilitation) Act, 2017 provides an opportunity for the private sector to set up private markets, alternate marketing channels, online market platforms, etc., in both agriculture and livestock marketing.



# Bottlenecks for private sector investments in the Food & Beverages sector

The following bottlenecks that result in low productivity and value losses for private commercial investment in the F&B sector were highlighted in consultations with investors and industry experts





### 1.4. Priority subsectors

Through a review of subsectoral development needs and policy priorities, and by deep-dive consultations with sector experts and investors, the following themes emerged as areas which address key development needs through business models:

1. Agriculture technology (including E-markets and technological interventions in the agriculture space)
2. Research and Development (R&D) in agriculture and agri-biotechnology
3. Rural markets, logistics and supply chain to be strengthened
4. Food processing
5. Poultry, Fish and Dairy farming
6. Agri-financing

Consultations with sector experts, investors and industry bodies helped test the abovementioned themes for alignment with development needs, policy priorities and viability for commercial investments. Experts' suggestions and evidence

from secondary sources show that R&D in agriculture and agri-biotechnology do not currently offer attractive commercial and operating environment for private sector participation. Besides, while some business models offer financing support to farmers, agri-financing space is not commercially viable to operate as an independent business model, offering scalable and marketable business opportunities.

**Food Retailers and Distributors, Processed Foods and Meat, Poultry and Dairy** are subsectors that lie at the intersection of development and policy priorities, as well as commercial private interest, and have therefore been shortlisted for the Investor Map. Investing in agriculture technology models can help in servicing input and output needs of farmers, while also offering advisory services to guide them on the usage of modern techniques of agriculture. Though food processing and the dairy market already have significant private investment, the growth of these sectors can help in reducing wastage of produce and diversify product offerings.



**Figure 15: Subsector Shortlist for the Food & Beverages Sector**

		Alignment to development needs and policy priorities		
Shortlisted subsectors		High (subsectors highlighted as 'top' priorities by development experts)	Medium (subsectors mentioned as 'priority' by development experts)	Low (subsectors not mentioned by development sector experts)
Private investor interest	Conducive for private sector participation (subsectors with PE investments)	<ul style="list-style-type: none"> <li>● <b>Subsector: FOOD RETAILERS &amp; DISTRIBUTORS</b> Input side digital platforms Output side digital platforms</li> <li>● <b>Subsector: PROCESSED FOODS</b> Food processing</li> <li>● <b>Subsector: MEAT, POULTRY &amp; DAIRY</b> Dairy and related products</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: AGRICULTURE FINANCING*</b> Risk-mitigation products to safeguard farmers from future price falls in case of excess produce</li> </ul>	
	Significant barriers to scale (subsector with commercial bottlenecks to investment)	<ul style="list-style-type: none"> <li>● <b>Subsector: FOOD RETAILERS &amp; DISTRIBUTORS</b> Efficient storage infrastructure for agri-produce to ensure minimum wastage of farm produce</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: PROCESSED FOODS</b> Export of processed foods</li> <li>● <b>Subsector: AGRICULTURE FINANCING*</b> Agri-insurance</li> </ul>	
	Low scope for commercial investor participation (subsectors with regulatory barriers)	<ul style="list-style-type: none"> <li>● <b>Subsector: MEAT, POULTRY &amp; DAIRY</b> Post-harvest infra for servicing value chains for meat/dairy/fish market Biotech inputs that can help in servicing value chains for meat/dairy/fish market</li> </ul>		

**Note:** \*Subsector not included in SASB  
**Source:** UNDP Investor Map research

### 1.5. Region ecosystem for the Food and Beverages sector

Developers of digital platforms to service input (seeds, nutrition and pest control) needs of farmers and increase their market reach: States such as Meghalaya, Rajasthan, Jharkhand, Haryana, Chhattisgarh, Uttar Pradesh, Madhya Pradesh, Assam, West Bengal, Andaman and Nicobar Islands, Punjab, Odisha, Jammu and Kashmir, Gujarat and Manipur have dedicated policies focused on improving agriculture subsectors such as Food Retailers and Distributors.

Experts believe that agri-tech ventures are likely to be concentrated in regions which possess the largest start-up talent pool, including Delhi NCR, Bombay-Pune and Hyderabad-Chennai-Bangalore. Headquarters of most companies, along with their core team, are likely to be located in one of these regions. However, given the nature of such businesses, the sourcing may be carried out from primarily rural areas, while logistics would be carried out at a pan-India level. Experts expect such regional focus to change post COVID-19, with North, West and Central regions of India to see more traction, due to better connectivity and proximity to the source of produce. Moreover, since such business models are likely to benefit medium-scale



farmers, more prosperous regions, such as Madhya Pradesh, Gujarat, Punjab, Haryana and Karnataka are likely to see more traction.

**The tech-enabled supply chain for fresh farm produce to create a link between farmers' produce and retail stores/end consumer and ensuring a fair price for all**

According to expert consultations, such models depend on their ability to scale, with an emphasis on catering the underserved markets. Apart from collection centres concentrated near farmlands, a regional focus may not be relevant in this space. Moreover, investors would be interested in models which are scalable and can operate at a pan-India level.

**Food processing of farm produce to reduce wastage and diversify offerings**

Various state policy documents focus on establishing food processing units, thereby offering a conducive policy environment for investors (fiscal interventions for agro and food processing enterprises, including capital investment subsidy for agro and food processing units, as well as for farmer producer). These states include Bihar, Meghalaya, Jharkhand, Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Tripura, Andaman and Nicobar Islands, Punjab, Odisha, Lakshadweep, Nagaland, Gujarat, Goa and Manipur.

Food processing centres are generally concentrated close to the source of raw material. For instance, manufacturers of tomato puree or other related products shall be set up near tomato farms in regions such as Andhra Pradesh, Madhya Pradesh, Karnataka, Gujarat, Odisha or West Bengal<sup>169</sup>. For marketing of such products, region prioritisation for such businesses shall be influenced by their demand, which is primarily higher in urban areas.

**Production and delivery of dairy products**

States including Bihar, Rajasthan, Haryana, Uttar Pradesh, West Bengal, Daman & Diu, Puducherry, Gujarat, Goa, Manipur and Dadra and Nagar Haveli, have the potential for development of the dairy sector with the support of dedicated state policies.

Market data shows that 10 States in India produce 81 percent of the milk, and the rest of the States and UTs produce the balance 19 percent. Only nine States have achieved per capita availability of milk at par with the national level<sup>170</sup>.

As per publicly available information, Uttar Pradesh is the largest dairy and milk-producing state as it is home to the highest buffalo population and the second-highest cattle population in the country. Gujarat has numerous cooperative dairy milk unions, private dairy plants and primary milk cooperative societies, which play a crucial role in the production of milk in the state.

According to expert consultations, States like Madhya Pradesh, Chhattisgarh and Odisha have scope for dairy farming as milk is consumed in its raw state in these regions. Many large meat/dairy farms operate out of Andhra Pradesh and Punjab. Investors suggest that for a business to be scalable for investments to flow in, the front-end operations of the business models must be at a pan-India level even if back-end operations may be region focused. (*State-wise SDG Maps and Indicators are documented in Annexure IV*)

**1.6. Investment Opportunity Areas - Overview**

While IOAs such as 'efficient storage infrastructure for agri-produce to ensure minimum wastage of farm produce' and 'risk-mitigation products to safeguard farmers from future price falls in case of excess produce' came up as IOAs with a potential for strong development impact, the commercial viability of such models remains unproven. Business models in these 'white spaces' currently face significant commercial hurdles and need to develop further from a policy and business innovation standpoint, before they attract large-scale commercial private investments.

Food processing, Dairy and related products on the other hand, not only have the potential to address key development needs but have also demonstrated interest from a range of private sector investors. Companies in this IOA have been able to demonstrate profitability and offer



**Figure 16: Investment Opportunity Areas Shortlist for the Food & Beverages Sector**

Subsector	Food Retailers & Distributors			Processed Foods	Meat, Poultry & Dairy	Agriculture Financing
Opportunity Areas	Digital platforms to service input (seeds, nutrition and pest control) needs of farmers and provide them with easy access to markets	Digital platforms offering tech-enabled solutions for agriculture supply chain and forming a link between farmers' and retail stores/end consumers, for selling fresh farm produce and ensuring fair price for all	Efficient storage infrastructure for agri-produce to ensure minimum wastage of farm produce	Food processing to reduce wastage and diversify food product offerings for end-consumers	Production and delivery of dairy products	Risk-mitigation products to safeguard farmers from future price falls in case of excess produce
Investors identified area as fundamentally marketable?	✓	✓	?	✓	✓	?
Scale Potential	<b>USD 1.7 bn</b> in 2025 <sup>1</sup> ; comprising 200 million potential customers <sup>2</sup>	<b>USD 12 bn</b> By 2025 <sup>1</sup>	<b>379 mn sq. ft</b> by 2023 <sup>2</sup>	<b>USD 535 bn</b> by 2026 <sup>3</sup>	<b>USD 32.57 bn</b> In 2023, at CAGR of 14.8 percent <sup>3</sup>	<b>USD 200 bn</b> market, consisting of 5 mn middlemen <sup>4</sup>
Proven in-market as evidenced by investors interest?	Models have <b>attracted private sector capital</b> , but have not yet been proven as profitable	Models have <b>attracted private sector capital</b> , but have not yet been proven as profitable	Models in <b>experiment stage</b> with few emerging ideas which have attracted investor interest	Models have <b>demonstrated profitability and attracted private sector investments</b> , albeit only recently	Models have <b>demonstrated profitability and attracted private sector investments</b> , albeit only recently	Models in <b>experiment stage</b> with few emerging ideas which have attracted investor interest
Opportunity type	Emerging IOA	Emerging IOA	White space: strong scale potential but not successful business models	Mature IOA	Mature IOA	White space: strong scale potential but not successful business models
Emerging business model(s)	▶ Input-side digital platforms serving farmers (including those engaged in specialized value chains, like aquaculture or high value produce like exotic fruits and vegetables) by offering agriculture inputs (seeds, nutrition and pest control), mechanization or productivity increasing tools (both, on sale or on lease) and enable them to eliminate any delays in production caused by travelling to nearby markets or due to inadequate access to essential inputs (inputs are either not available easily or time involved in procuring them leads to delay in production). Such platform providers also offer advisory services to farmers to resolve the problem of information asymmetry, thereby improving production yield and increasing their income	▶ B2B or B2C platforms for buying fresh produce from farmers (including meat products) and offering efficient delivery from farmgate to retailers/end consumers, with the objective to resolve the supply chain issues which affect Indian agriculture. Such models will also help in eliminating middlemen who seize farmers' margins (without offering any value addition), thereby increasing farmers' income. Farmers are also offered guidance and support on usage of digital tools	▶ Micro-warehousing at the village level ▶ Large warehouses catering to large traders and large corporations ▶ Storage facilities near consumption units ▶ Cold-storage facilities ▶ Warehousing companies focused on agri-marketing, in addition to offering storage facilities	▶ Food processing units under large brands or newer processing units focused on crops which are easily grown in India, like pulses, millets, etc. Such units can help offer a variety of food products for end-consumers, and also ensure better utilisation of farm produce, while reducing food wastage	▶ Business models servicing value chains for dairy products (including cold-storage based delivery services) and value-added dairy products (such as cheese – European style cheeses, soft cheese, hard cheese, different types of yoghurts, etc.) help in addressing nutritional needs and offer an alternative source for doubling farmers' income	▶ Auction facilities and commodity spot markets for agri produce
SDGs impacted						

**Sources:**

1. www.ey.com. (n.d.). How agritech start-ups are changing the face of Indian agriculture.

Available at: [https://www.ey.com/en\\_in/start-ups/how-agritech-start-ups-are-changing-the-face-of-indian-agriculture](https://www.ey.com/en_in/start-ups/how-agritech-start-ups-are-changing-the-face-of-indian-agriculture)



2. [www.businesstoday.in](https://www.businesstoday.in). (n.d.). Budget 2020: FM Sitharaman pushes for building warehousing on PPP model. **Available at:** <https://www.businesstoday.in/union-budget-2020/decoding-the-budget/budget-2020-fm-pushes-for-building-warehousing-on-ppp-model/story/395231.html>.
3. Aayushi Bhatia, Aayushi Bhatia, Radhika Mehta & Kanika Verma (2020a). Indian Food Processing Sector: The untapped growth opportunity. [www.investindia.gov.in](https://www.investindia.gov.in). **Available at:** <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
4. Agritech startup Bijak raises \$2.5 million from investors. (n.d.). The Economic Times. **Available at:** <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/agritech-startup-bijak-raises-2-5-million-from-investors/articleshow/72838211.cms?from=mdr>.
5. Anon, (n.d.). A Startup for 58% of India | Ideascapes Communications. **Available at:** <https://ideascapes.in/blog/a-startup-for-58-of-india/> [Accessed 27 Oct. 2020].
6. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. **Available at:** [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).

successful exits to early investors. Continued commercial private sector interest is expected in this mature IOA.

Models under both input side digital platforms and output side digital platforms, are still relatively nascent but have gained significant traction from investors/large corporations over the past few years because of their potential to scale cost-effectively by leveraging technology. Investment activity in this 'emerging opportunity area' is expected to continue growing in medium to long-term horizon. These areas have also been included as part of the Investor Map.

In addition to the shortlisted IOAs and identified white spaces, themes including 'Export of processed foods', 'Biotech inputs that can help in servicing value chains for meat/dairy/fish market', 'Post-harvest infra for servicing value chains for meat/dairy/fish market' and 'Agri-insurance' were also highlighted in the course of our discussions with expert consultants. However, there is still uncertainty over the marketability and scalability of existing business models nor have any proven business models that have displayed any investment momentum in the past. *(Please refer to Annexure III for detailed analysis of the shortlisting process followed to arrive at the final IOAs)*

## 1.7. Food and Beverages Investment Opportunity Areas Deep Dive

### 1.7.1. Digital platforms to service input (seeds, nutrition and pest control) needs of farmers and provide them with easy access to markets

India's agri-inputs industry comprises three key subsectors – crop protection (pesticides), crop nutrition (fertilizers) and seeds. Agritech startups are operating in an attractive market with an estimated potential of USD 24 billion by 2025, wherein the segment supporting market linkages (farm inputs) is estimated to reach a market potential of USD 1.7 billion by 2025<sup>171</sup>.

Digital platforms help in addressing information asymmetries in the agriculture sector by offering value-based advisory and exposure to new techniques of agriculture, as well as information about government schemes/policies.

Market players offering app-based agricultural inputs and advisory to farmers have engaged in continuous innovations in farmer engagement,

product range and last-mile delivery. Such platforms may not have reported a profit, but have been successful in attracting investor interest, while growing ~2-2.5 times<sup>172</sup> during 2016-2019. According to expert consultations, extensive utilization of data analytics in this space for predicting demand as well as for agri-input stock aggregation will help lower the procurement cost and increasing margins through economies of scale. Furthermore, platforms that service specialized value chains (end to end), such as aquaculture or high value produce like exotic fruits and vegetables, focus on the quality of products and are thus able to attract a higher price realization. Typically, pure electronic platforms charge ~1-2 percent of trade as their commission. Since business models in this area are still at a nascent stage, experts believe that such businesses are likely to generate returns in ~7-10 years.


Under Budget 2021, GoI announced the provision of USD 306.29 million<sup>173</sup> for computerization of Primary Agricultural Credit Society (PACS) to ensure cooperatives are

benefited through digital technology. With the dismantling of APMCs and strengthening of eNAM, electronic trading in the agriculture sector has become easier, thereby facilitating private participation. GoI's Digital India initiative has also enabled the availability of smartphones and internet in remote rural areas of India. Digital platforms servicing farmers have benefited from


such government initiatives, thereby expanding to newer regions and offering easy market access to farmers.

This area has seen growing private sector interest, with some companies having raised capital and demonstrated scalability. Therefore, Input side digital platforms have been identified as a key IOA.

### 1.7.1. Digital platforms to service input (seeds, nutrition and pest control) needs of farmers and provide them with easy access to markets - Market Insights


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**Overview:**

» Investors can focus on companies providing farmers with timely and easy access to input markets, thereby facilitating improved yield. This will subsequently help in raising India's agriculture productivity
- 


**Need case:**

» According to market data, existing yield levels for a majority of crops remain much lower than the world average. Predominant causes of such low yield include low irrigation, use of low-quality seeds, low adoption of improved technology and a knowledge deficit in respect to improved agricultural practices

» This IOA could contribute directly to **SDG2 (Zero Hunger)**, particularly 2.3.2. (Gross Value Added (GVA) in Agriculture per worker) and **SDG12 (Sustainable Consumption and Production)**, particularly 12.3.1. (Per capita food availability), while it contributes indirectly to **SDG1 (No Poverty)**, **SDG5 (Gender Equality)**, **SDG8 (Decent Work and Economic Growth)**, **SDG13 (Climate Action)**, **SDG14 (Life Below Water)** and **SDG15 (Life on Land)**
- 


**User or beneficiary:**

» This IOA can benefit farmers by offering easy market access for their input needs, as well as real-time solutions to reduce their cost of production and improved yields. Marketeers would also benefit from obtaining accurate information about the yield, thereby assisting them in making timely decisions regarding their sale

» About 14.8% of the population is undernourished in India. End consumers are likely to benefit from improvement in quality of produce (achieved through better productivity), resulting in more nutritional food products. This would, in turn, help in achieving India's SDG 2 - 'end hunger, achieve food security and improved nutrition and promote sustainable agriculture'
- 


**Economic factors:**

» Market players offering app-based agricultural inputs and advisory to farmers may not have reported a profit, but have been successful in attracting investor interest, while growing ~2-2.5 times in the last three years. As per investors, extensive utilization of data analytics in this space for predicting demand, as well as for agri-input stock aggregation, will help lower the procurement cost and increasing margins through economies of scale

» Since business models in this area are still in a nascent stage, experts believe that such businesses are likely to generate returns in ~7-10 years
- 


**Enabling factors:**

» The vertical has a strong partner environment with significant interest from commercial investors and private corporations

» With dismantling of APMCs and strengthening of eNAM, electronic trading in agriculture sector has become easier. GoI's 'Digital India' initiative has also enabled the availability of smartphones and internet in remote rural areas of India. Digital platforms servicing farmers have benefited from such government initiatives, thereby expanding to newer regions and offering each market access to farmers.
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**Risk factors:**

» Majority of farmers in India come from low resource settings. Due to information asymmetries, they are neither fully aware of the benefits nor trust alternate channels of commerce. Convincing farmers to use the platform is the primary challenge for such businesses

» Ensuring timely last-mile delivery; logistics challenges still stand in the way of speedy deliveries of bulk products
- 

**Impact management:**

» Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that this business model yields an important and intended outcome that can improve access to healthcare in non-metros

Source: UNDP research for India Investor Map



### 1.7.2. Digital platforms offering tech-enabled solutions for agriculture supply chain and forming a link between farmers' and retail stores/end consumers, for selling fresh farm produce and ensuring a fair price for all

According to a recent National Association of Software and Service Companies (NASSCOM) report titled 'Agri-tech in India – Emerging Trends in 2019', the Indian agri-tech sector is growing at a rate of 25 percent year-on-year (YoY) and comprises more than 450 startups<sup>174</sup> which are receiving considerable investment interest. AgriTech segment supporting supply chain tech and output market linkages is estimated to reach a market potential of USD 12 billion by 2025<sup>175</sup>.

Digital platforms based on emerging technologies in satellite imagery can differentiate between different crops and help in foreseeing the kind of yield one can expect, thereby reducing food wastage.

To develop affordable and financially viable post-harvest management infrastructure, GoI has provided a financing facility of USD 13.24 billion<sup>176</sup> for funding agriculture infrastructure projects at farm gate and aggregation points. This has the potential to plug post-harvest storage related challenges with perishable crops and meet the requirement of 70,000 pack-houses (near-farm aggregation points where fresh harvest is brought for processing), in comparison to the current level of 249 pack-houses only<sup>177</sup>. Additionally, such infrastructure development will also contribute towards employment generation at the village level (for example, creation of 70,000 pack-houses would potentially create 2.8 million jobs at the village level). With an allocation of USD 66 million, GoI expanded the purview of 'Operation Green' (a scheme for integrated development of tomato, onion and potato (TOP) value chain) to include all fruits and vegetables, and offering 50 percent subsidy on transportation from surplus to deficient markets and 50 percent subsidy on storage, including cold storage.<sup>178</sup> In 2020, GoI announced its plans to dismantle the APMCs and amend the Essential Commodities Act to deregulate food items like cereals, pulses and onion, thereby making agriculture sector more competitive, while ensuring better price realisation for farmers. Removal of stock limits

on all agri-commodities will offer farmers the freedom to produce, hold, move, distribute and supply, resulting in economies of scale. This will also help in attracting private sector/FDI into the agriculture sector, thereby driving up investment in cold storage, as well as modernisation of food supply chain. Central Government has also proposed a new law to be framed, which shall be focused on providing adequate choices to farmers to sell their produce at attractive prices, enabling interstate trade without restrictions and creating a framework for electronic trading of farm products.<sup>179</sup>

According to experts, such models are essentially demand-supply matching agents, and for a platform to unlock its value, achieving network effects is imperative. Such business models focus on eliminating the intermediary and streamlining the supply chain while generating revenue from the margin at which fresh produce is sold to retailers. Moreover, digitization of value chain can help resolve potential disruptions that hinder food-chain, including minimizing the time spent in travelling to mandis, use of precision farming for integrating field data and weather patterns to drive agronomic advice to farmers, yield forecasting and efficient financial system at the farm gate level to reduce delay in payments and provide easy lending facilities.

Even though players in this space are yet to demonstrate profitability, they have shown promising results in terms of growth in volume and revenue. Since these models are at a nascent stage, market players are investing in growth. Expansion for growth occurs at above Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) level for such service-oriented and asset-light business models. As a result, it is difficult for most companies to achieve a positive EBITDA at a time when they are still focused on growth.

Output side digital platforms have been identified as a key IOA, due to growing private sector interest, with some companies having raised capital and demonstrated scalability. Investors also believe that newer players entering the market can build upon the experience of existing players, and can potentially achieve scale at a faster rate than their predecessors.



### 1.7.2. Digital platforms offering tech-enabled solutions for agriculture supply chain and forming a link between farmers' and retail stores/end consumers, for selling fresh farm produce and ensuring a fair price for all - Market Insights

- Overview:** » Investors can focus on companies offering technology solutions to resolve demand and supply mismatch, especially in case of fresh produce, by obtaining essential information regarding what is grown and when would it be available for sale
- Need case:** » According to UNFAO estimates, more than 40% of food produced in India (i.e., ~USD 14 billion worth of food per year) is wasted before it reaches the end consumers. As a result of such massive food wastage, ~194 million Indians go hungry every day  
» This IOA could contribute directly to **SDG2 (Zero Hunger)**, particularly 2.3.2. (GVA in Agriculture per worker) and **SDG12 (Sustainable Consumption and Production)**, particularly 12.3.1. (Per capita food availability), while it contributes indirectly to **SDG1 (No Poverty)**, **SDG5 (Gender Equality)**, **SDG8 (Decent Work and Economic Growth)**, **SDG13 (Climate Action)** and **SDG15 (Life on Land)**
- User or beneficiary:** » This IOA can benefit farmers (suppliers) by allowing them to sell their produce at a better price than the market without being exploited by the middleman through a one point sale. Assured and timely receipt of payment can help in strengthening their financial resilience  
» Shopkeepers and restaurants (customers) get fresh and good quality vegetables and fruits at their doorstep at competitive prices without having to visit the market
- Economic factors:** » Models in this segment are in a nascent stage, expansion for growth happens above EBITDA level for such service-oriented and asset-light business models. As a result, it is difficult for most companies to achieve a positive EBITDA at a time when they are still focused on growth. Thus, in order for these companies to hit a profit, they need to stabilize and stop investing in expansion of business  
» Many players in this segment are likely to take minimum ~10 years to achieve full scale and report a profit. Investors also believe that newer players entering the market can re-use the learnings of existing players, and can potentially achieve scale at a faster rate than their predecessors
- Enabling factors:** » The vertical has a strong partner environment with significant interest from commercial investors and private corporations  
» In 2020, GoI announced its plans to amend the Essential Commodities Act to deregulate food items like cereals, pulses and onion, thereby making agriculture sector more competitive, while ensuring better price realization for farmers
- Risk factors:** » Such business models require time and effort to build. Also, high capital is required since a significant amount of money is needed to accommodate machines, computers and educating the farmers to use the same  
» Fresh produce or food supply chain has become a crowded market, simply because of the sheer size of the Indian territory, which makes scaling up a huge challenge
- Impact management:** » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), given that these business models yield an important and intended outcome that can allow farmers to sell their produce at a better price than the market without being exploited by the middleman through a one point sale

Source: UNDP research for India Investor Map

### 1.7.3. Food processing to reduce wastage and diversify food product offerings for end-consumers

Food processing has an important role to play in linking farmers to consumers in both domestic and international markets, while also reducing food wastage as processing helps in prolonging

the life of food products. Indian food processing sector accounts for 32 percent<sup>180</sup> of the country's total food market, which is one of the largest industries in India and ranked fifth in terms of production, consumption, export and expected growth. As a result of rising household incomes, urbanization and growth of organized retail,



India's food processing sector's output is expected to reach USD 535 billion by 2026<sup>181</sup>.

Despite a large production base, the level of processing (essentially primary processing) in India is less than 10 percent, with only ~2 percent of fruits and vegetables, 6 percent poultry, 21 percent meat, 23 percent marine, and 35 percent milk produce being processed.<sup>182</sup> GoI plans to triple the capacity of food processing sector and has committed USD 936.38 million<sup>183</sup> as investments for mega food parks in the country, as part of the Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters under Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters (SAMPADA). GoI has rolled out the scheme of Formalization of Micro Food Processing Enterprises (FME) with an outlay of USD 1 billion<sup>184</sup> in line with the objectives of Atmanirbhar Bharat.

According to market data, food processing companies which raised funding in the last 5 years reported average EBITDA margins of ~8.3 percent. Business models engaged in niche market foods, snack foods, ready-to-make foods and packaged foods, entail high volumes and low margins. Penetration levels in the segment are as yet quite low, with product acceptance largely restricted to the urban population. As per investors, business houses operating food processing units can benefit if they start building value chains linked to farmers, which would help them in getting adequate and assured supply that meet quality standards while also eliminating middlemen. According to experts, product development, market testing and subsequent market capture require a long gestation period.

Given its strong potential to meet India's development need, favourable policy momentum and significant private sector interest, Food processing is a IOA.

### 1.7.3. Food processing to reduce wastage and diversify food product offerings for end consumers - Market Insights

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**Overview:**
  - » Investors can focus on companies engaged in food processing with the objective to reduce wastage, increase value addition, ensure better prices for farmers while ensuring availability of affordable and quality produce to consumers

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**Need case:**
  - » Majority of processing in India can be classified as primary processing, which offers lower value addition compared to secondary processing. There is a need to move up the value chain in processed food products to boost farmers' income
  - » This IOA could contribute directly to **SDG2 (Zero Hunger)**, particularly 2.3.2. (GVA in Agriculture per worker) and **SDG12 (Sustainable Consumption and Production)**, particularly 12.3.1. (Per capita food availability), while it contributes indirectly to **SDG1 (No Poverty)**, **SDG5 (Gender Equality)**, **SDG8 (Decent Work and Economic Growth)**, **SDG13 (Climate Action)** and **SDG15 (Life on Land)**

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**User or beneficiary:**
  - » This IOA can benefit end consumers by offering a greater variety of food products
  - » Food processing acts as a bridge between Agriculture and Manufacturing sectors, thereby creating direct and indirect employment opportunities

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**Economic factors:**
  - » Food processing companies which raised funding in the last 5 years reported average EBITDA margins of ~8.3%. Business models which cater to niche market foods, snack foods, ready-to-make foods and packaged foods, essentially cater to urban population and entail high volumes, low margins and low penetration levels
  - » According to experts, product development, market testing and subsequent capture, require a long gestation period

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**Enabling factors:**
  - » The vertical has a strong partner environment with significant interest from commercial investors and private corporations
  - » GoI plans to triple the capacity of food processing sector and has committed USD 936.3818 billion as investments for mega food parks in the country, as a part of the Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters under SAMPADA

**Risk factors:**

- » Seasonal deficiency and high cost of raw materials constitute one of the most important constraints affecting the growth of small-scale food processing businesses, which subsequently results in shortage and higher pricing of raw materials
- » This sector essentially caters to urban areas, as majority of processed foods are expensive and out of reach for the common man
- » Modernisation is not affordable for small-scale manufacturer, while large companies do not find investment justifiable due to small size of the market

**Impact management:**

- » Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that such business models yield an important and intended outcome as creation of large scale processed food manufacturing and food chain facilities would uplift the agricultural economy by creating employment and potential export earnings

Source: UNDP research for India Investor Map

### 1.7.4. Production and delivery of dairy products

As per Invest India 2018 data, India is a leading milk producer, holding 19 percent<sup>185</sup> of the global market share. Indian milk processing sector is expected to expand at a CAGR of 14.8 percent between 2018 and 2023 and is projected to reach USD 32.57 billion in 2023<sup>186</sup>. As of 2018, 81.1 percent<sup>187</sup> of the dairy and milk processing market was part of the unorganised sector and 71 percent of total participants in the sector are women. Experts expect the dairy industry to gain more importance with people moving back to villages during the pandemic. While crop production employs rural workforce for 90-120 days per year, dairy provides alternative and sustainable employment opportunities throughout the year<sup>188</sup> and has significant potential to grow, with the added potential for diversification.

Under Budget 2021, GoI allocated USD 447 million<sup>189</sup> for Animal Husbandry and Dairying and various initiatives have been undertaken by the government to strengthen the dairy sector. As per the National Action Plan on Dairy Development Vision 2022 report<sup>190</sup>, GoI aims to increase milk procurement and processing through setting up village-level dairy infrastructure, increase organized milk handling to 50 percent by 2024, increase milk procurement by cooperatives 20 percent, and by the private sector 30 percent by 2023. Furthermore, to facilitate private investment in dairy processing and cattle feed infrastructure,


GoI announced an outlay of USD 2 billion<sup>191</sup> for Animal Husbandry Infrastructure Development Fund. The Model Agriculture Produce and Livestock Marketing (Promotion and Facilitation) Act, 2017 allows the private sector to set up private markets, alternate marketing channels, online market platforms, etc., in both agriculture and livestock marketing.

As per expert consultations, since dairy business is capital intensive (cost of cattle, quality feed, machinery for processing, cold-storage facilities and transport), it is only investable if it can capture a large share of the market to justify the project cost involved. Value-added dairy product segment (for example, cheese, including European style cheese, soft cheese, hard cheese, different types of yoghurts, etc.) has showcased high potential to scale and attract private investment. As per Invest India, flavored milk drinks segment reported annual growth in value of 25 percent in 2019 and is expected to register a CAGR of 23.6 percent between 2019 and 2024<sup>192</sup>. The main driver of growth for this segment is rising health consciousness among consumers. Yoghurt and sour milk products segment grew at the rate of 26 percent YoY, to reach USD 3.29 billion in 2019<sup>193</sup>. Due to the substantial amount of time and effort required to achieve scale and marketability, investments in this space will have a gestation period of more than 15 years.

Given its strong potential to meet India's development need, favourable policy momentum and significant private sector interest, Dairy and related products is a key IOA.




### 1.7.4. Production and delivery of dairy products - Market Insights

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**Overview:**

» Investors can focus on companies engaged in dairy business and contribute to the development of agribusiness and food processing industry, while allowing farmers to earn higher income and creating employment opportunities

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**Need case:**

» As per Agriculture Skill Council of India, ~8.4 million farmers depend on dairy sector for their livelihoods, out of which 71% are women. While crop production employs rural workforce for 90-120 days per year, dairy provides alternative employment opportunities throughout the year

» This IOA could contribute directly to **SDG2 (Zero Hunger)**, particularly 2.3.2. (GVA in Agriculture per worker), **SDG3 (Good Health and Well-Being)**, **SDG8 (Decent Work and Economic Growth)**, particularly 8.2.4. (Annual growth in agriculture sector) and **SDG12 (Sustainable Consumption and Production)**, particularly 12.3.1. (Per capita food availability), while it contributes indirectly to **SDG1 (No Poverty)**, **SDG5 (Gender Equality)**, **SDG10 (Reduced Inequalities)**, **SDG13 (Climate Action)** and **SDG15 (Life on Land)**

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**User or beneficiary:**

» This IOA can support in development of rural economy by reducing poverty and providing a regular source of income for rural households

» As per International Farm Comparison Network, Dairy Report, 2018, ~60% of consumer price from milk goes to the farmer, which is the highest among major milk-producing countries

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**Economic factors:**

» As per experts, dairy business is only investable if it is able to capture a large share of the market in order to substantiate the project cost

» As per experts, success of dairy-based business models depends on large volumes and capturing of a large market share. Since this would require a substantial amount of time and effort to build, investments in this space will have a long gestation period

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**Enabling factors:**

» The vertical has a strong partner environment with significant interest from commercial investors and private corporations

» Various initiatives have been undertaken by the government to strengthen the dairy sector, including National Programme for Dairy Development (NPDD), Dairy Entrepreneurship Development Scheme (DEDS) and Dairy Processing and Infrastructure Development Fund (DIDF)

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**Risk factors:**

» Dairy sector needs organization, significant infrastructure and capital infusion to boost hygiene and nutrition levels. Investment in infrastructure to transform this ecosystem, would require tapping into unrealized potential for supply and distribution logistics, as well as into the huge customer base under this segment

» There are no reliable cold chains or proper transport facilities, which are necessary for temperature-sensitive foods like fruits and vegetables, ice creams, etc.

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**Impact management:**

» Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that such business models yield an important and intended outcome as development of dairy sector would help in boosting rural economic growth and empowering rural women

Source: UNDP research for India Investor Map

## 1.8. Food and Beverages White Spaces Deep Dive

### 1.8.1. Efficient storage infrastructure for agri-produce to ensure minimum wastage of farm produce ('Warehousing')

Currently, inadequate storage (warehousing and cold-storage) facilities lead to heavy losses for Indian farmers due to wastage of perishable

farm products. To meet India's policy priority to double farmer's income by 2022, it is imperative to capture a greater value of agri-produce through storage and processing, among other key factors. This segment is expected to grow as a result of rising food demand, supply deficits and improved market economics. Cold chain storage facilities could be set-up using alternate energy technologies like solar-powered systems,



and players could explore chemical treatments to extend the shelf-life of produce and set up pack houses and reefer transport systems<sup>194</sup>. There is a need to not only optimize the usage of existing cold-storage facilities by allowing storage of multiple crops but also deploy cold storage at the farm gate level, which can work in off-grid conditions, to support farmers in growing fruits and vegetables.

Since farmers prefer to immediately sell off their produce to gain liquidity, instead of storing the same, demand for storage infrastructure in India is low and businesses in this space struggle with achieving scale. Moreover, cold-storage is a capital-intensive segment which requires funds for implementing innovative hardware. As a result, the majority of warehousing players focused on large markets and only expanded into rural markets after achieving financial stability. However, as per experts, rental cold storage models can be marketable, if the

demand-supply mismatch is addressed. Many emerging players also bundle post-harvest finance at the farm gate level, thereby facilitating the farmers to utilize warehouse services economically.

GoI has undertaken several measures to uplift this area by way of setting up a fund of USD 13.3 billion<sup>195</sup> for establishing farm gate infrastructure to strengthen agriculture, fisheries, and food processing sectors. RBI's circular<sup>196</sup> on PSL also includes agriculture infrastructure as a priority area that commercial and public-sector undertaking (PSU) banks are mandated to fund under the PSL norms.

Although some players have invested in this space, business models are still in an experimental stage. However, given its strong potential to meet India's development need and growing policy momentum, we expect private investment in this space to pick up. Thus, warehousing is recognized as a white space.

### 1.8.1. Efficient storage infrastructure for agri-produce to ensure minimum wastage of farm produce (Warehousing) - Market Insights



#### Overview:

- » Investors can focus on companies engaged in storage (warehousing and cold storage) business with the objective to reduce wastage of farm produce and enable farmers to realize sufficient returns for their produce



#### Need case:

- » Inadequate storage (warehousing and cold storage) facilities lead to heavy losses for Indian farmers due to wastage of perishable farm products
- » Such models could contribute directly to **SDG2 (Zero Hunger)**, particularly 2.3.2. (GVA in Agriculture per worker) **SDG12 (Sustainable Consumption and Production)**, particularly 12.3.1. (Per capita food availability), while it contributes indirectly to **SDG1 (No Poverty)**, **SDG5 (Gender Equality)**, **SDG8 (Decent Work and Economic Growth)** and **SDG13 (Climate Action)**



#### User or beneficiary:

- » Support farmers in avoiding wastage of their produce and thereby reducing post-harvest losses. Farmers are able to sell their produce at the right price, instead of dumping it in the market at throw-away prices
- » Cold storage facilities can help in increasing the life of perishable products such as milk, fruits and vegetables



#### Risk factors:

- » Although there are players working in this area, models in this space struggle with achieving scale since demand for storage infra in India is low, in comparison to the need for storage facilities at both business and end-consumer level. Farmers prefer immediately selling off their produce to gain liquidity, instead of storing the same
- » Cold storage is a capital-intensive segment which requires funds for implementing innovative hardware



#### Impact management:

- » Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that such business models yield an important and intended outcome by reducing wastage of farm produce, while increasing the level of food security in India

Source: UNDP research for India Investor Map



### 1.8.2. Risk-mitigation products to safeguard farmers from future price falls in case of excess produce ('E-auction and commodity trading')

Although investment burden and risks associated with production are borne entirely by farmers who produce nearly all the agricultural produce, first-mile intermediaries (namely, the local aggregators who gather produce from multiple smallholder farmers and sell it to commission agents) seize ~75 percent<sup>197</sup> of the produce value.


India's agri-commodity trading sector addresses a market size of USD 200 billion, comprising ~5 million middlemen<sup>198</sup>. Business models under this area offer agricultural commodity buyers and sellers better prices, increased working capital and optimized logistics. They help in bringing accountability and transparency into the agricultural value chain through a buyer/seller rating system, and enable traders, wholesalers,

and food processors to keep a ledger of their transactions, access transparent pricing, and improve their working capital cycles.


Various existing agri-tech players plan to launch their e-market platforms. Investors expect more traction in this segment in the next 12-15 months, especially with the strengthening of eNAM. GoI, through eNAM, aims to create a unified national market for agricultural commodities by networking existing APMCs. It aims to connect all regulated wholesale produce markets through a pan-India trading portal.

Although some players have invested in this space, models are still in an experimental stage. Given its strong potential to meet development needs and growing policy momentum, we expect private investment in this space to pick up. Thus, E-auction and commodity trading is recognized as a white space.

#### 1.8.2. Risk-mitigation products to safeguard farmers from future price falls in case of excess produce (E-auction and commodity trading) - Market Insights


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Overview:

» Investors can focus on companies engaged in offering e-auction of agri-commodity trading with the objective to allow buyers and sellers trade at better prices, while providing them increased working capital and optimized logistics
- 


Need case:

» Helps in creating a transparent agricultural value chain through a buyer/seller rating system, and ensuring price security for farmers

» Such models could contribute directly to **SDG1 (No Poverty)**, particularly 1.1.1. (Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)), **SDG10 (Reduced Inequalities)**, while it contributes indirectly to **SDG2 (Zero Hunger)**, **SDG5 (Gender Equality)**, **SDG8 (Decent Work and Economic Growth)** and **SDG12 (Sustainable Consumption and Production)**
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User or beneficiary:

» Market participants benefit from creation of a better link between the future market and the spot market

» Ensuring price stability so that seasonal variations can be minimized. Agricultural commodity trading market is helpful to discover future prices depending upon the current trends
- 

Risk factors:

» Garnering farmers' trust to trade on such platforms is the biggest challenge for players in this segment. Since the network is not formalized, it is plagued by issues such as information asymmetry, trust deficit, doubts of transparency and accountability

Although GoI has undertaken some policy initiatives, market players are still unclear about the policy implications, and thus such models are still in an experimental stage
- 

Impact management:

» Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), given that these business models yield an important and intended outcome, allowing development of a transparent trading ecosystem for agriculture produce and offering price security to farmers for selling their produce

Source: UNDP research for India Investor Map

## Sources:

140. www.ibef.org. (n.d.). Growth of Agriculture Industry in India - Infographic. Available at: <https://www.ibef.org/industry/agriculture-india/infographic>.
141. Markets, R. and (n.d.). India Agriculture Market Report 2018-2023. www.prnewswire.com. Available at: <https://www.prnewswire.com/news-releases/india-agriculture-market-report-2018-2023-300709483.html#:~:text=The%20agriculture%20industry%20in%20India>
142. necouncil.gov.in. (n.d.). Agriculture and Allied | North Eastern Council | Government of India. Available at: <http://necouncil.gov.in/nec-project-sector/agriculture-and-allied>
143. Aravind, I. (n.d.). Startups are deploying tech to improve farm-to-fork supply chain and offer farmers better prices. The Economic Times. Available at: <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/startups-are-deploying-tech-to-improve-farm-to-fork-supply-chain-and-offer-farmers-better-prices/articleshow/67808957.cms?from=mdr>
144. Sep 4, T./, 2019 and Ist, 13:56 (n.d.). Agricultural wastage is India's problem No 1 – Here is why - Times of India. The Times of India. Available at: <https://timesofindia.indiatimes.com/business/india-business/agricultural-wastage-is-indias-problem-no-1-here-is-why/articleshow/70974705.cms>
145. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
146. Ramesh Chand (2017). Doubling Farmers' Income: Rationale, Strategy, Prospects and Action Plan. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/document\\_publication/DOUBLING%20FARMERS%20INCOME.pdf](https://niti.gov.in/writereaddata/files/document_publication/DOUBLING%20FARMERS%20INCOME.pdf).
147. www.downtoearth.org.in. (n.d.). Private and government: Who is investing how much on agriculture? Available at: <https://www.downtoearth.org.in/news/agriculture/private-and-government-who-is-investing-how-much-on-agriculture--65296> [Accessed 27 Oct. 2020].
148. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
149. foodsecurityindex.eiu.com. (n.d.). Global Food Security Index (GFSI). Available at: <https://foodsecurityindex.eiu.com/Country/Details#India>.
150. CEIC (2016). India | Agriculture Census: Average Size of Operational Land Holdings: Size Group: All Holdings | Economic Indicators. www.ceicdata.com. Available at: <https://www.ceicdata.com/en/india/agriculture-census-average-size-of-operational-land-holdings-by-size-group/agriculture-census-average-size-of-operational-land-holdings-size-group-all-holdings#:~:text=This%20records%20a%20decrease%20from>.
151. World Bank national accounts data (n.d.). Agriculture, forestry, and fishing, value added (% of GDP) - India, Brazil, China, Korea, Rep., World, Malaysia | Data. data.worldbank.org. Available at: <https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=N-BR-CN-KR-1W-MY-V> [Accessed 27 Oct. 2020].
152. www.investindia.gov.in. (n.d.). Food Processing Industry in India - Investment Opportunities. Available at: <https://www.investindia.gov.in/sector/food-processing#:~:text=Major%20industries%20constituting%20the%20Food>
153. Pucci, J. (2017). How AgroStar Is Leading the Way to Simplify India's Distribution. [online] AgriBusiness Global. Available at: <https://www.agribusinessglobal.com/agrochemicals/how-agrostar-is-leading-the-way-to-simplify-indias-distribution/>.
154. Alli, A.N.& P. (n.d.). Agriculture market reforms are a must. @businessline. Available at: <https://www.thehindubusinessline.com/opinion/agriculture-market-reforms-are-a-must/article10007561.ece>
155. Mukherjee, S. (2020). Agriculture clocks growth rate of 3.4% in Q1 despite GDP contraction. Business Standard India. [online] 1 Sep. Available at: [https://www.business-standard.com/article/economy-policy/agriculture-clocks-growth-rate-of-3-4-in-q1-despite-gdp-contraction-120090100046\\_1.html](https://www.business-standard.com/article/economy-policy/agriculture-clocks-growth-rate-of-3-4-in-q1-despite-gdp-contraction-120090100046_1.html)
156. Mann, R.S. (n.d.). 'Atmanirbhar' does not compensate farmers for losses incurred during lockdown. [online] @businessline. Available at: <https://www.thehindubusinessline.com/opinion/atmanirbhar-does-not-compensate-farmers-for-losses-incurred-during-lockdown/article31802118.ece#>
157. www.ibef.org. (n.d.). Union Budget of India 2020 - 21 | IBEF. Available at: <https://www.ibef.org/economy/union-budget-2020-21>
158. m.rbi.org.in. (n.d.). Reserve Bank of India - Frequently Asked Questions. Available at: <https://m.rbi.org.in/Scripts/FAQView.aspx?id=87#:~:text=Loans%20to%20individuals%20up%20to>
159. Ramesh Chand (2019). Presidential Address: Transforming Agriculture for Challenges of 21st Century. Indian Economic Association. Available at: [https://niti.gov.in/sites/default/files/2020-01/Presidential\\_Address.pdf](https://niti.gov.in/sites/default/files/2020-01/Presidential_Address.pdf).
160. www.fao.org. (n.d.). 2.a.1 Public Investment in agriculture | Sustainable Development Goals | Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/sustainable-development-goals/indicators/2a1/en/>
161. www.downtoearth.org.in. (n.d.). Private and government: Who is investing how much on agriculture? Available at: <https://www.downtoearth.org.in/news/agriculture/private-and-government-who-is-investing-how-much-on-agriculture--65296> [Accessed 27 Oct. 2020].
162. IVCA and EY (2020). PE/VC Agenda India Trend Book 2020. Available at: [https://ivca.in/wp-content/uploads/2020/02/IVCA-EY-PE-VC-Agenda-India-Trend-book-2020\\_compressed.pdf](https://ivca.in/wp-content/uploads/2020/02/IVCA-EY-PE-VC-Agenda-India-Trend-book-2020_compressed.pdf).
163. Ibef.org. (2017). Agriculture in India: Industry Overview, Market Size, Role in Development... | IBEF. Available at: <https://www.ibef.org/industry/agriculture-india.aspx>.
164. Yadav, Y.P. (n.d.). India's dairy sector has helped lift the rural economy and improve livelihoods. Available at: <https://www.thehindubusinessline.com/opinion/indias-dairy-sector-has-helped-lift-the-rural-economy-and-improve-livelihoods/article31722467.ece#>
165. CEIC (2016). India | Agriculture Census: Average Size of Operational Land Holdings: Size Group: All Holdings | Economic Indicators. www.ceicdata.com. Available at: <https://www.ceicdata.com/en/india/agriculture-census-average-size-of-operational-land-holdings-by-size-group/agriculture-census-average-size-of-operational-land-holdings-size-group-all-holdings#:~:text=This%20records%20a%20decrease%20from>.
166. KMW Agri. (2017). 5 Major Agricultural Challenges in India and Their Possible Solutions. Available at: <https://kmwagri.com/agricultural-challenges-india-possible-solutions/>
167. KMW Agri. (2017). 5 Major Agricultural Challenges in India and Their Possible Solutions. Available at: <https://kmwagri.com/agricultural-challenges-india-possible-solutions/>
168. KMW Agri. (2017). 5 Major Agricultural Challenges in India and Their Possible Solutions. Available at: <https://kmwagri.com/agricultural-challenges-india-possible-solutions/>
169. Horticulture Statistics Division, Department of Agriculture, Cooperation and Farmers' Welfare, Ministry of Agriculture and Farmers' Welfare (2018). Monthly Report: Tomato, January 2018. Available at: <http://agricoop.gov.in/sites/default/files/Monthly%20Report%20on%20Tomato%20for%20January%202018.pdf>.
170. Yadav, Y.P. (n.d.). India's dairy sector has helped lift the rural economy and improve livelihoods. Available at: <https://www.thehindubusinessline.com/opinion/indias-dairy-sector-has-helped-lift-the-rural-economy-and-improve-livelihoods/article31722467.ece#>



171. www.ey.com. (n.d.). How agritech start-ups are changing the face of Indian agriculture. Available at: [https://www.ey.com/en\\_in/start-ups/how-agritech-start-ups-are-changing-the-face-of-indian-agriculture](https://www.ey.com/en_in/start-ups/how-agritech-start-ups-are-changing-the-face-of-indian-agriculture)
172. Pucci, J. (2017). How AgroStar Is Leading the Way to Simplify India's Distribution. [online] AgriBusiness Global. Available at: <https://www.agribusinessglobal.com/agrochemicals/how-agrostar-is-leading-the-way-to-simplify-indias-distribution/>.
173. Ibef.org. (2017). Agriculture in India: Industry Overview, Market Size, Role in Development... | IBEF. Available at: <https://www.ibef.org/industry/agriculture-india.aspx>.
174. Inc42 Media. (2019). How Ninjacart Is Fixing India's Farm-To-Fridge Food Supply Chain To Bring Cheer To Farmers. Available at: <https://inc42.com/startups/ninjacart-fixing-india-flawed-fresh-produce-food-supply-chain-bring-cheer-to-farmers/>
175. www.ey.com. (n.d.). How agritech start-ups are changing the face of Indian agriculture. Available at: [https://www.ey.com/en\\_in/start-ups/how-agritech-start-ups-are-changing-the-face-of-indian-agriculture](https://www.ey.com/en_in/start-ups/how-agritech-start-ups-are-changing-the-face-of-indian-agriculture)
176. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
177. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
178. Mann, R.S. (n.d.). 'Atmanirbhar' does not compensate farmers for losses incurred during lockdown. [online] @businessline. Available at: <https://www.thehindubusinessline.com/opinion/atmanirbhar-does-not-compensate-farmers-for-losses-incurred-during-lockdown/article31802118.ece#>
179. Ray, M. (2020). Govt to announce changes in essential commodities act, dismantling of APMC: Sources. Hindustan Times. Available at: <https://www.hindustantimes.com/india-news/govt-to-announce-changes-in-essential-commodities-act-dismantling-of-apmc-sources/story-TOBYq5XvLW2fNMz0mUIYL.html#:~:text=Amendments%20in%20the%20essential%20commodities>.
180. Ibef.org. (2017). Agriculture in India: Industry Overview, Market Size, Role in Development... | IBEF. Available at: <https://www.ibef.org/industry/agriculture-india.aspx>.
181. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
182. CII (2019). Indian Food Processing Sector: TRENDS & OPPORTUNITIES. CII. Available at: [http://face-cii.in/sites/default/files/food\\_processing\\_report\\_2019.pdf](http://face-cii.in/sites/default/files/food_processing_report_2019.pdf).
183. Ibef.org. (2017). Agriculture in India: Industry Overview, Market Size, Role in Development... | IBEF. Available at: <https://www.ibef.org/industry/agriculture-india.aspx>.
184. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
185. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
186. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
187. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
188. Yadav, Y.P. (n.d.). India's dairy sector has helped lift the rural economy and improve livelihoods. Available at: <https://www.thehindubusinessline.com/opinion/indias-dairy-sector-has-helped-lift-the-rural-economy-and-improve-livelihoods/article31722467.ece#>
189. Yadav, Y.P. (n.d.). India's dairy sector has helped lift the rural economy and improve livelihoods. Available at: <https://www.thehindubusinessline.com/opinion/indias-dairy-sector-has-helped-lift-the-rural-economy-and-improve-livelihoods/article31722467.ece#>
190. Yadav, Y.P. (n.d.). India's dairy sector has helped lift the rural economy and improve livelihoods. Available at: <https://www.thehindubusinessline.com/opinion/indias-dairy-sector-has-helped-lift-the-rural-economy-and-improve-livelihoods/article31722467.ece#>
191. Yadav, Y.P. (n.d.). India's dairy sector has helped lift the rural economy and improve livelihoods. Available at: <https://www.thehindubusinessline.com/opinion/indias-dairy-sector-has-helped-lift-the-rural-economy-and-improve-livelihoods/article31722467.ece#>
192. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
193. www.investindia.gov.in. (n.d.). Indian Food Processing Sector: The untapped growth opportunity. Available at: <https://www.investindia.gov.in/siru/indian-food-processing-sector-untapped-growth-opportunity#:~:text=A%20strong%20and%20dynamic%20food>.
194. McKinsey & Company (2017). Harvesting golden opportunities in Indian agriculture: from food security to farmers' income security by 2025. Available at: <https://www.mckinsey.com/~media/McKinsey/Industries/Chemicals/Our%20Insights/Harvesting%20golden%20opportunities%20in%20Indian%20agriculture/Harvesting-golden-opportunities-in-Indian-agriculture.pdf>.
195. Niti Aayog (2020). India VNR 2020: DECADE OF ACTION TAKING SDGs FROM GLOBAL TO LOCAL. New Delhi: Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2020-07/26281VNR\\_2020\\_India\\_Report.pdf](https://niti.gov.in/sites/default/files/2020-07/26281VNR_2020_India_Report.pdf).
196. m.rbi.org.in. (n.d.). Reserve Bank of India - Frequently Asked Questions. Available at: <https://m.rbi.org.in/Scripts/FAQView.aspx?id=87#:~:text=Loans%20to%20individuals%20up%20to>
197. Omidyar Network India. (n.d.). Omidyar Network India invested \$200bn in Bijak. Available at: <https://www.omidyarnetwork.in/blog/digitizing-the-200bn-first-mile-agriculture-value-chain-why-we-invested-in-bijak> [Accessed 27 Oct. 2020].
198. Agritech startup Bijak raises \$2.5 million from investors. (n.d.). The Economic Times. Available at: <https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/agritech-startup-bijak-raises-2-5-million-from-investors/articleshow/72838211.cms?from=mdr>.









# Renewable Resources & Alternative Energy



## 1. Sector overview

By virtue of its geographic location, India is the fourth most attractive market for Renewable Resources & Alternative Energy. Gol is making steady efforts to move towards cleaner sources of energy not only to deal with the problems of growing air pollution and global climate change but also to ensure its energy security. As of 2020, India's installed RE capacity stands at 87.26 GW, which includes 34.81 GW of solar, 37.74 GW of wind, 9.86 GW of biomass and 4.68 GW of small hydro<sup>199</sup>. To achieve its target of 175 GW by 2022, Gol has estimated an investment of USD 100 billion<sup>200</sup> over the next 3 years, requiring increased capital inflow from both domestic and international investors. Based on publicly available information, key investment deals in Indian RE sector amounted to USD 8.4 billion, 41 percent was in solar, 10 percent was in wind, while 1 percent was for storage of solar pumps<sup>201</sup>. With growing investor interest in this space, along with a positive policy momentum, RE sources can not only enable India to become self-sufficient for its energy needs but can also have the potential to address the power deficit faced by the underserved regions and Small-Medium Enterprises (SMEs).

### 1.1. Sectoral development needs

Our review of key policy documents, human development reports and stakeholder consultations highlighted the following sectoral development needs in India:

#### 1.1.1. Climate change (SDG 7 and SDG 13)

- The Intergovernmental Panel on Climate Change (IPCC) finds that India is one of the most vulnerable countries in the world to global warming. There is, thus, a pressing need for a reduction in the use of fossil fuels and the associated emissions. As per SDG India Index report by NITI Aayog<sup>202</sup>, Gol's thrust on renewables has brought down share of coal in energy generation to 57 percent. Now that 99.99 percent<sup>203</sup> of households have access to electricity, there is a need to increase the share of RE in electricity generation and meet India's targets for SDG 13 (Climate Action)
- The power sector contributes to half of India's CO2 emissions<sup>204</sup>. Total Primary Energy Demand (TPED) of India is expected to grow by 63 percent<sup>205</sup> by 2030. Concomitantly, India's contribution to world's energy-related total CO2 emission is expected to rise from 6.7 percent to 10.6 percent<sup>206</sup>



### 1.1.2. Reducing India's dependence on imports (SDG 7)

- As per NITI Aayog's report 'Zero-Emission Vehicles (ZEVs): Towards a Policy Framework', import oil is needed to cover over 80 percent<sup>207</sup> of India's transport fuel. The import bill for crude oil is currently standing at nearly USD 85 billion<sup>208</sup> in 2020. This oil demand is likely to grow with an increasing rate of urbanisation, leading to a higher need for transport facilities
- A shift from imported oil to other efficient methods can help in generating additional employment. European Climate Foundation states that through reducing oil demand by more efficient electric cars, employment will increase from 500,000 to 850,000 jobs by 2030<sup>209</sup>
- Although Govt's tax revenue from the oil sector is likely to reduce with increased usage of EVs in India's transportation system, such revenue loss is expected to be offset with potential higher tax revenues, generated as a result of improved operational productivity in other economically viable sectors

### 1.1.3. Impact on health/mortality rate (SDG 3)

- Pollution is a global issue and adversely impacts health and premature mortality rate. In addition to implementing various progressive initiatives to curb pollution, Govt has also undertaken specific policy measures to promote clean energy solutions

### 1.1.4. Impact of COVID-19

- Due to disruptions in the global supply chains, COVID-19 has intensified the urgency for India to become self-sufficient to meet its energy needs and reduce its dependency on import of crude oil for the generation of electricity, as well as transport facilities. Due to the nationwide lockdown in India, electricity demand reduced by 25-30 percent. Market experts estimate that such decline in demand, coupled with a reduced collection of payments and slow economic recovery, will aggravate financial pressure on Distribution Companies (DISCOMs), resulting in a shortfall of approximately USD 5 billion<sup>210</sup>

- Lockdown resulted in increased migration from urban to rural areas, which underscored the need for entrepreneurial ventures to uplift the rural sector and create employment opportunities. An insufficient power supply is a major hindrance for productive investments in rural and semi-urban areas. RE and cleantech solutions can help bridge such energy gaps in an environment-friendly way by serving the needs of underserved regions, as well as SMEs, thereby strengthening local value chains by creating demand for skilled and semi-skilled manpower

## 1.2. Policy momentum

RE has been highlighted as a priority sector by the country's apex policy think tank, NITI Aayog and Govt have undertaken several initiatives to boost the Indian RE sector. Govt has set a target to achieve RE capacity of 175 GW by 2022 (and 450 GW by 2030), including 60 GW of utility-scale solar photovoltaic (PV), 40 GW of rooftop solar PV, 60 GW of wind power, 5 GW of small hydro and 10 GW of bioenergy<sup>211</sup>. Budget 2020-21 proposed allocation of USD 3.11 billion<sup>212</sup> for power and RE sector. Up to 100 percent<sup>213</sup> FDI is allowed under the automatic route for renewable energy generation and distribution projects subject to provisions under the Electricity Act, 2003. During 2020, the finance ministry announced changes in FDI rules which made prior approval of the government mandatory for foreign investments from countries that share a border with India (including China, Bangladesh, Pakistan, Bhutan, Nepal, Myanmar and Afghanistan) to prevent the opportunistic takeover of domestic firms amid COVID-19 pandemic under the FEMA law<sup>214</sup>. To further boost the RE sector, India plans to add 30 GW of RE capacity along the desert region on its western border, covering the states of Gujarat and Rajasthan. Indian Railways also plans to adopt sustained energy efficient measures and maximum use of clean fuel to cut down emission level by 33 percent<sup>215</sup> by 2030.

A list of key policy initiatives driving the growth of the RE sector in India is available in Annexure II.



### 1.3. Private sector participation

To achieve GoI's target of 175 GW of RE by 2022, the government must encourage private sector participation by creating a conducive policy environment and by offering incentives.

**1.3.1.** Investment deals in Indian RE sector during 2020 amounted to USD 8.4 billion<sup>216</sup>, of which majority were in solar, followed by EVs, providing evidence that investors are bullish in these sectors near to medium term.

**1.3.2.** By 2019, India accounted for around 1.6 percent of the close to USD 40 billion that had been invested in companies the electric vehicles sector across the globe. GoI introduced national competitive auctions for wind and solar PV sector, intending to increase investment in RE in a cost-effective manner.

**1.3.3.** GoI has set up a dispute resolution mechanism. Besides, GoI has also approved for setting up of an 'Empowered Group of Secretaries (EGoS) and Project Development Cells (PDCs) in Ministries/Departments of GoI for attracting investments in India'. This new mechanism will reinforce India's vision of becoming a USD 5 trillion economy by 2025<sup>217</sup>.

**1.3.4.** Customs duty on import of cobalt, nickel and other elements which are used for battery manufacturing has been removed.

To ensure continuous progress in the growth of renewables, auction design, grid connections and the financial health of DISCOMs are critical elements for reform.

## Bottlenecks for private sector investments in the Renewable Resources & Alternative Energy sector

Developers in the RE sector have been facing some issues which have resulted in a dip in the rate of private investments in this segment. The following bottlenecks to private commercial investment in the RE sector were highlighted in consultations with investors and industry experts:





04

### **The high cost of raw materials**

Currently, components used in the manufacturing of RE-based products are imported. For instance, there is a significant import dependence on countries like Chile, Argentina, Bolivia, China, the Democratic Republic of the Congo, and the United States (Nevada) for core components of lithium-ion batteries such as import of cobalt, and experts expect India to take a few years before it can reach the economies of scale to manufacture such products domestically, especially due to limited demand, high cost of capital, lack of technology and access to affordable raw materials

05

### **Mounting dues from distributors**

As per the Central Electricity Authority (CEA) of India data dated 2019, distribution companies across India owe USD 1.29 billion<sup>218</sup> to renewable power producers.

06

### **Grid bottlenecks**

There is a difficulty in integrating Renewable RE into the Indian grid system, as there is no system in place to facilitate efficient electricity trading between states with surplus renewable generation and others.

07

### **Retiring existing coal plants**

Retiring of the capital-intensive brownfield coal plants while also paying for the already committed capital (or sunk) costs of these plants is a tedious process. The decommissioning cost, net of scrap value, ranges between USD 10-14 million per 500 Mega Watt (MW)<sup>219</sup>.

08

### **Lack of smart grids**

Smart grid can help in resolving the problem of intermittency issues of high variability and unpredictability which arise due to power generation from RE. Application of a large amount of electric power storage is challenging and can cause system losses. Given the growing participation of RE in the electricity supply chain, the requirement for energy storage is likely to increase.

09

### **Lack of storage**

There is a need to develop a robust regulatory framework for energy storage systems to bolster the development of the RE storage sector. Issues faced by owners (generating companies, distribution licensees, transmission utilities, merchant power plants, bulk power consumers) include the dependence of regulatory treatment on the ownership of energy storage assets which include market entry fee, cost recovery structures/mechanisms (pricing), grid integration, use of licensees' assets and revenue sharing. Energy storage has the potential to reduce bulk/industrial consumers' reliance on DISCOMs as a back-up. However, such reduced dependence on DISCOMs would increase the tariff for retail and domestic consumers, which will significantly impact the operations of DISCOMs.

## 1.4. Priority subsectors

Through review of subsectoral development needs and policy priorities and by deep-dive consultations with sector experts and investors, the following themes emerged as areas which address key development needs through business models:

1. Scalable solar energy projects
2. EV manufacturing and infrastructure
3. Harnessing wind resources to meet energy needs
4. Harnessing hydropower to meet energy needs
5. Converting waste to energy (such as biofuels)
6. Upgrading industrial and agricultural technology to reduce emissions
7. Forestry Management and processing of forest produce

Consultations with sector experts, investors and industry bodies helped test the abovementioned themes for alignment with development needs, policy priorities and viability for commercial investments. Experts' suggestions and evidence

from secondary sources show that there are significant commercial hurdles in hydropower and biomass segments, and these areas require more development and policy momentum to attract private capital and offer power viable solutions. Also, while some business models and initiatives have been undertaken to reduce the level of emissions in India and develop forestry management segments, these areas are not commercially viable from the point of offering scalable and marketable business opportunities.

Solar Technology and Project Developers, EV and Wind Technology and Project Developers are subsectors that lie at the intersection of development and policy priorities, as well as commercial private interest, and have therefore been shortlisted for the Investor Map. Investing in solar and wind energy, as well as the development of the EV sector, can help in meeting government's RE target and in moving towards cleantech solutions of energy. Though EV sector already has significant private investment, the growth of this sector is highly dependent on the development of charging infrastructure which is an ancillary segment.





**Figure 17: Subsector shortlist for Renewable Resources & Alternative Energy sector**

		Alignment to development needs and policy priorities		
Shortlisted subsectors		High (subsectors highlighted as 'top' priorities by development experts)	Medium (subsectors mentioned as 'priority' by development experts)	Low (subsectors not mentioned by development sector experts)
Private investor interest	Conducive for private sector participation (subsectors with PE investments)	<ul style="list-style-type: none"> <li>Subsector: SOLAR TECHNOLOGY &amp; PROJECT DEVELOPERS Rooftop solar</li> <li>Subsector: ELECTRIC VEHICLE* Manufacturing of EVs EVs for service industry</li> <li>Subsector: WIND TECHNOLOGY &amp; PROJECT DEVELOPERS Wind-Solar Hybrid Projects</li> </ul>	<ul style="list-style-type: none"> <li>Subsector: SOLAR TECHNOLOGY &amp; PROJECT DEVELOPERS Floating solar plants</li> </ul>	<ul style="list-style-type: none"> <li>Subsector: WIND TECHNOLOGY &amp; PROJECT DEVELOPERS On-grid and off-grid wind energy projects</li> </ul>
	Significant barriers to scale (subsector with commercial bottlenecks to investment)	<ul style="list-style-type: none"> <li>Subsector: ELECTRIC VEHICLE* Charging infrastructure for EVs</li> </ul>	<ul style="list-style-type: none"> <li>Subsector: SOLAR TECHNOLOGY &amp; PROJECT DEVELOPERS Manufacture of solar utility products Trading/supply of solar energy-based products to last-mile consumers</li> </ul>	
	Low scope for commercial investor participation (subsectors with regulatory barriers)	<ul style="list-style-type: none"> <li>Subsector: SOLAR TECHNOLOGY &amp; PROJECT DEVELOPERS Solar component manufacturing Manufacturing of batteries used in solar panels</li> </ul>		

**Note:** \*Subsector not included in SASB  
**Source:** UNDP Investor Map research

## 1.5. Region ecosystem

### 1.5.1. Solar technology and project developers

Investment in solar projects is likely to be concentrated in regions which experience a higher intensity of sun rays. As per Ministry of New and Renewable Energy (MNRE) data<sup>220</sup>, sunny states in India, with more than 20 GWp of solar potential include Rajasthan, Maharashtra, Madhya Pradesh, Andhra Pradesh, Gujarat, Odisha, Karnataka, Himachal Pradesh, Uttar Pradesh and Telangana. Furthermore, investors believe that the scope for solar-based projects will be high in regions with an advanced industrial sector, including Haryana, Delhi,

Jharkhand, Tamil Nadu, Maharashtra and Gujarat. NITI Aayog's SDG India Index report identified Haryana, Delhi, Tamil Nadu, Maharashtra and Gujarat as states which are performing well in achieving SDG 7, while Jharkhand still needs to make considerable progress in achieving targets concerning SDG 7.

Currently, Maharashtra has the highest installed capacity of rooftop solar (473 MW), followed by Tamil Nadu (312 MW), Karnataka (273 MW), Rajasthan (270 MW) and Uttar Pradesh (223 MW). As per a report by the Institute for Energy Economics and Financial Analysis (IEEFA), these top five states account for 54 percent of total rooftop solar capacity in India<sup>221</sup>.



Additionally, various states offer a conducive policy environment for players in this sector to function. For instance, Gujarat government, in its Budget 2020-21, announced USD 121 million<sup>222</sup> subsidy for rooftop solar under Surya Gujarat Yojana, wherein residential consumers shall be provided 40 percent subsidy on the stipulated cost of the solar system up to 3 Kilo Watt (KW), and 20 percent subsidy for more than 3 KW and up to 10 KW capacity.

### 1.5.2. Electric Vehicle

**As per expert consultations, the following regions offer a conducive environment for EVs:**

- Uttar Pradesh has a draft policy for EVs, while Punjab has a notified policy dedicated to the subject
- States of Tamil Nadu, Karnataka and Maharashtra offer a conducive ecosystem, with adequate state policy momentum, as well as existing market forces of suppliers and consumers
- Metropolitan cities with heavy traffic (including Delhi, Bangalore and Pune) can be suitable areas for sale of EVs for both personal and commercial use

Ministry of Heavy Industries and Public Enterprises has shortlisted 11<sup>223</sup> cities (namely Delhi, Ahmedabad, Bengaluru, Jaipur, Mumbai, Lucknow, Hyderabad, Indore, Kolkata, Jammu and Guwahati) in the country for introduction of EVs in their public transport systems under the Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles (FAME) scheme and has made subsidy allocations to that effect.

According to India Brand Equity Foundation's (IBEF) published research, Inter-ministerial panel sanctioned 5,645<sup>224</sup> electric buses for 65 cities in 2019. GoI also plans to set up incubation centre for start-ups working in the EV space.

### 1.5.3. Wind technology and project developers

As per MNRE data, Gujarat, Karnataka, Maharashtra, Andhra Pradesh, Rajasthan, Madhya Pradesh and Telangana have a high potential for both wind and solar power

generation. As per NITI Aayog's SDG India Index report, Gujarat, Karnataka, Maharashtra, Andhra Pradesh and Telangana qualify as states which have made significant progress in achieving SDG 7, while Rajasthan and Madhya Pradesh qualify as states which still need to make considerable progress in achieving targets concerning SDG 7. Additionally, Gujarat has dedicated policies to promote both solar and wind energy projects, while Rajasthan and Andhra Pradesh state governments have issued policies to promote Wind-Solar-Hybrid projects. *(State-wise SDG Maps and Indicators are documented in Annexure IV)*

## 1.6. Investment Opportunity Areas - Overview

While IOAs such as floating solar projects and charging infrastructure for EVs came up as IOAs with a potential for strong development impact, the commercial viability of such models remains unproven. Business models in these 'white spaces' currently face significant commercial hurdles and need to develop further before they attract large-scale commercial private investments.

Rooftop solar to serve residential, commercial and industrial energy needs on the other hand, not only has the potential to address key development needs but has also demonstrated interest from a range of private sector investors. Companies in this IOA have been able to demonstrate profitability and offer successful exits to early investors. Continued commercial private interest is expected in this 'mature' IOA.

While models under manufacturing of EVs, EV for the service industry and wind-solar hybrid (WSH) projects are still relatively nascent; they have gained significant traction from investors/large corporations over the past few years. Investment activity in this 'emerging opportunity area' is expected to continue growing in medium to long-term horizon. These areas have also been included as part of the Investor Map. *(Please refer to Annexure III for detailed analysis of the shortlisting process followed to arrive at the final IOAs)*



**Figure 18: Investment Opportunity Areas Shortlist for the Renewable Resources & Alternative Energy sector**

Subsector	Solar Technology & Project Developers		Electric Vehicle			Wind Technology & Project Developers
Opportunity Areas	Rooftop solar to serve residential, commercial and industrial energy needs	Innovative solutions for resolving limited land-bank issues which plague the solar industry	Manufacturing of Electric Vehicles	Electric Vehicle-based services for logistics, hyperlocal delivery and micro-mobility	Charging infrastructure for EVs	Innovative solutions for resolving issues affecting the RE
Investors identified area as fundamentally marketable?	✓	?	✓	✓	?	✓
Scale Potential	<b>40 GW</b> Gol's target 2022 <sup>1</sup>	<b>1700 MW</b> projects under various stages of development <sup>2</sup>	<b>USD 7.09 bn</b> by 2025 <sup>3</sup>	<b>USD 1 bn</b> Shared mobility market in 2019; expected to grow at 25-30% over the next 5 years <sup>4</sup>	<b>c.40% CAGR</b> Between 2019-2025 <sup>5</sup>	<b>10 GW</b> Under construction or being tendered <sup>6</sup>
Proven in-market as evidenced by investors interest?	Models have demonstrated <b>profitability and attracted private sector investments</b> , albeit only recently	Models in experiment stage with few tenders issued by Gol	Models have demonstrated <b>profitability and attracted private sector investments</b> , albeit only recently	Promising models have <b>attracted venture capital</b> , but have not yet been proven as profitable	Models in <b>experiment stage</b> with one pilot project and few emerging ideas such as swappable batteries	Models have <b>attracted private sector capital</b> , but have not yet been proven as profitable
Opportunity type	Mature IOA	White space: strong scale potential but not successful business models	Emerging IOA	Emerging IOA	White space: strong scale potential but not successful business models	Emerging IOA
Emerging business model(s)	<ul style="list-style-type: none"> <li>On-grid or Off-grid rooftop solar panel installation projects to serve energy needs of industrial clusters (including MSME manufacturing clusters across industries, food parks, etc.), residential and commercial complexes, housing societies, community centres, government organizations and private institutions. In addition to reduction in electricity costs, on-grid solar rooftop projects allow users to earn additional income by supplying extra electricity generated to the community/central grid, thereby making them eligible for generation-based incentives and USD 0.03 (INR 2) per unit of electricity generated</li> </ul>	<ul style="list-style-type: none"> <li>Floating solar plants, which involve installing solar panels on floating structures on a waterbody</li> </ul>	<ul style="list-style-type: none"> <li>Manufacturing units for EVs across 2/3/4-wheeler passenger segments and EV buses, which would include manufacturing of vehicles by assembly of EV components, thereby enabling users to enjoy lower operating costs</li> </ul>	<ul style="list-style-type: none"> <li>EV-based ride-sharing or rental services (EV buses, E-taxis, E-rickshaws or E-bikes), offering inter-city and intra-city, affordable micro-mobility, logistics or hyperlocal delivery services</li> </ul>	<ul style="list-style-type: none"> <li>Point-based charging infrastructure</li> <li>Battery swapping model for charging EVs, which may also include setting up an agency to handle battery quality checks to facilitate battery swapping model</li> <li>Battery disposal systems</li> </ul>	<ul style="list-style-type: none"> <li>Solar-wind hybrid projects, or hybridization of existing solar and wind plants to allow 24 hour electricity generation (resulting in reduced variability of energy generation), with the rated power capacity (maximum output/generation) of one source of energy to be at least 25% of the rated power capacity of the other source. Such hybrid projects would lead to savings in capital cost (in comparison to cost incurred on stand-alone solar and wind projects), with improved utilization of common infrastructure such as land, approach roads and evacuation infrastructure</li> </ul>
SDGs impacted						

**Sources:**

- Niti Aayog (2020). Zero-Emission Vehicles (ZEVs) 2020. Niti Aayog. **Available at:** [https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen2020-In-depth-EnergyPolicy\\_0.pdf](https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen2020-In-depth-EnergyPolicy_0.pdf)
- TERI (2019). Floating Solar Photovoltaic (FSPV): A Third Pillar to Solar PV Sector? **Available at:** <https://www.teriin.org/sites/default/files/2020-01/floating-solar-PV-report.pdf>.
- www.ibef.org. (n.d.). Electric Vehicle Market Likely To Be Rs 50,000 cr Opportunity In India By 2025 | IBEF. **Available at:** <https://www.ibef.org/news/electric-vehicle-market-likely-to-be-rs-50000-crore-opportunity-in-india-by-2025-report>.
- www.ETAuto.com (2019). Opinion: EV adoption in shared mobility is gamechanger for Indian auto inc - ET Auto. ETAuto.com. **Available at:** <https://auto.economictimes.indiatimes.com/news/industry/opinion-ev-adoption-in-shared-mobility-segment-a-game-changer-for-indian-automobile-industry/72022796#:~:text=The%20shared%20mobility%20market%20in%20India%20is%20one%20of%20the>
- www.businesswire.com. (2019). India Electric Vehicle Charging Infrastructure Market Report 2019: Drivers, Restraints, Opportunities, Trends, and Forecast up to 2025 - ResearchAndMarkets.com. **Available at:** <https://www.businesswire.com/news/home/20190813005366/en/India-Electric-Vehicle-Charging-Infrastructure-Market-Report>
- CRISIL (2020). The new power couple in town: Wind-solar hybrid finding favor with Centre and states.

## 1.7. Renewable Resources & Alternative Energy Investment Opportunity Areas Deep Dive

### 1.7.1. Rooftop solar to serve residential, commercial and industrial energy needs






India's power sector is responsible for half of India's CO2 emissions. However, with Gol's push towards adoption of RE sources and slower growth in coal-based power generation, the rate of growth in CO2 emissions in 2019 slowed down by ~2 percent<sup>225</sup> (i.e., lower than the annual increase seen in any year since 2001). During 2020, 35.22 percent of total electricity was generated from renewable sources, with solar power contributing 24.3 percent to the total RE basket<sup>226</sup>.

Solar rooftop projects can serve residential, commercial and industrial energy needs. Solar rooftops not only offer a clean alternative to conventional energy sources but also help in saving energy costs. A typical residential rooftop solar can save up to USD 662 per KW a year or

around USD 16,550 with a 25-year lifetime of the installation<sup>227</sup>. Reaching Gol targets to achieve 40 GW of solar rooftop capacity by 2022 can help in saving more than 10,000 MW<sup>228</sup> of electricity with avoidance of transmission and distribution (T&D) losses. As of 2019, cumulative solar rooftop installations in India accounted for ~4.4 GW<sup>229</sup>. Ministry of New and Renewable Energy (MNRE) and various state governments have several policies to incentivize and facilitate rooftop installations.

A number of companies in this space have already raised capital and have even demonstrated profitability. Investors can expect an average 16 percent<sup>230</sup> unleveraged IRR in rooftop solar installation projects for commercial/industrial segment. While the gestation period of conventional power plants is between 5 to 6 years, the gestation period of a solar power plant would be approximately six months<sup>231</sup>. Thus, small 1-5 MW solar power plants can be built around rural communities or MSME clusters to meet their immediate electricity demand<sup>232</sup>. Therefore, Rooftop Solar has been identified as a key IOA.

#### 1.7.1. Rooftop solar to serve residential, commercial and industrial energy needs - Market Insights

-  **Overview:**
  - » Investors can focus on companies offering rooftop solar panel installation to serve energy needs of residential, commercial and industrial sectors, enabling them to reduce their energy costs per year
-  **Need case:**
  - » A typical residential rooftop solar can save up to USD 662 per KW a year or around USD 16,550 with a 25-year lifetime of the installation. Achieving Gol's target of 40 GW rooftop solar by 2022 can help in saving more than 10,000 MW of electricity with avoidance of T&D losses
  - » This IOA could contribute directly to **SDG7 (Affordable and Clean Energy)**, particularly 7.2.1. (Renewable energy share in the total installed electricity generation) and **SDG13 (Climate Action)**, while it contributes indirectly to **SDG11 (Sustainable Cities and Communities)**, **SDG12 (Sustainable Consumption and Production)**, **SDG14 (Life Below Water)** and **SDG15 (Life on Land)**
-  **User or beneficiary:**
  - » This IOA can benefit residential, commercial and industrial users with lower electricity bills since tariff rates for rooftop solar in comparison to industrial and commercial tariff rates are cheaper by 17% and 27% respectively
  - » The model can also help in generating employment opportunities for locals
-  **Economic factors:**
  - » Investors can expect average 16% (unleveraged) in rooftop solar installation for commercial/industrial segment
  - » As per experts, typical gestation period of a solar power plant would be six months. Several small 1-5 MW solar power plants can be built around rural communities to meet the immediate electricity demand due to shorter gestation period of solar projects and low operating costs
-  **Enabling factors:**
  - » The vertical has a strong partner environment with significant interest from commercial investors and private corporations
  - » Strong policy momentum to incentivize and facilitate rooftop installations through budget (for year 2020-21) allocation of USD 121 million subsidy under Surya Gujarat Yojana, as well as inclusion of grid-connected solar rooftop systems under RBI's priority sector lending category


**Risk factors:**

- » India is highly dependent on other countries for import of solar panels and equipment, 85% of which are imported. Unless India is able to manufacture these products internally, cost of setting up rooftop projects cannot be reduced
- » Due to the pandemic and a nationwide lockdown, rooftop solar segment has been adversely impacted as most players are small-sized companies, with limited financial capacity to sustain sudden heavy losses resulting due to low demand. Inability to sustain may result in such players going bankrupt, or exiting the business. Demand for rooftop solar is likely to be low due to financial insecurity and job losses among consumers. Bank debt is also expected to get tighter for most consumers due to low level of credibility


**Impact management:**

- » Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that such business models yield an important and intended outcome that can meet power needs of multiple users, while reducing electricity costs and lowering carbon footprint of India

Source: UNDP research for India Investor Map

### 1.7.2. Manufacturing of Electric Vehicles

As per NITI Aayog, EVs are a sunrise opportunity in India, the fourth largest automobile market in the world. EVs can help in reducing local concentrations of pollutants in cities, open up job opportunities and reduce India's dependence on imported crude oil to meet transportation needs. In addition, GoI launched National Mission on Transformative Mobility and Battery Storage, National E-Mobility Programme and the FAME-II Scheme to develop and promote effective means of sustainable transport in the country. Under draft 'Delhi Electric Vehicle Policy 2020' Delhi government targets to increase its market share of battery-EVs to 25 percent (of new vehicles added) by 2024<sup>233</sup>. Goods and Services Tax (GST) Council also announced its plans to reduce tax rates on e-vehicles from 12 percent to 5 percent<sup>234</sup>.

Experts predict that startups in this space will need approximately 3-5 years to find stability, ward off major competition and start becoming core players in this space. M&A and fundraising activities are likely to pick up in medium and long term, with the valuation of EV start-ups becoming attractive for investors in the short term compared to pre-COVID-19 era. With many large corporations investing strategic stakes in newer ventures, experts expect acquisitions to eventually become a theme in this space.

The area has also seen growing private sector interest, with some companies having raised capital and demonstrated scalability. Therefore, the manufacturing of EVs has been identified as a key IOA.

#### 1.7.2. Manufacturing of Electric Vehicles - Market Insights


**Overview:**

- » Investors can focus on companies engaged in manufacturing of EVs, under 2/3/4 wheeler segment, or in manufacturing of EV buses, thereby supporting GoI's initiatives towards reducing use of fossil fuels and achieving target of 25% EVs by 2023


**Need case:**

- » Use of EVs can help in reducing India's dependence on crude oil imports (oil import bill of USD 112 billion in FY19) to cover over 80% of its transport fuel demand. GoI targets to reduce transport's share of nitrogen oxide (NOX) emissions from 40% in FY2019 to less than 20% in 2040
- » This IOA could contribute directly to **SDG7 (Affordable and Clean Energy)**, particularly 7.2.1. (Renewable energy share in the total installed electricity generation), **SDG9 (Industry, Innovation and Infrastructure)**, particularly 9.4.1. (CO2 emission per unit of value added) and **SDG13 (Climate Action)**, while it contributes indirectly to **SDG3 (Good Health and Well-Being)**, **SDG11 (Sustainable Cities and Communities)**, **SDG12 (Sustainable Consumption and Production)**, **SDG14 (Life Below Water)** and **SDG15 (Life on Land)**


**User or beneficiary:**

- » This IOA can benefit owners of an EV with lower running costs. Electricity to charge an EV costs one-third the cost per kilometer of petrol. Expenditure on servicing and other motor parts is comparatively low
- » Metropolitan cities like Delhi, Mumbai, Bangalore, etc., which have heavy vehicular traffic will benefit from lower level of pollution caused by use of EVs in comparison to Internal Combustion Engines (ICEs)





### Economic factors:

- » Experts predict that startups in this space will need 3-5 years to find stability, ward off major competition and start becoming core players in this space
- » Startups operating in the EV sector are crucial for developing this sector in India. Mergers and Acquisitions (M&A) and fundraising activities are likely to pick up in medium and long term, with valuation of EV startups becoming attractive for investors in the short term compared to pre-COVID-19 era. With many large corporations investing strategic stakes in newer ventures, experts expect acquisitions to eventually become a theme in this space



### Enabling factors:

- » The vertical has a strong partner environment with significant interest from commercial investors and private corporations
- » Strong policy momentum with the release of Delhi Government's draft 'Delhi Electric Vehicle Policy 2018', as well as GoI's initiatives towards launch of National Mission on Transformative Mobility and Battery Storage and the FAME-II Scheme. In 2018, GoI launched a National E-Mobility Programme (to be implemented by Energy Efficiency Services Limited (EESL)), to augment demand for EVs



### Risk factors:

- » Despite a low operating cost, an EV is twice as expensive as the comparable petrol vehicle. As a result, manufacturers have been losing money in the past. Complementary measures may still be needed to address the high upfront purchase price of EVs, boost investment in EV manufacturing, ensure sufficient availability of charging infrastructure and improve the efficiency of EVs
- » India is highly dependent on other countries for import of battery storage equipment and permanent magnets for electric car motors. Therefore, increased focus on domestic manufacturing of energy equipment is imperative for the growth of this sector



### Impact management:

- » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), given that these business models yield an important and intended outcome that can offer clean and efficient transportation solutions to the population at large, while also lowering the level of pollution

Source: UNDP research for India Investor Map

### 1.7.3. Electric Vehicle-based services for logistics, hyperlocal delivery and micro-mobility

With the growing penetration of shared mobility in India, vehicle utilization has increased, leading to an increase in demand for commercial vehicles. Commercial vehicle production in India increased from 416,870 vehicles in 2009 to 1,112,176 vehicles in 2019<sup>235</sup>. Adoption of EVs for commercial usage, supported by a clean energy mix and optimized charging patterns, will help in reducing emissions, improving air quality and benefiting human health.

GoI plans to electrify all 2-wheelers up to 150cc electric by 2025, which would contribute 90 percent<sup>236</sup> of the total two-wheeler market in India. Since 2-wheelers consume approximately 60-65 percent of total petrol available, adoption of EV-based 2-wheelers would help in reducing India's crude oil import burden. Moreover, since running cost associated with EVs is lower than that of their petrol, diesel or Compressed Natural

Gas (CNG) counterparts (for all types of vehicles – 2-wheelers, 3-wheelers, cars, buses and trucks), operating such vehicles will be more economical for their owners.

As per experts, most companies in this segment are likely to take a while before they become profitable but have been successful in raising VC funding. Under the service segment, experts expect to see consolidation among some of the incumbents before they become acquisition targets for the likes of Ola or Uber<sup>238</sup>. However, for any exit to materialize, these startups will have to prove their ability through the use of differentiated technology and validation through revenues.

Given its strong potential to meet India's development need, favourable policy momentum and significant private sector interest, EVs for service industry is a key IOA.



### 1.7.3. Electric Vehicle-based services for logistics, hyperlocal delivery and micro-mobility - Market Insights

- Overview:** » Investors can focus on companies engaged in EV-based ride-sharing or rental services, EV-based tour operations or limited distance EVs (Buses) offering point-to-point commute services. This would enable owners to operate EV-based commercial vehicles at a lower operating cost
- 
- Need case:** » Adoption of EVs for commercial usage, supported by a clean energy mix and optimized charging patterns, will help in reducing emissions, improving air quality and benefiting human health  
 » This IOA could contribute directly to **SDG7 (Affordable and Clean Energy)**, particularly 7.2.1. (Renewable energy share in the total installed electricity generation), **SDG9 (Industry, Innovation and Infrastructure)**, particularly 9.4.1. (CO2 emission per unit of value added) and **SDG13 (Climate Action)**, while it contributes indirectly to **SDG3 (Good Health and Well-Being)**, **SDG11 (Sustainable Cities and Communities)**, **SDG12 (Sustainable Consumption and Production)**, **SDG14 (Life Below Water)** and **SDG15 (Life on Land)**
- 
- User or beneficiary:** » This IOA can benefit travel operators as total cost of ownership (TCO) for EV is comparatively lower than that of a traditional (petrol/diesel) vehicle. Not only is the fuel cost quite high, but the distance covered by an EV per charge is almost 5-6 times the mileage of a traditional vehicle  
 » High traffic zones, as well as tourist destinations can benefit from lower level of pollution caused by use of EVs in comparison to ICEs
- 
- Economic factors:** » As per experts, most companies in this segment are likely to take a while before they become profitable. Although new companies in this domain may not be profitable, but have been successful in raising VC funding  
 » Under the service segment, experts expect to see consolidation among some of the incumbents before they become acquisition targets for the likes of Ola or Uber. However, for any exit to materialize, these startups will have to prove their ability through a differentiated technology and validation through revenues
- 
- Enabling factors:** » The vertical has a strong partner environment with significant interest from commercial investors and private corporations  
 » Under the second phase of FAME India scheme, Govt aims to electrify the entire public transport fleet including buses, taxis and auto-rickshaws. Department of Heavy Industries (DHI) has emphasized on the need for 100% electrification of public transport in order to reduce pollution level in India
- 
- Risk factors:** » EV-based car-hire companies have not taken off in a big way because of many challenges such as upfront purchase cost, battery life, safety (possibility of battery explosions), insufficient charging infrastructure and public perception  
 » Many players in this segment feel that the main challenge is to manage the battery swap or charging infrastructure. Electric cars need charging stations with uninterrupted power, and power shortages in the country pose a hindrance in this space
- 
- Impact management:** » Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that such business models yield an important and intended outcome that can offer clean, efficient and economical transportation solutions, while also lowering carbon footprint of India

Source: UNDP research for India Investor Map

#### 1.7.4. Innovative solutions to ensure round-the-clock energy generation, reducing variability in renewable power generation and achieving better grid stability

WSH systems provide round-the-clock power solutions since the batteries connected to them can efficiently store energy and provide a backup at the time of an electricity outage, or during the night. The potential reduction in energy from a WSH power plant is likely to be in the range of 2-3 percent<sup>239</sup> below the cumulative level of energy from independent solar and wind farms of similar capacities. Individually, the average Plant Load Factor (PLF) of a wind plant is 28 percent, while that of a solar plant is 18.7 percent<sup>240</sup>. Thus, PLF of a WSH plant is ~41.8 percent<sup>241</sup>. Moreover, hybridization of wind and solar assets is likely to lower the capital cost by 5-7 percent<sup>242</sup> in comparison to the cost of standalone wind and solar assets, thus improving the returns for the developers.

'National Wind-Solar Hybrid Policy', introduced by the MNRE in 2018, aims at optimizing and improving the efficacy of the usage of transmission infrastructure and land, which in turn will mitigate inconsistencies associated with the generation of renewable power and help in attaining better grid stability. Apart from that, the policy will also stimulate the development of solutions and technological advancements in the field of WSH power generation.

As per experts, WSH projects would lead to savings in capital cost (about 7-10 percent<sup>243</sup> in capital investments in comparison to standalone solar/wind projects) with improved utilization of common infrastructure such as land, approach roads and evacuation infrastructure, and thus improve the returns for the developers. Furthermore, WSH assets are expected to operate at higher debt coverage metrics (compared to a standalone wind or solar plant), achieve savings in operating cost and incur a lower cost for complying with the forecasting and scheduling regulations, which would further boost the returns for the developers. Thus, the estimated IRR for a WSH plant is estimated to be higher by ~10 percent<sup>244</sup>, compared to standalone wind or solar power project (IRRs for solar and wind projects are estimated to be between 9 and 11 percent<sup>245</sup>), with other factors (like funding structure, cost of debt, power purchase agreement terms and operation and maintenance cost) remaining the same. Such projects generally have an operating life of approximately 25 years based on Power Purchase Agreements (PPAs) issued. Although a number of corporations have invested in this space, they are yet to achieve profitability. Given its strong potential to meet India's development need, favourable policy momentum and significant private sector interest, WSH projects is a key IOA.

#### 1.7.4. Innovative solutions to ensure round-the-clock energy generation, reducing variability in renewable power generation and achieving better grid stability - Market Insights

- Overview:** » Investors can focus on companies engaged in operating Wind-Solar Hybrid projects or in hybridization of existing solar and wind plants. Such projects would offer round-the-clock energy production, while also increasing the PLF
- Need case:** » A typical WSH project can be operated at a higher PLF and lower capital cost, thus offering higher returns to investors  
» This IOA could contribute directly to **SDG7 (Affordable and Clean Energy)**, particularly 7.2.1. (Renewable energy share in the total installed electricity generation) and **SDG13 (Climate Action)**, while it contributes indirectly to **SDG11 (Sustainable Cities and Communities)**, **SDG12 (Sustainable Consumption and Production)**, **SDG14 (Life Below Water)** and **SDG15 (Life on Land)**
- User or beneficiary:** » This IOA can benefit developers by generating better returns with round-the-clock energy generation and improved PLFs  
» Environment, at large, shall benefit from greater use of renewable energy sources for power generation, leading to reduced carbon footprint



### Economic factors:

- » At a tariff rate of Rs 2.5 per unit and with a wind solar mix of 50:50, the IRR for a wind-solar hybrid project is estimated to be higher by about 60-70 bps against a standalone wind or solar power project, with other things like funding structure, cost of debt, power purchase agreement terms and operation and maintenance cost remaining same
- » Such projects generally have an operating life of approximately 25 years based on PPAs issued



### Enabling factors:

- » The vertical has a strong partner environment with significant interest from commercial investors and private corporations
- » 'National Wind-Solar Hybrid Policy', introduced by MNRE in 2018, aims at optimizing and improving the efficacy of the usage of transmission infrastructure and land, which in turn will mitigate inconsistencies associated with generation of renewable power and help in attaining better grid stability. Apart from that, the policy will also stimulate the development of solutions and technological advancements in the field of WSH power generation



### Risk factors:

- » Low ceiling tariffs of 2.7 per unit set by Solar Energy Corporation of India (SECI); expectation of a minimum 38% combined utilization factor (CUF) in the tenders; and lack of good sites are among the reasons impacting hybrid projects
- » As per Investment Information and Credit Rating Agency of India (ICRA), hybrid projects would face challenges related to selection of sites suitable for both wind and solar power generation, availability of adequate transmission infrastructure, technical challenges in integrating the two generation sources and setting up systems to manage the generation from wind and solar resources



### Impact management:

- » Investments falling under this IOA are likely to act to avoid harm (**IMP classification A**), given that outcome is likely to be positive because projects can generate power for 24 hours, resulting higher PLFs and higher returns for developers

Source: UNDP research for India Investor Map

## 1.8. Renewable Energy White Spaces Deep Dive

### 1.8.1. Innovative solutions for resolving limited land-bank issues which impact the solar industry

Typically, solar farms require 4-5 times more land than a traditional power generation facility<sup>246</sup>. While it is difficult to resolve fragmented land ownership and cost-compensation issues, most water bodies are owned by utilities and governments. Thus, floating solar projects, which involve installing solar panels on floating structures on a water body, can offer an efficient solution to the land acquisition issue which plagues our country. As per experts<sup>247</sup>, building floating solar plants near existing hydropower projects can enable leveraging of existing infrastructure. Although Engineering, Procurement and Construction (EPC) cost for

installing a floating solar project is higher than that of a ground-mounted solar project, additional generation from a floating solar project will make the levelized cost of both comparable.

GoI plans to develop 10 GW of floating solar capacity in the country by 2021<sup>248</sup>. Experts believe that India has the potential to set up 300 GW of floating solar projects by utilizing only 10-15 percent of water bodies in states such as Kerala, Assam, Odisha and West Bengal<sup>249</sup>. Although some players have invested in this space, models are still in an experimental stage with few tenders issued by GoI.

Given its strong potential to meet India's development need and growing policy momentum, we expect private investment in this space to pick up. Thus, Floating Solar Systems is recognized as a white space.



### 1.8.1. Innovative solutions for resolving limited land-bank issues which impact the solar industry - Market Insights



#### Overview:

- » Investors can focus on companies engaged in floating solar plants which can help in resolving land acquisition issues in the country



#### Need case:

- » Such models can help in addressing India's land-bank issue, while achieving Gol's target of 10 GW floating solar power capacity by FY21
- » This IOA could contribute directly to SDG7 (**Affordable and Clean Energy**), particularly 7.2.1. (Renewable energy share in the total installed electricity generation) and **SDG13 (Climate Action)**, while it contributes indirectly to **SDG11 (Sustainable Cities and Communities)**, **SDG12 (Sustainable Consumption and Production)**, **SDG14 (Life Below Water)** and **SDG15 (Life on Land)**



#### User or beneficiary:

- » This IOA can benefit developers with better level of power generation
- » Building floating solar plants near existing hydropower projects can enable developers leverage on existing infrastructure



#### Risk factors:

- » Floats, used to set up a floating solar project, are made from high-density polyethylene (HDPE) materials that are UV resistant. Thus, transporting such bulky floats to site is challenging
- » Securely anchoring and mooring the floating solar farms is difficult. For example, they need to be anchored in a way that can withstand weather extremities



#### Impact management:

- » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), given that these business models yield an important and intended outcome that can offer clean energy solutions by addressing the land acquisition issues in India

Source: UNDP research for India Investor Map

### 1.8.2. Charging infrastructure for Electric Vehicles

Charging infrastructure is integral for successful adoption of EVs in India as it supports the EV battery technology and its assembly. Multiple levels of charging standards are used in EVs. Alternate Current (AC) level 1 charging is a slow charging process (10 Kwh battery takes about 3 to 20 hours to charge) and is supplied by battery vendors as it does not feature a standardized charger. A majority of 'adaptable' batteries utilized by 2W/3W and some authorized 4W EVs of India employ them. The AC level 2 fast charging generally utilizes 3.6, 7 Kwh and 10 Kwh AC chargers with consistent connectors. The all-Indian BHARAT 2 AC and most of the 4W EVs feature a level 2 fast charger, wherein a 10 Kwh battery top-up takes 90 minutes and a full cycle of 30 Kwh usually takes about 4 hours. Level 3 and Direct Current (DC) fast charging technology circumvents the on-board charging circuit of the vehicles and supplies DC to the batteries.

A 40 Kwh battery can charge up to 80 percent of its capacity in 30 minutes using hi-speed Float charger (FC).

Under the FAME II scheme, Gol proposed a subsidy for deploying 5,000 EV charging stations in cities and highways across the country<sup>250</sup> to accelerate the process of catering to the increased demand for EVs. Some experimental stage models in the charging infrastructure space include a swappable battery model, wherein a vehicle's discharged battery can be immediately swapped for a fully charged one, eliminating the delay involved in waiting for the vehicle's battery to charge. India's EV battery swapping market is projected to reach USD 6.1 million by 2030, registering 31.3 percent growth during 2020-2030<sup>251</sup>.

Given its importance to India's adoption of EV and growing policy momentum, we expect private investment in this space to pick up. Thus, charging infrastructure is recognized as a white space.



### 1.8.2. Charging infrastructure for Electric Vehicles - Market Insights



#### Overview:

- » Investors can focus on companies engaged in developing charging infrastructure or offering innovative solutions such as swappable battery models or battery disposal systems



#### Need case:

- » This segment is ancillary to the EV industry
- » This IOA could contribute directly to **SDG7 (Affordable and Clean Energy)**, particularly 7.2.1. (Renewable energy share in the total installed electricity generation), **SDG9 (Industry, Innovation and Infrastructure)**, particularly 9.4.1. (CO2 emission per unit of value added) and **SDG13 (Climate Action)**, while it contributes indirectly to **SDG3 (Good Health and Well-Being)**, **SDG11 (Sustainable Cities and Communities)**, **SDG12 (Sustainable Consumption and Production)**, **SDG14 (Life Below Water)** and **SDG15 (Life on Land)**



#### User or beneficiary:

- » Adequate charging infrastructure will enable owners of EVs to operate without any untimely delays of stoppages due to battery outage
- » Environment shall benefit from reduction in transport-related emissions, leading to reduced carbon footprint



#### Risk factors:

- » Although, Ministry of Power de-licensed setting up of charging infrastructure, guidelines are not clear
- » Battery swapping models have the potential to take away both the high upfront cost and long charging times, with dedicated swap stations. However, vehicle owners may have safety concerns related to the quality of battery installed and its impact on the operation of vehicle in the long-run



#### Impact management:

- » Investments falling under this IOA are likely to benefit stakeholders (**IMP classification B**), given that such business models yield an important and intended outcome that can help in supporting the growth of the entire EV segment

Source: UNDP research for India Investor Map

#### Sources:

199. Ibef.org. (2019). Renewable Energy Industry in India: Overview, Market Size & Growth | IBEF. Available at: <https://www.ibef.org/industry/renewable-energy.aspx>.
200. www.ETEnergyworld.com (2020). Another \$100-bn investment required to meet 175 GW RE target: MNRE Secy - ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economictimes.indiatimes.com/news/renewable/another-100-bn-investment-required-to-meet-175-gw-re-target-mnre-secy/73806002>.
201. Institute for Energy Economics & Financial Analysis. (2020). IEEFA India: Investment trends in renewable energy 2019/20. Available at: <https://ieefa.org/ieefa-india-investment-trends-in-renewable-energy-2019-20/>
202. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
203. saubhagya.gov.in. (2020). Saubhagya Dashboard. [online] Available at: <https://saubhagya.gov.in/>.
204. Carbon Brief. (2019). Analysis: India's CO2 emissions growth poised to slow sharply in 2019. Available at: <https://www.carbonbrief.org/analysis-indias-co2-emissions-growth-poised-to-slow-sharply-in-2019>.
205. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
206. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
207. Niti Aayog (2020). Zero-Emission Vehicles (ZEVs) 2020. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen202020-In-depth-EnergyPolicy\\_0.pdf](https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen202020-In-depth-EnergyPolicy_0.pdf)
208. Inc42 Media. (2020). Electric Vehicles: The Segment Of Choice To Invest In 2020. [online] Available at: <https://inc42.com/resources/electric-vehicles-the-segment-of-choice-to-invest-in-2020/>.
209. Niti Aayog (2020). Zero-Emission Vehicles (ZEVs) 2020. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen202020-In-depth-EnergyPolicy\\_0.pdf](https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen202020-In-depth-EnergyPolicy_0.pdf)
210. www.ETEnergyworld.com (n.d.). Renewable Energy "New Normal" and Impact of Covid-19 - Opinion by Ashish Khanna | ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economictimes.indiatimes.com/energy-speak/renewable-energy-new-normal-and-impact-of-covid-19/4167#:~:text=are%20being%20observed,->
211. Niti Aayog (2020). Zero-Emission Vehicles (ZEVs) 2020. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen202020-In-depth-EnergyPolicy\\_0.pdf](https://niti.gov.in/sites/default/files/2020-01/IEA-Indiapercen202020-In-depth-EnergyPolicy_0.pdf)
212. www.ibef.org. (n.d.). Union Budget of India 2020 - 21 | IBEF. Available at: <https://www.ibef.org/economy/union-budget-2020-21>
213. www.investindia.gov.in. (n.d.). Renewable Energy. Available at: <https://www.investindia.gov.in/sector/renewable-energy>.
214. The Times of India. (2020). India FDI Policy 2020: Finance ministry notifies changes in FDI policy under FEMA | India Business News - Times of India. [online] Available at: <https://timesofindia.indiatimes.com/business/india-business/finance-ministry-notifies-changes-in-fdi-policy-under-fema/articleshow/75316305.cms>.
215. www.ibef.org. (n.d.). Union Budget of India 2020 - 21 | IBEF. Available at: <https://www.ibef.org/economy/union-budget-2020-21>
216. Ritchie, H. and Roser, M. (2017). Renewable Energy. Our World in Data. Available at: <https://ourworldindata.org/renewable-energy#investment-by-region>
217. pib.gov.in. (n.d.). Make In India. Available at: <https://pib.gov.in/PressReleaseDetailm.aspx?PRID=1655062>
218. www.ETEnergyworld.com (n.d.). Why India needs to act quickly on its solar power ambitions - Opinion by Ketan Mehta | ET EnergyWorld. ETEnergyworld.com. Available at:

- <https://energy.economictimes.indiatimes.com/energy-speak/why-india-needs-to-act-quickly-on-its-solar-power-ambitions/3070#:~:text=Thanks%20to%20a%20supportive%20policy>
219. theprintmedia. (2020). Powering reforms: Transforming India's power sector through GARUDA. Available at: <https://theprintmedia.in/2020/08/08/powering-reforms-transforming-indias-power-sector-through-garuda/>
  220. MNRE (2020). Annual Report 2019-2020. Available at: [https://mnre.gov.in/img/documents/uploads/file\\_f-1597797108502.pdf](https://mnre.gov.in/img/documents/uploads/file_f-1597797108502.pdf).
  221. IEEFA (2019). Vast Potential of Rooftop Solar in India: Setting the Pace for Rapidly Increasing Rooftop Solar Installations in India. Available at: [https://ieefa.org/wp-content/uploads/2019/05/IEEFA-India\\_Vast-Potential-of-Rooftop-Solar-In-India.pdf](https://ieefa.org/wp-content/uploads/2019/05/IEEFA-India_Vast-Potential-of-Rooftop-Solar-In-India.pdf).
  222. pv magazine India. (n.d.). Rooftop solar leader Gujarat gets maximum central financial support for RE generation. Available at: <https://www.pv-magazine-india.com/2020/03/03/rooftop-solar-leader-gujarat-gets-maximum-central-financial-support-for-re-generation/#:~:text=For%20rooftop%20solar%2C%20the%20state>
  223. UITP. (n.d.). India. Available at: <https://india.uitp.org/articles/dhi-funding-pilot-electric-projects-11-cities>
  224. Ibef.org. (2017). Automobile Industry in India, Indian Automobile Industry, Sector, Trends, Statistics. Available at: <https://www.ibef.org/industry/india-automobiles.aspx>.
  225. Carbon Brief. (2019). Analysis: India's CO2 emissions growth poised to slow sharply in 2019. Available at: <https://www.carbonbrief.org/analysis-indias-co2-emissions-growth-poised-to-slow-sharply-in-2019>
  226. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
  227. Praveer Sinha (2019). Rooftop solar power: A bright and clean idea on our terrace. Available at: [https://economictimes.indiatimes.com/small-biz/productline/power-generation/rooftop-solar-power-a-bright-and-clean-idea-on-our-terrace/articleshow/70769124.cms?utm\\_source=contentofinterest&utm\\_medium=txt&utm\\_campaign=cppst](https://economictimes.indiatimes.com/small-biz/productline/power-generation/rooftop-solar-power-a-bright-and-clean-idea-on-our-terrace/articleshow/70769124.cms?utm_source=contentofinterest&utm_medium=txt&utm_campaign=cppst)
  228. Power Insight. (2017). Rooftop Solar PV Sector India - Overview & Outlook. Available at: <https://powerinsight.vision-media.co.in/rooftop-solar-pv-sector-india-overview-outlook/#:~:text=Yearly%20capacity%20addition%20is%20expected>
  229. Sanjay, P. (2019). India Added 5.4 GW of Solar in 9M 2019, with 2.2 GW Installed in Q3 2019. Mercom India. Available at: <https://mercomindia.com/india-solar-installed-q3-2019/>
  230. Distributed Energy. (n.d.). IRR Expectations from Solar Rooftop Projects. Available at: <https://de.energy/blog/irr-expectations-from-solar-rooftop-projects/>
  231. Asian Power. (n.d.). India on the move towards solar energy. Available at: <https://asian-power.com/regulation/commentary/india-move-towards-solar-energy>
  232. Asian Power. (n.d.). India on the move towards solar energy. Available at: <https://asian-power.com/regulation/commentary/india-move-towards-solar-energy>
  233. Transport Department, Government of NCR (2020). Delhi Electric Vehicles Policy, 2020. Available at: [https://transport.delhi.gov.in/sites/default/files/All-PDF/Delhi\\_Electric\\_Vehicles\\_Policy\\_2020.pdf](https://transport.delhi.gov.in/sites/default/files/All-PDF/Delhi_Electric_Vehicles_Policy_2020.pdf).
  234. www.ETAuto.com (n.d.). 5,645 electric buses sanctioned for 65 cities: Kant - ET Auto. ETAuto.com. Available at: <https://auto.economictimes.indiatimes.com/news/commercial-vehicle/mhcv/5645-electric-buses-sanctioned-for-65-cities-kant/70434005>.
  235. Statista. (n.d.). India: commercial vehicle production 2018. Available at: <https://www.statista.com/statistics/318027/commercial-vehicle-production-in-india/#:~:text=This%20graph%20displays%20India%27s%20commercial>
  236. The New Indian Express. (n.d.). EV makeover: Scooter sharing service provider Bounce gears up for next wave of change. Available at: <https://www.newindianexpress.com/business/2019/dec/31/ev-makeover-scooter-sharing-service-provider-bounce-gears-up-for-next-wave-of-change-2083112.html>
  237. The New Indian Express. (n.d.). EV makeover: Scooter sharing service provider Bounce gears up for next wave of change. Available at: <https://www.newindianexpress.com/business/2019/dec/31/ev-makeover-scooter-sharing-service-provider-bounce-gears-up-for-next-wave-of-change-2083112.html>
  238. Inc42 Media. (2020). Electric Vehicles: The Segment Of Choice To Invest In 2020. [online] Available at: <https://inc42.com/resources/electric-vehicles-the-segment-of-choice-to-invest-in-2020/>.
  239. admin (2016). What benefits do solar-wind hybrid systems bring along with them? - Solar Mango - #1 guide for solar. Solar Mango - #1 guide for solar. Available at: <http://www.solarmango.com/2016/09/25/cost-benefits-solar-wind-hybrid-systems-bring-along/>
  240. PV Tech. (n.d.). Hero launches India's first solar-wind hybrid project. Available at: <https://www.pv-tech.org/editors-blog/hero-launches-indias-first-solar-wind-hybrid-project#:~:text=Not%20only%20does%20this%20smooth>
  241. PV Tech. (n.d.). Hero launches India's first solar-wind hybrid project. Available at: <https://www.pv-tech.org/editors-blog/hero-launches-indias-first-solar-wind-hybrid-project#:~:text=Not%20only%20does%20this%20smooth>
  242. www.ETEnergyworld.com (n.d.). Hybrid wind-solar assets may lower capital costs by 5-7%: Study - ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economictimes.indiatimes.com/news/renewable/hybrid-wind-solar-assets-may-lower-capital-costs-by-5-7-study/65756328>
  243. 2018-19 MNRE Annual Report
  244. The Leading Solar Magazine In India. (n.d.). Wind-solar hybrid systems may raise project IRR by upto 10 Percent. Available at: <https://www.eqmagpro.com/wind-solar-hybrid-systems-may-raise-project-irr-by-upto-10-percent/>
  245. FCBureau (2018). Government estimates 9-11 per cent IRR for renewable projects. The Financial Express. Available at: <https://www.financialexpress.com/economy/government-estimates-9-11-per-cent-irr-for-renewable-projects/1030770/#:~:text=far%20this%20fiscal->
  246. www.ETEnergyworld.com (n.d.). Floating solar is a 300 Gw opportunity for India: Mitesh Patel, Black & Veatch - ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economictimes.indiatimes.com/news/renewable/floating-solar-is-a-300-gw-opportunity-for-india-mitesh-patel-black-veatch/69585066>
  247. www.ETEnergyworld.com (n.d.). Floating solar is a 300 Gw opportunity for India: Mitesh Patel, Black & Veatch - ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economictimes.indiatimes.com/news/renewable/floating-solar-is-a-300-gw-opportunity-for-india-mitesh-patel-black-veatch/69585066>
  248. www.ETEnergyworld.com (n.d.). Floating solar is a 300 Gw opportunity for India: Mitesh Patel, Black & Veatch - ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economictimes.indiatimes.com/news/renewable/floating-solar-is-a-300-gw-opportunity-for-india-mitesh-patel-black-veatch/69585066>
  249. www.ETEnergyworld.com (n.d.). Floating solar is a 300 Gw opportunity for India: Mitesh Patel, Black & Veatch - ET EnergyWorld. ETEnergyworld.com. Available at: <https://energy.economictimes.indiatimes.com/news/renewable/floating-solar-is-a-300-gw-opportunity-for-india-mitesh-patel-black-veatch/69585066>
  250. www.businesswire.com. (2019). India Electric Vehicle Charging Infrastructure Market Report 2019: Drivers, Restraints, Opportunities, Trends, and Forecast up to 2025 - ResearchAndMarkets.com. Available at: <https://www.businesswire.com/news/home/20190813005366/en/India-Electric-Vehicle-Charging-Infrastructure-Market-Report>
  251. Aryan, A. (2020). Battery Swapping-Is It a Success In India? Entrepreneur. Available at: <https://www.entrepreneur.com/article/353581>.



**FINANCIALS**





# Financials



## 1. Sector overview

Financial Inclusion is a key enabler of the 2030 SDG developmental goals where it is featured as a target in 8 of the 17 goals<sup>252</sup>. India has also made significant advancements in the space of financial inclusion. The roll out of Pradhan Mantri Jan Dhan Yojana (PMJDY), a GoI scheme to provide universal access to bank accounts in India, has played a pivotal role in creating a gateway to accessing formal financial services. By 2017, 80 percent of Indians had at least a Basic Savings Basic Deposits Accounts (BSBDA). Since the roll out of the scheme, parallel efforts such as roll out of a universal, biometric-based unique identification system – Aadhar, bolstering of payments infrastructure to enable digital transactions through Unified Payments Interface (UPI), roll out of insurance cover through Pradhan Mantri Suraksha Bima Yojana (PMSBY) and coverage of pension through Atal Pension Yojana (APY) have been made to offer a holistic package of services that improve socio-economic resilience of citizens. These initiatives are further scaffolded by a push by India's Central Bank, RBI for MSMEs, a majority of which are run by entrepreneurs in low resource settings to access credit through commercial banking entities to bolster job creation and overall contribution to the growth and development of the country. The shift to digital channels for delivery and engagement provides a strong opportunity to reduce costs and improve depth of operations through acceptance infrastructure such as improved coverage of Automated Teller Machine (ATM) infrastructure, Business Correspondent (BCs) network to handhold transition to digital platforms and leveraging of increasing mobile penetration for Fintech solutions that enable digital transactions. The private sector can play a significant role in addressing the gaps in making formal financial services universally accessible especially in an ecosystem made favourable by a strong policy and regulatory momentum in India.



## 1.1. Sectoral development needs

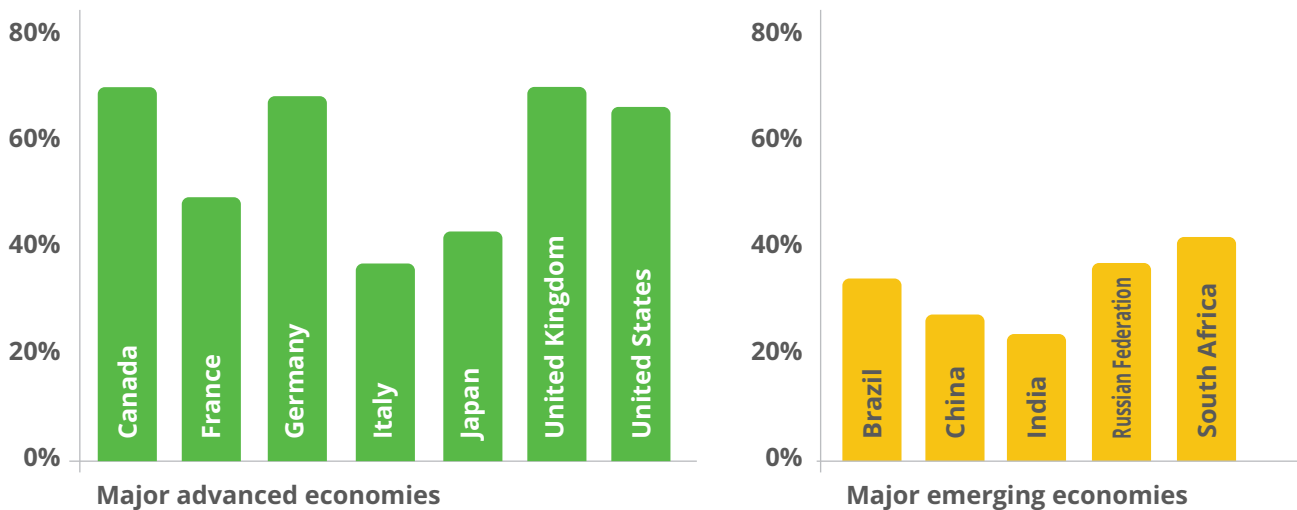
A review of key policy documents<sup>253</sup>, human development reports and stakeholder consultations highlighted the most pressing sectoral development needs as the following:

### 1.1.1. Financial literacy

Information asymmetries in understanding financial concepts hinders consumers to fully engage with financial products in an informed manner. A recent study by a global rating agency

– Standard & Poor, titled – Financial Literacy around the world<sup>254</sup> reports that 24 percent of the adult population in India are financially literate<sup>255</sup>. As the financial services sector in India becomes increasingly more competitive to offer financial products to underserved populations, there is a need to further improve financial and digital literacy outcomes to not only ensure the uptake of these services but also to help new consumers make the best use of these services as per their needs.

**Chart 9: Variation in Financial Literacy Around the World**



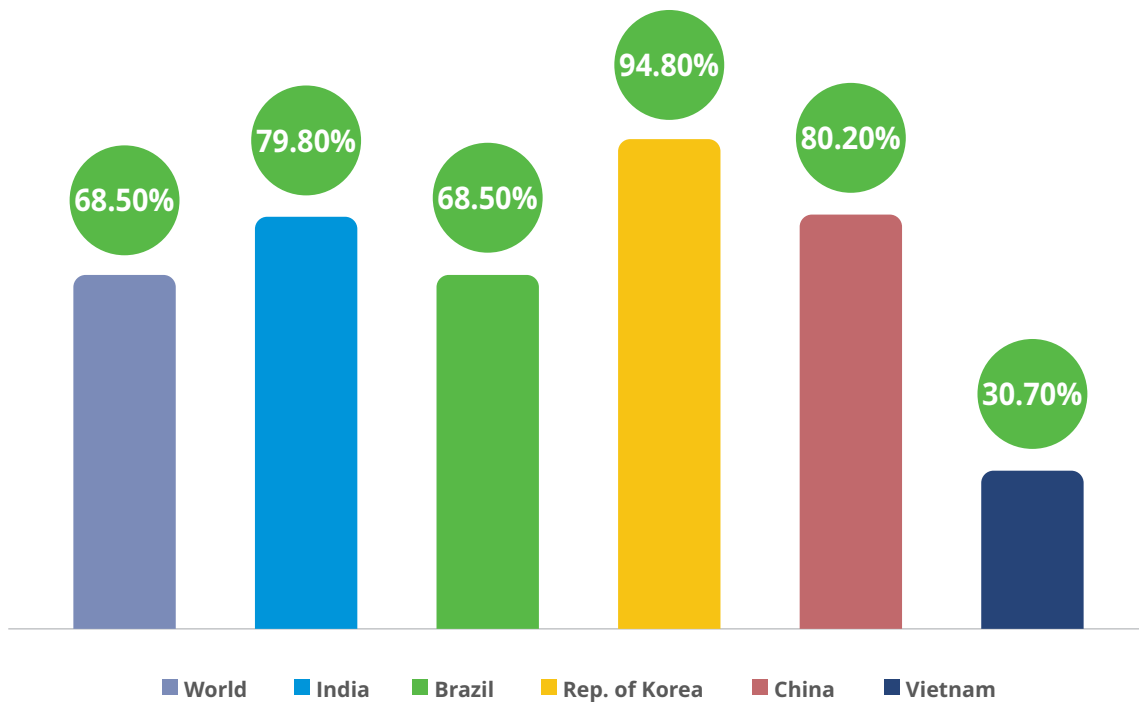
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### 1.1.2. Adoption of formal banking services (SDG 8)

Gol's, PMJDY created almost universal access to bank accounts by opening 0.4 billion BSBDA, across 0.2 billion households that have mobilised close to ~USD 17.6 billion in deposits as of September 2020<sup>256</sup>. The scheme has ensured that by 2017 over 80 percent of Indians had a bank account, a jump of almost 45 percent since 2011. When segmented by income poverty, 77 percent of the bottom 40 percent also had access to a bank account<sup>257</sup>. However, as of 2018, only 43 percent of bank account owners had made any deposits into or withdrawals from their bank accounts<sup>258</sup>. Developments such as cash transfers by Gol through PMJDY accounts for COVID relief

may nudge higher levels of engagement with formal bank accounts. The challenge now is to ensure regular use of these accounts, by helping account holders bridge gaps in financial and digital literacy – a key objective also resonated in RBI's National Financial Inclusion Strategy (NFIS) 2019-24. Besides, generally most transactions take place in cash, creating a need for a stronger digital ecosystem where cash flows to households and businesses digitally, thereby providing them with the incentive to engage with digital channels for onward transactions. Greater engagement levels will help last-mile consumers adopt products such as insurance and pensions and realise the goals of the PMJDY scheme.

**Chart 10: Account ownership with a bank or a mobile money service provider (percent of the population, age 15+) - India and peers compared as of 2017**



Source: data.worldbank.org

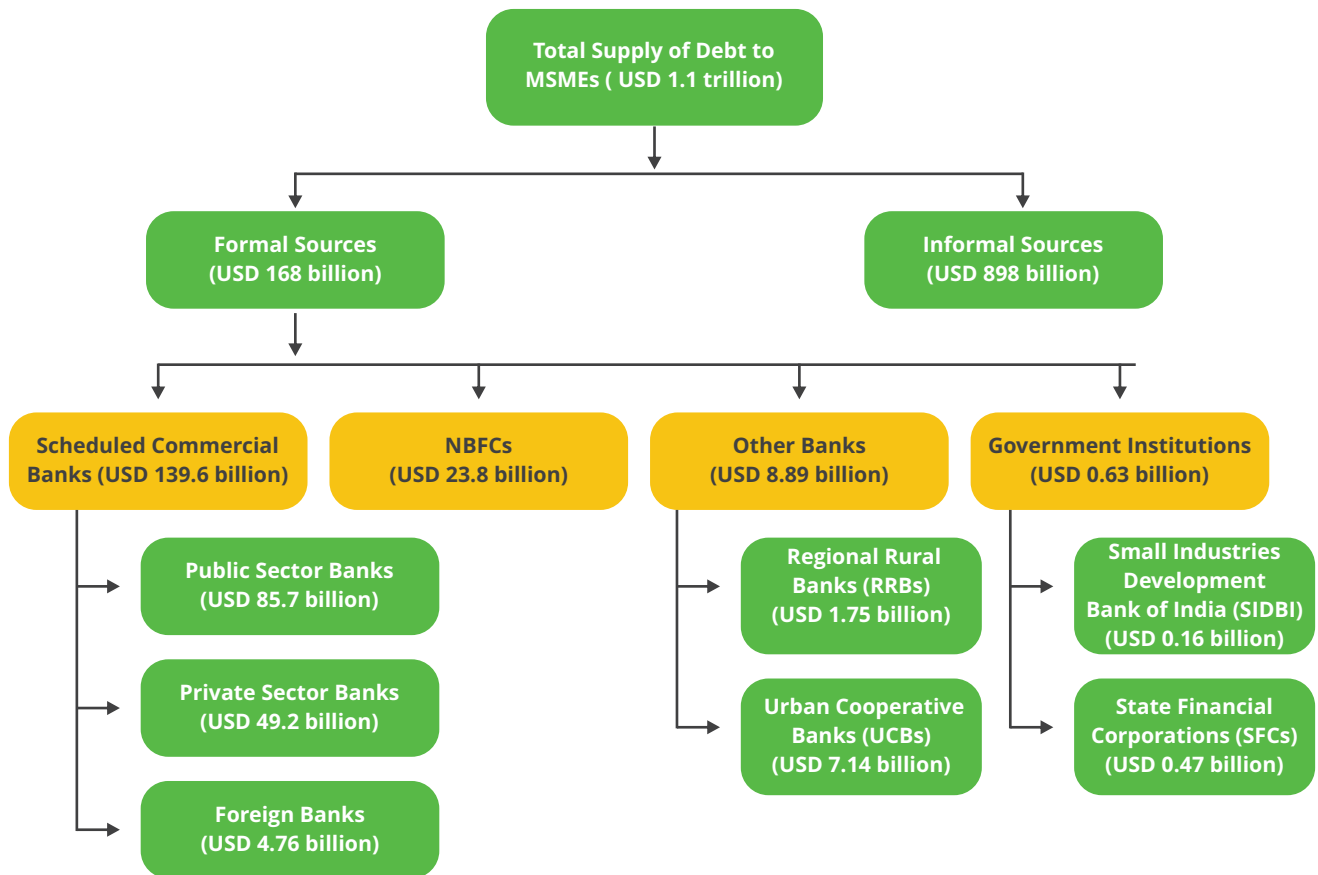
### 1.1.3. Access to credit (SDG 9)

Contribution of MSMEs to India's GDP is 29.7 percent<sup>259</sup> as of 2019 and the share of MSME related products in total export from India during 2018-19 is 48.10 percent<sup>260</sup>. According to the National Sample Survey (NSS), 73rd round conducted during the period 2015-16, MSME sector has been creating 111 million jobs across rural and urban areas in the country, thereby playing a crucial role in employment generation and reducing regional, social and economic

imbalances. However, access to affordable finance has been a concern for the sector<sup>261</sup>. The informal nature of MSMEs coupled with lack of documentation regarding their cash flows, credit histories and governance, leads to hesitation on part of formal financing institutions to optimally serve the sector with credit<sup>262</sup>. The addressable credit gap to the sector has grown at a CAGR of 37 percent to USD 397 billion. As a result, over 84 percent of total demand for credit for MSMEs is serviced through informal sources<sup>263</sup>.



**Figure 19: Total credit supply to Micro, Small and Medium Enterprises in India by source**



**Source:** Financing India's MSMEs: Estimation of debt requirement of MSMEs in India [https://www.intellecap.com/wp-content/uploads/2019/04/Financing-Indias-MSMEs-Estimation-of-Debt-Requireme-nt-of-MSMEs-in\\_India.pdf](https://www.intellecap.com/wp-content/uploads/2019/04/Financing-Indias-MSMEs-Estimation-of-Debt-Requireme-nt-of-MSMEs-in_India.pdf)

#### 1.1.4. Digital payments infrastructure for the underserved, rural population (SDG 8)

The 2016 Financial Inclusion Insights survey found that only 30 percent of the Indian population was digitally financially included and were able to access their accounts through electronic means such as debit and credit cards, electronic money transfers, or mobile phones.<sup>264</sup> Moreover, PMJDY facilitated bank accounts also share a close link with Gol's Direct Benefit Transfer \*(DBT) mission that hopes to reduce leakages in BoP segments' access to subsidies as well as provide a primary use case for bank account usage.<sup>265</sup> There is an opportunity for more innovation to create payment solutions and products that are suited to the BoP segment, many of whom are first time users. This includes domestic migrants that are heavily dependent

upon transparent and affordable channels for remittances. Some business models in the fintech/payments space appear to have struggled because their services do not meet the differentiated needs of Indian populations, particularly with the vernacular market remaining largely underserved.<sup>266</sup>

#### 1.1.5. Access points for banking transactions (SDG 8)

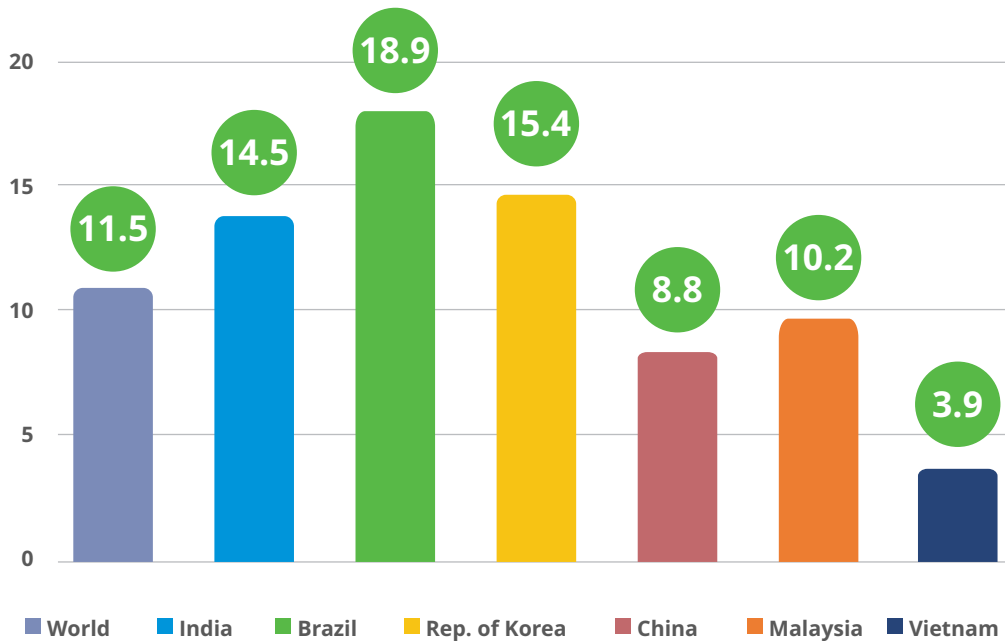
One of the reasons for low engagement with the formal banking system is the low penetration of banking infrastructure. As seen in Chart 11, India has only 14 bank branches per 100,000 population totalling to 120,000 branches across the country of which only 30 percent are in rural areas.<sup>267</sup> In contrast, two-thirds of the Indian population reside in rural areas. Additionally,



although the number of ATMs has been about 30 percent YoY growth in the number deployed in the country since 2008, ATM penetration on a per capita basis continues to be lower in comparison to other countries (Chart 12). As 71 percent of transactions at the point of sale (POS) are still done through cash in India, there is a

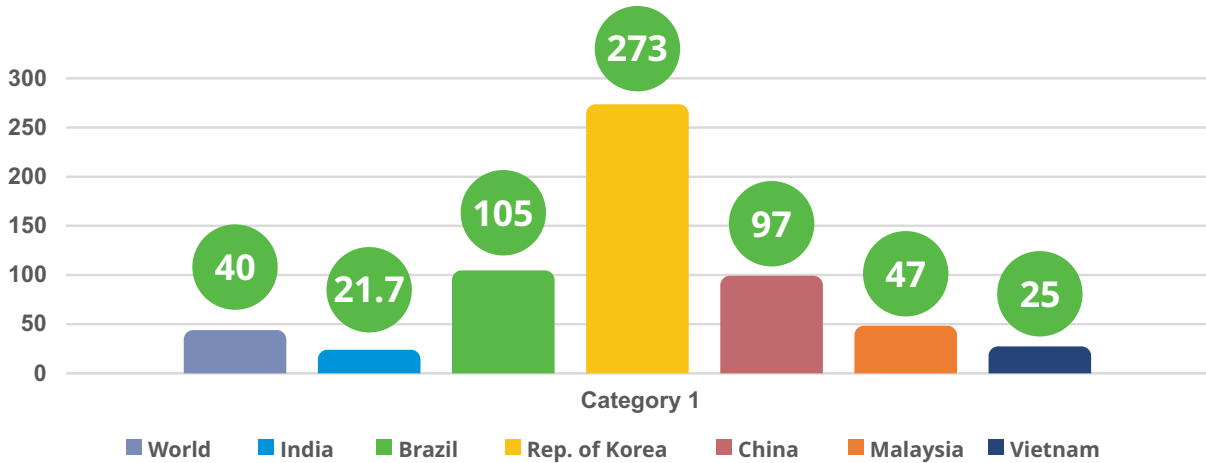
need to deploy more ATMs, particularly in Tier III to Tier VI areas of the country<sup>268</sup>. Infrastructure such as micro-ATMs facilitated through BCs that can help handhold the engagement have also proved to be useful in increasing usage and adoption of formal banking services.

**Chart 11: Commercial bank branches per 100,000 adults - India and peers compared as of 2018**



Source: data.worldbank.org

**Chart 12: ATMs per 100,000 adults - India and peer countries compared as of 2018**



Source: data.worldbank.org



### 1.1.6. Penetration of products to build socio-economic resilience<sup>269</sup> (SDG 1, SDG 3)

Over 80 percent of the Indian workforce is employed in the informal sector and have limited or no social protection measures in place. Financial products like insurance and pensions are crucial for helping them build socio-economic resilience, and mitigate the impacts of financial emergencies, more so for individuals and households in low resource settings that have limited means for recourse in the event of socio-economic shocks. As of 2018, the life insurance penetration in India was at only 2.74 percent and the coverage of non-life insurance was even lower at 0.97 percent for the same period.<sup>270</sup> In addition, only 24 percent of the population in the pensionable age are covered under pension in India. Though the APY accounts have helped cover over 17 million members of the BoP workforce, it is still gaining traction, with 50 percent of the accounts having recorded transactions in the last year.<sup>271</sup>

### 1.1.7. Unequal access to finance by women entrepreneurs

India currently ranks 70th in the Female Entrepreneurship Index and demonstrates the third-highest gender gap in entrepreneurship across the world. A key reason for this is that Women entrepreneurs find it hard to raise finance and have limited access to financial services, despite evidence suggesting that women-owned enterprises are profitable segments that demonstrate greater brand loyalty, higher savings percentages and similar repayment rates as male-owned enterprises.

### 1.1.8. Impact of COVID-19

The broad-based loss of cash flows due to the COVID containment measures has triggered a chain of non-payments throughout the economy, including to the financial sector<sup>272</sup>. Uncertainty around future income due to the spread of the pandemic including unpredictability around its decline and lowering of purchasing power of customers further endangers the MSMEs to smoothly ride out the pandemic. According to a survey conducted by Microsave Consulting in June 2020, nearly 75 percent of MSMEs have reported a loss in income<sup>273</sup>. Given the current

crisis and its impact on capital markets and businesses across, banks and NBFCs will face clients who are potentially experiencing stressed financial conditions, including deterioration of their credit ratings and credit quality. There is also a high potential for current loans turning into NPAs<sup>274</sup>.

However, the crisis has proven to be an opportunity for Fintech apps. These have seen a surge in consumers using digital payment apps for transactions since the lockdown began in India. UPI, an instant real-time payment system operated by the National Payments Corporation of India (NPCI), processed 1.23 billion transactions worth ~USD 33 billion in June 2020 alone, the highest value recorded by the channel in a month.

## 1.2. Policy momentum

Financial Inclusion is listed as one of the key growth drivers for the Indian economy in NITI Aayog's Strategy for New India @ 75. In addition, the 2020 Voluntary National Review submitted by NITI Aayog towards India's commitment and progress on SDG goals has noted financial inclusion to be an important performance indicator to drive commitments made by India across SDGs to foster social protection and access to financial services. Further, RBI has launched the National Financial Inclusion Strategy (NFIS) 2019-24 to follow a target-based approach to achieve financial inclusion objectives for India with a key focus on last-mile delivery of services.

Strategy for New India @ 75 prioritizes banking for the unbanked through universal access to bank accounts and digital payment services, securing the unsecured populations through insurance and asset diversification and better access to credit at affordable prices for those that are presently excluded as the key objectives under its financial inclusion mandate. To actualize the GoI's vision to further financial inclusion, the government and RBI have taken steps to foster innovation by leveraging the growing access to internet and mobile phone usage, improve access to formal banking services, create opportunities for private sector participation, and provide regulatory guidelines

for improved access to such services in rural areas. In addition, RBI has also issued licenses and regulatory guidelines for various banking entities with distinct functions to cater to credit and liability needs of customers with a focus on financial inclusion. Such entities are NBFC, MFIs, Small Finance Banks (SFBs), Payment Banks, RRBs, Fintech companies for furthering digital financial inclusion, among others. Insurance Regulatory and Development Authority of India (IRDAI), the insurance regulator for India has also committed to promoting innovations in designing need-based policies and laying down regulatory obligations to ensure policyholder protection.

*A list of key policy initiatives driving the growth of Financials (financial inclusion) sector in India is available in Annexure II.*

### 1.3. Private sector participation

Recent investment trends in the BFSI sector have been marked by deals in banks as well as NBFCs that continue to draw significant investor interest. NBFCs have created a strong business case for segments that are either inaccessible or unattractive for traditional banks and MSME lending continues to be a significant opportunity to meet the large unaddressed debt demand. Overall, in the last five years, BFSI, among other sectors have seen above-average returns and the highest multiples with investments largely

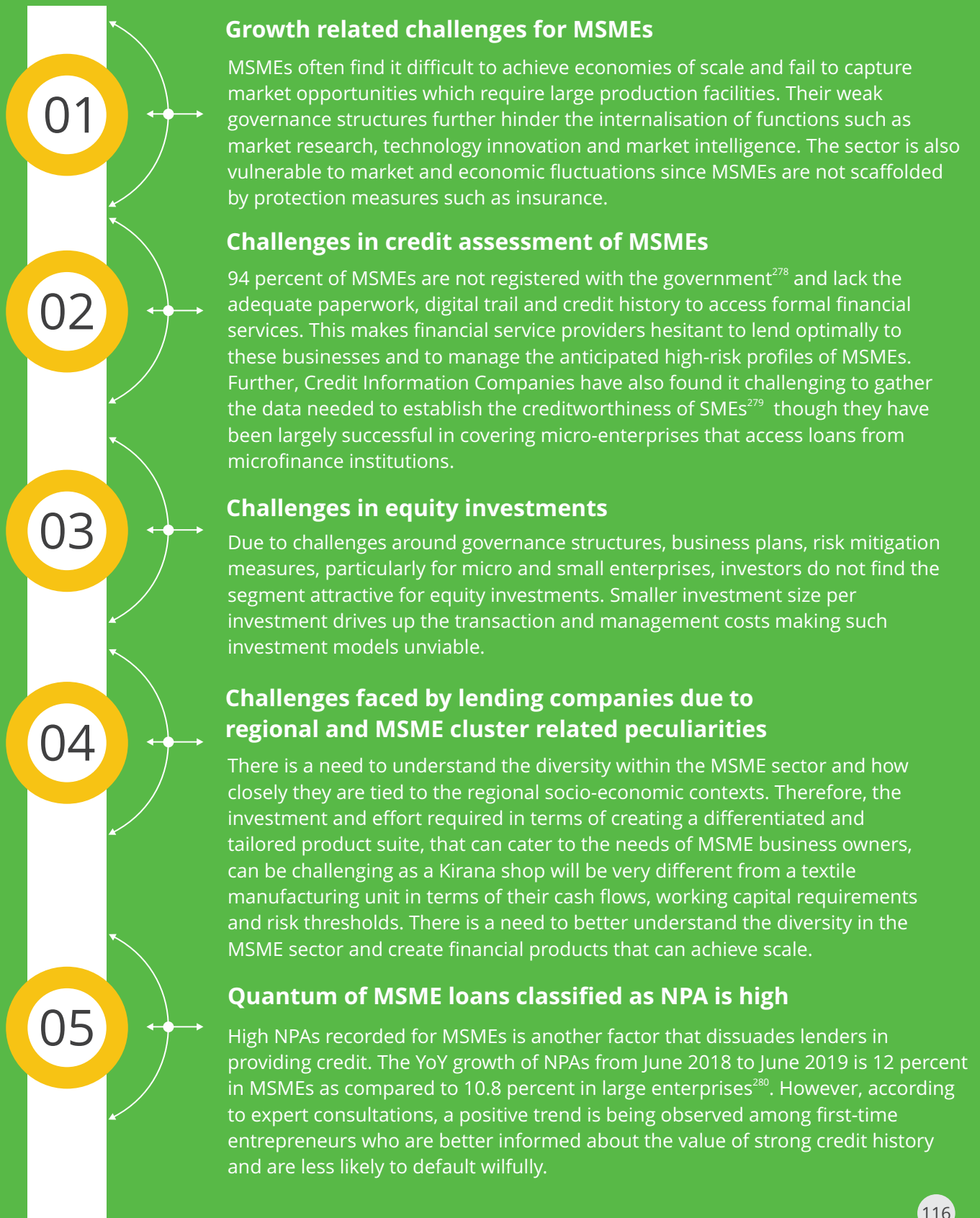
concentrated in NBFCs. The MSME debt demand is expected to almost double in the next five years and presents a significant opportunity as this demand remains largely unaddressed. Multiple lending entities including banks, NBFCs, fintech firms and e-commerce players are trying to tap into this new opportunity which is likely to gain investor traction in the future<sup>275</sup>. Together with VC deals made in the NBFC sector, the total investments made in the space stood at USD 9.1 billion for 2019, up by 20 percent from 2018. In 2019, a total of 188 PE/VC deals were made in the financial services sector, highest recorded for any sector<sup>276</sup>.

Fintech continues to be the largest cross-sector technology segment in India for PE investments, both in terms of deal value and volume, substantially growing from USD 0.7 billion (49 deals) in 2018 to USD 2.4 billion investments (83 deals) in 2019. The key sub-segments within the Fintech space that have drawn most investments are payments, lending followed by Insurtech and wealth management in order of deal volumes. Investments in payments and lending companies, together account for nearly 80 percent of total investment in fintech in 2019. Return multiples on PE exits have, on the whole, seen an upward trend for the BFSI sector averaging at 3.8, greater by 0.3 points on the overall cross-sectoral average of 3.5<sup>277</sup>.



# Bottlenecks for private sector investments in the Financials sector

## For MSMEs





## For Low-Income Households

06

### High costs of underwriting for last-mile population

Underwriting for financial products requires credit history, asset-based collateral or proof of a steady cash flow that low-income households are often not equipped with. This is especially challenging for recently operational businesses, with no priors that often have to work with sub-optimal credit lines, stifling their growth prospects.

07

### Lack of viable models in the social protection space

Investors have traditionally chosen to invest only in mature insurance companies that serve the middle and high-income segments where business models are viable with strong commercial returns. There are challenges in underwriting costs for small-ticket premiums for low-income populations. Though there are promising Insurtech start-ups with innovative distribution solutions for claims management, fraud detection, customer satisfaction, grievance redressal, among others they are still on the fringes and yet to achieve scale.

08

### Regulatory hurdles for White Label ATM Operators (WLAOs)

Due to cash management norms announced by RBI in 2018 that required banks and ATM managed service providers to revamp technology including electronic surveillance at ATM premises, digital locks, upgrading operating systems, etc., led to stagnation in the growth of these business models. However, expert consultations with investors suggested that business models in this space will bounce back given RBI's push for greater ATM penetration<sup>281</sup>, especially in underserved locations.

09

### Low penetration of internet services in rural areas

Even though India offers one of the most affordable internet services across the globe, the penetration of internet and data services in rural areas is only 27 percent. Further, the availability of service is extremely fragmented with the top 8 metros accounting for 63 percent of total internet users<sup>282</sup>. The non-uniformity of seamless data services creates hurdles for business models that seek to leverage technology to scale rapidly and creates a challenge for the usage and adoption of financial services at last mile.





### Tailwinds in the Financials sector promising greater flow of commercial capital

The bottlenecks notwithstanding, investors have been bullish in the BFSI sector. Emerging technologies that improve digital outreach of financial services promise to substantially reduce operational costs and policies such as universal banking schemes and a largely amenable and well-regulated sector makes for a strong case from an investment point of view. Initiatives such as creation and scaling of digital infrastructure like UPI has further strengthened the Digital India story as the platform continues to record higher volumes of transactions with 138 percent YoY growth since 2018<sup>283</sup> and average growth of 8 percent every month since. The platform, that currently hosts 168 banks, offers opportunities for Fintech players to leverage an interoperable, easy-to-use platform to move beyond urban and peri-urban markets to serve underserved regions in the country. However, to make use of these tailwinds, the penetration of internet services and the provision of supporting infrastructure in currently underserved regions of the country needs to be bolstered. To solve for challenges around assessing credit history and risk profile of MSMEs, RBI announced the establishment of a Public Credit Registry (PCR) in April 2018 and is currently in the process of identifying implementation partners. The PCR is envisioned as a centralized and state-owned database that will aggregate financial and non-financial information from several databases. This public utility platform has the potential to democratize the availability of data and create a seamless onboarding experience for MSMEs by financial institutions and allow service providers to assess and manage risk thresholds for their customers efficiently. Fintech firms are also scaffolding their business models using alternative data such as GST data, utility bills payment data, to not just assess the capacity of their customer to service a loan but to also assess behavioural patterns to determine their willingness to repay.

Gol's push for universal insurance coverage also opens up opportunities for insurance players. Coupled with growing interest on part of Fintech players to move beyond urban and peri-urban markets, investors believe that the time is ripe for more complex products such as insurance to

become part of the product basket. The use of alternative data has the potential to change the insurance industry by triggering changes in customers' behaviour to achieve better risk-based product pricing.

### 1.4. Priority subsectors

Through a review of the subsectoral development needs and policy priorities, following are the key development themes that emerged as priority areas for the Financials sector with particular emphasis on last-mile customers from underserved geographies:

1. Access to credit for MSME segments for their working capital needs
2. Access to equity by MSMEs for business growth and expansion
3. Fintech platforms for lending and payments services
4. Asset lean banking infrastructure to provide financial services
5. Insurance services with a primary focus on life and health
6. Lending models with particular focus on value chain financing for sectors such as agriculture

Consultations with private sector investors, particularly PE funds, also suggested wealth management and investment services as one of the focus sub-themes under Financials. However, most of the business models in this area, including the growing WealthTech-based models, are currently designed for and serve high-income segments with an increasing interest in the middle-income population segments. These do not serve the low-income segments as of yet and do not find the demand-side dynamics as commercially viable.

The development and policy priority themes were further pressure tested with the sector and investment experts. Access to Credit for MSME segments, Fintech platforms for lending and payment services, Asset lean infrastructure for banking services emerged as key development needs that can be viably addressed by a greater flow of commercial capital in proven business models that are already mature or are

emerging with the potential to scale with promising returns.

Experts unanimously agree on the importance of Insurance products to provide social protection and improve the financial resilience of customers and thereby also creating a stronger market for capital to flow in. However, commercially viable models are few and far between this subsector owing to challenges that have been elaborated

under section 1.3 of this chapter. This subsector has been shortlisted as a white space given the projected growth of business models over a 5 to 10 years horizon and with a more amenable regulatory framework that IRDAI has committed to<sup>284</sup>.

In alignment with SASB's SICS, the subsector shortlisted for the Financials sector is **Consumer Finance**.

**Figure 20: Subsector shortlist for Financials sector**

		Alignment to development needs and policy priorities		
Shortlisted subsectors		High (subsectors highlighted as 'top' priorities by development experts)	Medium (subsectors mentioned as 'priority' by development experts)	Low (subsectors not mentioned by development sector experts)
Private investor interest	Conducive for private sector participation (subsectors with PE investments)	<ul style="list-style-type: none"> <li>● <b>Subsector: CONSUMER FINANCE</b> MSME financing through digital and offline models- CO Fintech platforms for differentiated financial products to last-mile customers</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: CONSUMER FINANCE</b> Asset lean banking infrastructure for last-mile outreach - WLAOs, POS infrastructure - Agent Network Management (ANM)</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: CONSUMER FINANCE</b> WealthTech platforms to transform traditional wealth and investment management services</li> </ul>
	Significant barriers to scale (subsector with commercial bottlenecks to investment)	<ul style="list-style-type: none"> <li>● <b>Subsector: INSURANCE</b> Digital and offline affordable insurance products</li> <li>● <b>Subsector: PENSION</b> Digital and offline pension products</li> </ul>	<ul style="list-style-type: none"> <li>● <b>Subsector: SOLAR TECHNOLOGY &amp; PROJECT DEVELOPERS</b> Manufacture of solar utility products Trading/supply of solar energy- based products to last- mile consumers</li> </ul>	
	Low scope for commercial investor participation (subsectors with regulatory barriers)	<ul style="list-style-type: none"> <li>● <b>Subsector: CONSUMER FINANCE</b> Fintech platforms for value chain financing for sectors like Agriculture, Clean energy</li> </ul>		

Source: UNDP Investor Map research



## 1.5. Region ecosystem for the sector

Though microfinance institutions in India already have a presence in 615 of 739 districts, 80 percent of the total portfolio outstanding is accounted for by 210 districts. 11 percent of the total loan outstanding for these institutions that include Banks, NBFCs, SFBs and not-for-profit Microfinance Institutions (MFIs), is constituted by districts covered under the Aspirational Districts Programme, an outcomes-focused governance programme to improve India's most socio-economically challenged districts<sup>285</sup>. The presence of these traditional models is mostly concentrated in certain pockets within a State and subsequently within the district. Cost of operations, market dynamics, high-risk profiles in regions with limited economic activity, lack of key infrastructure may bar these institutions from going deeper. For example, Tamil Nadu's share of total portfolio outstanding is 15 percent, the highest for any State in India. Yet, most of the banking/microfinance activity is in only 10 districts of the 38 in the State<sup>286</sup>.

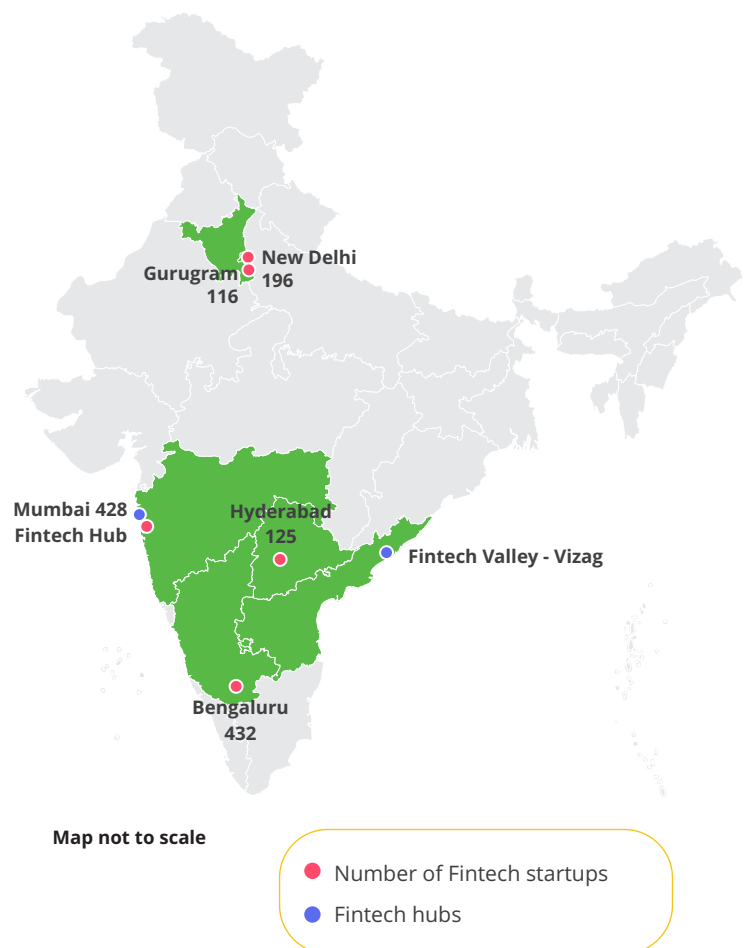
Fintech platforms have the potential to bridge the geographical gap in reaching the last mile, underserved regions, by leveraging the growing mobile phone penetration and data connectivity to create need-based products and low cost, affordable channels for delivery. However, most of the Fintech companies are headquartered in metro cities and struggle to run efficient assessments to optimally serve clients at the last mile. Collaborative business models where Fintech companies tie up with NBFCs and ANM companies (BCs) to take products/delivery channels to an already captive market is one of the options for exponential scale and depth of outreach.

It is also important to note the presence of manufacturing and service clusters where financial service providers can focus their attention and cater to the MSME sector. The state of Uttar Pradesh has the largest number of estimated MSMEs with a share of 14.20 percent of the total MSMEs in the country. West Bengal comes as a close second with a share of 14

percent, followed by Tamil Nadu and Maharashtra at 8 percent<sup>287</sup>.

Additionally, Remittances sent along migration corridors are a promising avenue for business models looking to strengthen their presence in the payments space. In a pre-pandemic situation, these migration corridors contributed almost ~USD 10.2 billion volume of transactions hosted by Fintech companies and Payment Banks and facilitated by BCs,<sup>288</sup> with over 60 percent going to Bihar and Uttar Pradesh. Odisha, Jharkhand, Tamil Nadu and Andhra Pradesh are some of the other receiving states.

**Chart 13: Major Fintech Clusters in India**



Source: Invest India  
<https://www.investindia.gov.in/sector/bfsi-fintech-financial-services>



Also, RBI has issued guidelines for different banking entities and financial service providers to prioritize regions for operations. For example, WLAOs are encouraged to enhance the spread of ATMs in semi-urban and rural areas, specifically in Tier III to Tier VI areas, where bank-owned ATM network was not growing<sup>289</sup>. Similarly, guidelines issued in 2008 stipulates that the distance between the place of business of a BC and the

base branch, ordinarily, should not exceed 15 km in rural, semi-urban and urban areas and 5 km in metropolitan centres. Guidelines for NBFC, MFIs, SFBs and Payment Banks have also been issued by RBI and are available on the central bank's website.

*(State-wise SDG Maps and Indicators are documented in Annexure IV)*

## 1.6. Investment Opportunity Areas - Overview

Figure 21: Investment Opportunity Areas shortlist for Financials Sector

Subsector	Consumer Finance			Insurance
Opportunity Areas	MSME financing through Fintech and traditional models	Asset lean acceptance infrastructure for last-mile banking	Fintech platforms facilitating payments for low-income segments	Digital and offline insurance for low-income segments
Investors identified area as fundamentally marketable?	✓	✓	✓	?
Scale Potential	Credit gap to MSMEs in India stands at <b>USD 397 bn<sup>1</sup></b> with a potential to serve 63.5 million MSMEs <sup>2</sup>	The market for ATM managed services is expected to be at <b>USD 0.5 bn<sup>3</sup></b> with a potential to serve 0.8 billion rural population <sup>4</sup>	Market size of Fintech and alternative finance industry <b>USD 92 bn<sup>5</sup></b> with a potential to serve 63.5 million MSMEs, 400 million informal workers <sup>6</sup>	Estimated market size of medical devices industry in India is <b>USD 280 bn<sup>8</sup></b>
Proven in-market as evidenced by investors interest?	Commercial models at scale that have attracted significant PE investments both for the traditional offline and the digital online business models. <b>In 2019, 80% of total deal value for PE investments in Fintech was towards lending platforms</b>	Promising WLAOs <b>have attracted PE investments in the past</b> . Investors opine that the sector will rebound with push from the central bank	Promising models have attracted PE investments. <b>Average deal size for Fintech payment platforms grew by 775% CAGR between 2018-19<sup>7</sup></b>	Successful, commercially viable models to serve last mile, underserved customers are still evolving but have not reached scale
Opportunity type	Mature	Mature	Emerging	<b>White space:</b> Strong scale potential but not successful business models
Emerging business model(s)	<ul style="list-style-type: none"> <li>▶ Debt financing for MSMEs through traditional offline models and digital online models</li> <li>▶ Digital platforms offering Trade Receivables Discounting System (TReDS) to facilitate discounting of invoices and bills of exchange for MSMEs to access credit</li> <li>▶ NBFCs, MFIs servicing micro-entrepreneurs</li> </ul>	<ul style="list-style-type: none"> <li>▶ ATM Managed Services to facilitate last-mile access to banking services</li> <li>▶ ANM companies to facilitate access to financial services as Points of Service</li> </ul>	<ul style="list-style-type: none"> <li>▶ Fintech platforms offering payment services to last-mile customers</li> </ul>	<ul style="list-style-type: none"> <li>▶ Traditional Insurance companies offering affordable life and general insurance products for low income households</li> <li>▶ Insurtech companies offering affordable life and general insurance products for low income households through digital platforms</li> </ul>



#### Sources:

1. IFC (2018). Financing India's MSMEs: Estimation of Debt Requirement of MSMEs in India. Available at: <https://www.intellectcap.com/wp-content/uploads/2019/04/Financing-Indias-MSMEs-Estimation-of-Debt-Requirement-of-MSMEs-in-India.pdf>.
2. SME Finance Forum. (2018). MSME Finance Gap. Available at: <https://www.smeffinanceforum.org/data-sites/msme-finance-gap>
3. Ken Research (2018). Bullion Management Market India, Cash Circulation Trend India, Importance of Cash India, Impact of Demonetization India, ATM Security Market India, Number of ATM Transactions India, India Cash Management Services, India Cash Management Services Market Value. Available at: <https://www.kenresearch.com/blog/2018/09/india-atm-cash-management-services-market-is-expected-to-reach-over-inr-4100-crore-by-fiscal-year-ending-march-2023-ken-research/#:~:text=India%20ATM%20Cash%20Management%20Services>.
4. ATM PoS. (June 2020.). ATM, Acceptance Infrastructure and Card statistics for the month of June 2020. Available at: <https://rbidocs.rbi.org.in/rdocs/ATM/PDFs/ATM12BAC674B07F4949B581713AFAC63691.PDF>
5. www.investindia.gov.in. (n.d.). BFSI – Fintech & Financial Services. Available at: <https://www.investindia.gov.in/sector/bfsi-fintech-financial-services>.
6. COVID-19 and Women Informal Sector Workers in India. (2015). Economic and Political Weekly, 55(35), pp.7–8. Available at: <https://www.epw.in/journal/2020/35/commentary/covid-19-and-women-informal-sector-workers-india.html>
7. Bain and Company, and IVC Association. India Private Equity Report 2020. Available at: [www.bain.com/globalassets/noindex/2020/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://www.bain.com/globalassets/noindex/2020/bain_report_india_private_equity_report_2020.pdf).
8. PwC (2019). Competing in a new age of insurance: How India is adopting emerging technologies. Available at: <https://www.pwc.in/assets/pdfs/consulting/financial-services/competing-in-a-new-age-of-insurance.pdf>.

IOAs such as 'Insurance for low-income segments through offline and digital channels' came up as an IOA with a potential for strong development impact; the commercial viability of such models remains unproven. Business models in these 'white spaces' currently face significant commercial hurdles and need to develop further from a policy and business innovation standpoint, before they attract large-scale commercial private investments.

'MSME financing through digital and offline channels', 'Asset lean banking infrastructure for last-mile outreach' and 'Fintech platforms for facilitating payment products' on the other hand, not only have the potential to address key development needs but have also demonstrated interest from a range of private sector investors. Companies in this IOA have been able to demonstrate profitability and offer successful exits to early investors. Continued commercial private sector interest is expected in this 'mature IOA'. *(Please refer to Annexure III for detailed analysis of the shortlisting process followed to arrive at the final IOAs)*

## 1.7. Financials Investment Opportunity Areas Deep Dive

### 1.7.1. MSME financing through digital and offline channels

The COVID-19 pandemic has posed challenges to the growth of MSMEs due to the shutdown of economic activities following the lockdown protocol announced in March 2020.

Considerable efforts have been made by GoI to create a more enabling environment for MSMEs to access financial services including efforts to minimize imports to encourage uptake of locally manufactured products.

Initiatives such as Public sector banks (PSB) online loans in 59 minutes allows access to an online marketplace for businesses to access loans between ~USD 1,400 and ~USD 684,000. The scheme aims to ease access to credit, reduce the time taken for the loan approval process and avoid opportunity costs that are involved for businesses to create a relationship with the banking institution. GoI has also announced monetary measures to provide MSME units with collateral and guarantee free loans to help

resume business activity and safeguard the employment of people working for these units. An upcoming Public Registry System that aims to democratize data sharing between different financial entities, the regulator, as well as businesses and individual customers seeking financial products, is also being facilitated by the central bank. To innovate access to finance for MSMEs, RBI has also issued TReDS licenses to three private sector companies to create an online marketplace to match financiers with businesses for the financing of business receivables of MSMEs<sup>291</sup>. However, most of these initiatives are applicable for MSMEs that are registered with Gol and are GST compliant. 99.8 percent of MSMEs that primarily lie in the micro segment remain outside the ambit of such initiatives and according to expert consultations, are catered to by microfinance institutions through unsecured loans.

The private sector has risen to the challenges faced by MSMEs, utilizing the progressive policy and regulatory environment to innovate models to combat them. Some of the interesting business models that were highlighted during consultations with sector experts and investors are:

- **Fintech lending models**

Also called Alternative Lending models, Fintechs operating in the lending space cross-sell by partnering with a licensed commercial bank or with a NBFC though some are also applying for NBFC licenses. These companies leverage technology to utilize alternative data such as GST that allows an insight into business parameters such as inputs, value, place of business, amount of taxes levied to derive information about business book size, assess financial risk appetites and gauge capacity to service further debt obligations<sup>292</sup>. Using such alternative data allows Fintechs to service high-risk profiles and provide unsecured loans with low or zero collateral. Fintech lenders are also offering invoice

financing as a short-term working capital facility based on unpaid invoices of MSME clients/customers connecting borrowers with lenders. Experts believe that building credit assessment and collection processes will be key to scale for the Fintech lending business models

- **Cluster financing models**

Cluster-based approach to lending provides a full-service approach to cater to the diverse needs of MSME business unit operating in a particular region and within a distinct, well-defined business cluster. Financial service providers have been using this approach to identify clusters and organize them by similar data points that allow for predictability around businesses' capacity to service debt, risk profiles and product needs allowing them to scale quickly with lower operational costs to reach business units with similar profiles<sup>293</sup>

- **Traditional microfinance models**

Using the Joint Liability Group (JLG) model, the MFI sector currently services 32.2 million customers that are primarily from the micro and small enterprise segments. NBFCs operating in this space have a proven, at-scale business model and have gradually moved from attracting capital from impact investors to large capturing PE funds. Investments in lending platforms, SFBs and NBFC-MFIs have seen successful exits within a 5 years' timeframe. Consultations with experts suggested that if these traditional MFI models were to transition to Fintech based models, they will have a strong competitive edge due to the in-depth experience and understanding of low-income segments

Therefore, MSME financing through digital and offline channels has been shortlisted as a key Investment Opportunity Area



### 1.7.1. Micro, Small and Medium Enterprises financing through digital and offline channels - Market Insights

- Overview:**

- » Investors can focus on Fintech and traditional lenders that provide secured and unsecured loans to MSMEs for their business, working capital, growth and expansion needs

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- Need case:**

- » 63 million MSMEs in India contribute significantly to India's GDP, total exports and provide over 111 million jobs across rural and urban areas. However, these enterprises are financially constrained with 84% of MSMEs turn to informal sources for credit
  - » Access to credit is compromised because businesses in this segment are not formally registered, lack of documentation regarding their cash flows, credit histories and governance structures
  - » Investment in this IOA can contribute directly to **SDG 1, SDG 8, SDG 9** and indirectly to **SDG 2, SDG 3, SDG 5, SDG 10** and **SDG 17**

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- User or beneficiary:**

- » MSMEs that face challenges to establish their credit-worthiness and access formal line of credit at affordable interest rates
  - » Low-income/middle-income households that draw their primary income from MSME enterprises

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- Economic factors:**

- » **Credit gap to MSMEs stands at USD 397 billion as of 2020** with a potential to service over 63 million MSME units
  - » Examples of exit activity in this space have shown IRRs upwards of 50%. Investments in this space have provided higher returns than the benchmark 20-30% the investors expect from emerging markets like India
  - » NBFCs and SFBs have achieved scale and profitability in less than 5 years of operation in this space. Investors in Fintech models also believe that tech based, cost efficient models may also start turning in a profit as early as within 2 years of setting up operations

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- Enabling factors:**

- » Lending to MSMEs is covered under PSL norms allowing NBFCs and Fintechs to secure low-priced debt from banks
  - » RBI has released an 'enabling framework for regulatory sandbox' for Fintechs and other financial institutions to test digital financial service innovations
  - » The vertical has a strong partner environment with participation from commercial investors, impact investors and foundations

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- Risk factors:**

- » Low availability of reliable data to determine credit-worthiness of MSMEs and lack of collateral can hinder optimal supply of credit for their business needs
  - » Fintech models for credit assessment and underwriting could lead to a typecasting customer profiles potentially pushing out certain customer segments
  - » Information asymmetries and low financial literacy, especially among low income segments that might lead to frauds, data leakages

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- Impact management:**

- » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), as the outcome is likely to be positive and intended as access to credit for income generating activities for underserved consumers builds financial resilience of households and businesses

Source: UNDP research for India Investor Map

### 1.7.2. Fintech platforms for facilitating payment transactions

Strengthening the payment infrastructure is one of the key performance metrics that has been set out in the NFIS 2019-24<sup>294</sup>. Even though at the point of sale, cash remains a dominant mode of transaction, payments through digital modes have picked up pace – first post demonetization and more recently due to social distancing

norms that followed the spread of the COVID-19 pandemic. By the end of August 2020, 168 banks were part of the UPI network with transactions of ~USD 39.7 billion and the volume of transactions at ~USD 1.6 billion<sup>295</sup>. These include Payment Banks, a new class of banking institution licensed by RBI in 2014, to provide payments/remittance services to migrant labour workforce, low-income households, small businesses, other



unorganised sector entities and users. India is forecasted to see the fastest growth in digital payments transaction value between 2019 and 2023 with a CAGR of 20.2 percent ahead of China and the United States<sup>296</sup>. Increased digital payments transactions, especially among the newly banked PMJDY beneficiaries can also lead to augmentation of their digital financial footprint, allowing for them to access more complex financial products like credit, insurance, among others. Another important use case for digital payments infrastructure is remittances. India's internal remittances transactions are estimated to be in the volume of ~USD 10.2 billion annually hosted by Fintech companies and Payment Banks and facilitated by BCs.

Gol has made significant advances to push for digital payments and to encourage adoption of platforms such as National Electronic Funds Transfer and Real Time Gross Settlement System facilities that are offered ubiquitously with savings bank accounts. The launch of UPI, Bharat Quick Response (QR) code and Aadhar-enabled Payment System (AePS) by NPCI has resulted in the roll-out of interoperable payment services amongst Fintechs and incumbent institutions, leading to greater usage of digital payments across merchants and customers.

Fintech startups are competitively looking for gaps in the ecosystem that can be addressed by using innovative tech-based solutions such as big data analytics, artificial intelligence, blockchain, Internet of Things (IoT) and real-time payments. Support services to address client grievances,

troubleshooting and in case of customers with low digital literacy-handholding, are becoming important parts of seamless payment experience. Experts believe that the rise of alternative distribution and marketing channels for awareness and lead generation, engaging customers through gamification techniques in a collaborative environment leading to better customer experience and reflecting on client retention are going to be main drivers for Fintechs in the payment space<sup>297</sup>. Industry experts also believe that there is greater business viability in the B2B segment.

One of the major contributing factors to the exponential growth of digital payments in India is the huge inflow of funds from a diverse set of domestic and international stakeholders. Some of the largest wallet players have received funding from American and Japanese corporations, looking to diversify their portfolio and establish a foothold in the Indian payments space. Similar investment activity has also been observed in the VC space, both domestic and international. In 2019, PE deals for the Fintech space amounted to USD 1.45 billion of which USD 70 million was in the payments sub-segment<sup>298</sup>. With many citing returns of upwards of 25x. The investment timeframe for payment models is short to medium term.

Therefore, Fintech platforms for facilitating payment transactions has been shortlisted as a key IOA.

### 1.7.2. Fintech platforms for facilitating payment transactions - Market Insights

- Overview:**

» Investors can focus on Fintech companies offering mobile-based payment solutions that can help businesses and individuals in underserved regions and from low-income segments that engage with digital financial services to bridge gaps caused due to the absence of formal banking infrastructure

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- Need case:**

» India has over 100 million internal migrants and distinct migration corridors. Strengthening digital payment systems will provide a safe, transparent channel for processing high volumes of domestic remittances estimated to be ~USD 10.2 billion annually

» MSMEs stand to manage their income and expenditures by using transaction accounts through payment platforms, thus, offering them freedom to make a choice about place and time for transactions

» Investment in this IOA can contribute directly to **SDG 1, SDG 8** and **indirectly to SDG 2, SDG 3, SDG 5, SDG 9, SDG 10** and **SDG 17**

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- User or beneficiary:**

» Rural migrant workers who require affordable, transparent and safe remittance solutions to send and receive money

» Small business owners who can use affordable payment platforms for conducting their business transactions in a safe and transparent manner


**Economic factors:**

- » The market size for Fintech industry is estimated to reach **USD 92 billion by 2021**
- » There are fewer PE exits in this space as most of the players are new entrants. However, exit activity for this IOA show that investors have realised returns of 27X. Investments in this space have provided higher returns than the benchmark 20-30% the investors expect from emerging markets like India
- » Fintech payment platforms have shown to **return a profit between 5 to 10 years**


**Enabling factors:**

- » Under 'Startup India' initiative, any startup that has been incorporated after April 1, 2016 can get a 100% tax rebate on its profits for a total period of 3 years within a block of 10 years
- » RBI has released an 'enabling framework for regulatory sandbox' for Fintechs and other financial institutions to test digital financial service innovations
- » The vertical has a strong partner environment with participation from commercial, impact investors and foundations


**Risk factors:**

- » Inability of payment platforms to create vernacular interface will limit their market to English and Hindi speaking consumer base and limit scale to underserved populations
- » Fintech payment platforms are still a very urban/peri-urban phenomena and due to supply side information asymmetries, potential to impact at last mile may still not be locked in as part of the business model
- » Information asymmetries and low financial literacy, especially among low-income segments that might lead to frauds, data leakages


**Impact management:**

- » Investments falling under this IOA are likely to benefit the stakeholders (**IMP classification B**), the outcome is likely to be positive and intended for business models that are concerted building solutions particularly for low income and vernacular populations to use payment solutions, thereby including them in the folds of formal financial services

Source: UNDP research for India Investor Map

### 1.7.3. Asset lean acceptance infrastructure for last-mile banking connectivity

To bridge the divide between uptake, usage and adoption of financial services, acceptance infrastructure that allows for easy access to such services is important. Under this IOA, two key business models have been highlighted:

- **ATM managed services:** Cash dominates the mode of transactions in India. Ease and ability to withdraw cash from bank accounts at a time and place of the account holder's choice give more confidence to the customer to keep cash in bank accounts and allow for greater circulation of cash through formal banking channels. However, ATM deployment, particularly in rural and peri-urban areas continues to be low. Outsourcing of ATM services by commercial banks to WLAOs has helped expand banking network beyond urban and peri-urban areas. RBI granted licenses in 2012 for non-bank entities to set up ATMs to plug in a key gap in the access to the financial services value chain and also allowed for interoperability provided by the authorized shared ATM network/Card

Payment operators. WLAOs have played a significant role in taking the ATM infrastructure to the last mile with 47 percent of total deployments made in rural areas compared to 9 percent by Private Banks and 20 percent by Public Sector Banks. After a dip in deployments between 2017-20 due to RBI mandated technical upgrades that pushed the cost of setting up ATMs by almost 15 percent, the sector is set to revive after the central bank took cognizance of challenges faced and has set up a committee to review deployment norms for WLAOs in June 2020<sup>299</sup>. Besides, RBI has also eased business guidelines for WLAOs, allowing companies that manage these machines to source cash directly from the central bank, offer non-bank services like bill payments and advertise non-financial products in their premises, increasing the revenue earning scope for these companies<sup>300</sup>. Companies are also considering setting up of 'recycler' machines that accept deposits as well as dispense cash thereby according to the status of a virtual bank branch to ATMs, further augmented by the interoperability of these machines. Currently,

14.6 percent of the total ATMs in India are in the recycler segment<sup>301</sup>.




Investment timeframe for companies in the acceptance infrastructure space is short to medium term. There have been no significant exits for the ATM managed services business models but experts anticipate a return of 15-20 percent on investments made. In addition, consultations also suggested that ATM Management Services is a CAPEX heavy business model requiring significant upfront investments. To fulfil the financial inclusion mandate, WLAOs must maintain outreach in rural areas where transaction amount and frequency is limited and the costs of which is offset by ATMs installed in urban locations with higher customer engagement.

- **Agent Network Management services:** These models allow a human interface to onboard, assist in transactions and handhold the transition to digital channels for financial transactions. Services include the management of micro/small entrepreneurs (BCs) who act as banking points for commercial banks and NBFCs. These agents play a pivotal role in extending financial services in underserved regions with limited banking infrastructure and also handhold customers with low digital and financial

literacy to conduct financial transactions. With the advent of AePS, micro-ATMs as acceptance infrastructure has recorded a growth of 150 percent since 2016<sup>302</sup>. The biometric authentication provides safety, transparency that it reduces risks around leakages and frauds and the proximity to the nearest BC agent offers easy access. ANM also plays an important role in transitioning customers to digital platforms by encouraging customers to gain knowledge and comfort with the uses and potential of digital finance platforms. The BC channel backed by the AePS infrastructure recorded the highest number of transactions among all the payment platforms as GoI routed relief fund through this channel during the pandemic<sup>303</sup>. The ANM Companies operating in this space have also diversified into lending and offer services such as deposit mobilization and payments. Given their proximity to their clients and a deep understanding of socio-economic behaviours of last-mile consumers, ANM companies gain a competitive edge and can manage their financial assets effectively.

Business models under this IOA have the potential to provide financial services at last mile without the banks having to invest in operating expenditure (OPEX) heavy brick and mortar branches.

### 1.7.3. Asset lean acceptance infrastructure for last-mile banking connectivity - Market Insights

-  **Overview:**
  - » Acceptance infrastructure for banking like ATMs and BC networks empowered with Micro-ATMs can help reach underserved geographies with limited banking infrastructure helping low-income customers onboard digital platforms for transactions, increase usage of bank accounts and resolve information asymmetries. Investments can be made in WLAOs and ANM services to increase acceptance of formal banking and create avenues for the supply of financial and non-financial products
-  **Need case:**
  - » 71% of transactions at point of sale take place in cash in India often disincentivizing consumers from engaging with their bank accounts
  - » Penetration of ATMs in India is low with only 22 ATMs per 100,000 people making withdrawal and deposit of cash challenging, especially in rural areas
  - » Due to information asymmetries, low financial and digital literacy in underserved areas, people do not engage with formal financial services in the absence of reliable and ubiquitous banking infrastructure and handholding support
  - » **Investment in this IOA can contribute directly to SDG 1, SDG 8 and indirectly to SDG 2, SDG 3, SDG 5, SDG 9, SDG 10 and SDG 17**
-  **User or beneficiary:**
  - » Low-income populations in low resource settings with limited access to financial information services and accessible banking infrastructure
  - » Small businesses who have the opportunity to add an additional source of revenue/income by becoming Business Correspondents for financial service providers or leasing out real estate for setting up ATM infrastructure



### Economic factors:

- » ANM service providers who are also in the lending business returned a profit in 5 years like most successful NBFCs
- » WLAO is a capex heavy business and with value-added services and strategic spread of operations in urban and rural areas, can return a profit in 5-10 years. Investors opine that the exit barriers for WLAO model are high



### Enabling factors:

- » RBI has eased business guidelines for WLAOs allowing them to source cash directly from the central bank, offer non-bank services like bill payments and advertise non-financial products on their premises, increasing the revenue earning scope for these companies
- » BC Registry has been set up by Indian Banks' Association to offer a BC certification course and to offer capacity building to prospective BCs



### Risk factors:

- » WLAO is a capex intensive business. Frequent changes in regulations, especially with respect to technology upgrades may impact profitability and expansion plans for the businesses in this segment
- » Absence of regulations to license White Label Agent Networks to operate restricts the mapping of BCs to a single bank reducing their options for better revenues
- » Information asymmetries and low financial literacy, especially among low-income segments that might lead to frauds, data leakages while using ATMs and other digital financial infrastructure



### Impact management:

- » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**) and the outcome is likely to be positive and intended since the business models for providing asset lean solutions for last mile banking have the potential to greatly reduce the cost of accessing formal banking infrastructure by last-mile consumers, thereby helping them access products that can improve their financial resilience

Source: UNDP research for India Investor Map

## 1.8. White spaces in the Financials sector

### 1.8.1. Life and non-life insurance for low-income segments through traditional and Insurtech models

For the Financials sector, Insurance services for rural areas particularly serving low-income segments came up as the potential for high development impact though the commercial viability of such models remains unproven. From a regulation perspective, insurance remains a protected sector and 100 percent FDI is not permitted for insurance companies even though in a recent move, GoI announced an allowance of 100 percent FDI for insurance intermediaries such as insurance brokerage firms, web aggregators, corporate agents and insurance surveyors, among others. This move is slated to boost investments by bringing in international best practices for product sales and increasing distribution networks in locations beyond Tier I cities which can otherwise be fairly capital intensive<sup>304</sup>. Pure play insurance companies,

while having garnered significant investor interest, have not yet ventured into the low-income space due to the cost of underwriting for small premiums. Moreover, such companies already have a competitive room to service the middle income and high-income segments with insurance products, a space that is far from saturating soon. Low acceptance for insurance products, information asymmetries and infrastructure gaps that define rural markets and underserved markets, do not offer the viable cost economics that is required for commercial investments to flow in. As a result, their offerings are unlikely to be as competitive as what the government is offering through schemes like PMSBY, a renewable one-year accidental death-cum-disability cover of ~USD 2,735, offered to all the bank account holders in the age group of 18-70 years for a premium as low as ~USD 0.16 per annum. In addition, for specific non-life insurance products like health insurance, the fragmented healthcare infrastructure, especially in rural regions does not inspire confidence to service claims efficiently. Availability of data to assess risk profiles of customers with



fragmented Know Your Customer (KYC) further makes the space unamenable at this point.

Challenges faced by the sector, however, has not deterred investor interest, especially in the insurance distribution and servicing space. Deal value for PE investments in the Insurtech space amounted to USD 41.8 million in 2019<sup>305</sup> though most of the investee companies work in the middle and high-income space. In addition, India's booming innovation and startup ecosystem have enabled domestic and global

insurance players to join forces either through strategic investments or operational partnerships particularly by leveraging technology to reach potential customers beyond Tier I and Tier II cities. Consultations with experts suggest that innovations that bring together digital technologies for underwriting and outreach of traditional insurance companies with feet on the ground, building upon the successful roll out of GoI's insurance schemes can bring about a disruptive change in the next few years in the insurance for low-income segments.

### 1.8.1. Financials White space - Insurance - Market Insights



#### Overview:

- » Investors can support innovations in insurance product distribution and servicing for life and non-life products for low-income segments, especially in underserved rural areas. Business models that can leverage technology to service last-mile segments, thereby reducing operational costs and increasing affordability of insurance products can be explored. There is already investor momentum in the Insurtech space albeit very few models operating to service rural areas and informal workers



#### Need case:

- » As of 2018, life insurance penetration in India was 2.74% and the coverage of non-life insurance was even lower at 0.97% for the same period
- » Due to information asymmetries, low financial and digital literacy in underserved areas, people do not engage with formal financial services in the absence of reliable and ubiquitous digital infrastructure, and handholding support
- » **Investment in this White Space can contribute directly to SDG 1, SDG 8 and indirectly to SDG 2, SDG 3, SDG 5, SDG 9, SDG 10 and SDG 17**



#### User or beneficiary:

- » Low-income populations in low resource settings with limited access to financial information services and social protection measures
- » Small businesses who have the opportunity to add an additional source of revenue/income by becoming agents to distribute and service insurance products



#### Risk factors:

- » Limited regulatory room to innovate, pilot and scale products that are differentiated for low-income segments even though 100% FDI is now allowed for insurance intermediaries
- » The runway for making insurance a profitable venture is a long one requiring significant investments towards operations as well as demand side preparedness
- » Information asymmetries and low financial literacy, especially among low-income segments that might lead to frauds and data leakages



#### Impact management:

- » Investments falling under this IOA are likely to contribute to solutions (**IMP classification C**), and the outcome is likely to be positive and intended since the business models that facilitate access to insurance products, especially for low-income segments will provide options for social protection, improve financial resilience of beneficiaries and reduce negative coping mechanisms at times of financial distress

Source: UNDP research for India Investor Map



## Sources:

252. These include SDG1, on eradicating poverty; SDG 2 on ending hunger, achieving food security and promoting sustainable agriculture; SDG 3 on profiting health and well-being; SDG 5 on achieving gender equality and economic empowerment of women; SDG 8 on promoting economic growth and jobs; SDG 9 on supporting industry, innovation, and infrastructure; and SDG 10 on reducing inequality. Additionally, in SDG 17 on strengthening the means of implementation there is an implicit role for greater financial inclusion through greater savings mobilization for investment and consumption that can spur growth
253. Niti Aayog (2018). Strategy for New India @ 75. Niti Aayog. Available at: [https://niti.gov.in/writereaddata/files/Strategy\\_for\\_New\\_India.pdf](https://niti.gov.in/writereaddata/files/Strategy_for_New_India.pdf).
254. Klapper, L., Lusardi, A. and van Oudheusden, P. (2014). Financial Literacy Around the World: INSIGHTS FROM THE STANDARD & POOR'S RATINGS SERVICES GLOBAL FINANCIAL LITERACY SURVEY. Available at: [https://gflec.org/wp-content/uploads/2015/11/3313-Finlit\\_Report\\_FINAL-5.11.16.pdf?x38887](https://gflec.org/wp-content/uploads/2015/11/3313-Finlit_Report_FINAL-5.11.16.pdf?x38887)
255. For the purposes of the study, the authors used 4 dimensions to determine financial literacy- Risk Diversification, Numeracy (ability to calculate interest rates), Compound Interest and Inflation.
256. Pmjd.gov.in. (2020). Pradhan Mantri Jan-Dhan Yojana | Department of Financial Services | Ministry of Finance. Available at: <https://pmjd.gov.in/statewise-statistics>.
257. data.worldbank.org. (n.d.). Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+) - India, Brazil, China, Korea, Rep., World, Malaysia, Vietnam | Data. Available at: <https://data.worldbank.org/indicator/FX.OWN.TOTL.ZS?locations=IN-BR-CN-KR-1W-MY-VN>.
258. Worldbank.org. (2017). Home | Global Findex. Available at: <https://globalfindex.worldbank.org/>.
259. Market, C. (2019). MSMEs Contribute 29.7% Of India's GDP. Business Standard India. 2 Dec. Available at: [https://www.business-standard.com/article/news-cm/msmes-contribute-29-7-of-india-s-gdp-119120200888\\_1.html](https://www.business-standard.com/article/news-cm/msmes-contribute-29-7-of-india-s-gdp-119120200888_1.html)
260. pib.gov.in. (n.d.). MSME Sector Contributes Significantly to Indian Economy. Available at: <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1579757>
261. www.rbi.org.in. (n.d.). Reserve Bank of India - Annual Report. Available at: <https://www.rbi.org.in/Scripts/AnnualReportPublications.aspx?Id=1259>
262. PwC and FICCI (2019). A wider circle: Digital lending and the changing landscape of financial inclusion. Available at: <https://www.pwc.in/assets/pdfs/consulting/financial-services/fintech/publications/a-wider-circle-digital-lending-and-the-changing-landscape-of-financial-inclusion.pdf>.
263. IFC (2018). Financing India's MSMEs: Estimation of Debt Requirement of MSMEs in India. Available at: <https://www.intellectap.com/wp-content/uploads/2019/04/Financing-Indias-MSMEs-Estimation-of-Debt-Requireme-nt-of-MSMEs-in-India.pdf>.
264. Sharma, M. and Chatterjee, S. (2017). Agents of Change How the Human Touch Is Bringing Digital Financial Services to New Customers in India. Available at: [https://content.centerforfinancialinclusion.org/wp-content/uploads/sites/2/2018/08/Agents\\_of\\_Change\\_India\\_FINAL-1.pdf](https://content.centerforfinancialinclusion.org/wp-content/uploads/sites/2/2018/08/Agents_of_Change_India_FINAL-1.pdf)
265. Under DBT mission of Gol, nearly 384 schemes of 52 ministries is routed through PMJDY accounts. dbtbharat.gov.in. (n.d.). DBT. Available at: <https://dbtbharat.gov.in/scheme/scheme-list>
266. mSTAR, USAID (2019). India Digital Financial Inclusion: Journey Map Report. USAID. Available at: <https://www.fhi360.org/sites/default/files/media/documents/reso-urce-mstar-india-digital-financial-inclusion-report.pdf>.
267. Shukla, S. (n.d.). Govt asks banks to open 15,000 branches in FY21. The Economic Times. Available at: <https://economictimes.indiatimes.com/industry/banking/finance/banking/govt-asks-banks-to-open-15000-branches-in-fy21/articleshow/73286116.cms?from=mdr>
268. Worldplay FIS (2020). 2020 Global Payments Report. worldpaymentsreport.com. Available at: <https://worldpaymentsreport.com/resources/world-payments-report-2020/>.
269. "Financial resilience can be defined as ability of people, particularly the BoP segment, who would be able to withstand a crisis without a fundamental deterioration of their individual and household situations thereby avoiding a slide into economic, social and health despair."Source: www.centerforfinancialinclusion.org. (n.d.). Resilience and the Three Phases of Response | Center for Financial Inclusion. Available at: <https://www.centerforfinancialinclusion.org/resilience-and-the-three-phases-of-response-brac>
270. Insurance Regulatory and Development Authority of India (2019). Annual Report 2018-19. [online] www.irdai.gov.in. Available at: [https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral\\_NoYearList.aspx?DF=AR&mid=11.1](https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_NoYearList.aspx?DF=AR&mid=11.1).
271. Singh, A. (2019). The State of Micro-pensions in India. [online] Dvara Research Blog. Available at: <https://www.dvara.com/blog/2019/11/27/the-state-of-micro-pensions-in-india/>.
272. World Bank. (2020). World Bank Approves \$750 Million Emergency Response Program for Micro, Small, and Medium Enterprises in India. Available at: <https://www.worldbank.org/en/news/press-release/2020/06/30/world-bank-approves-750-million-emergency-response-program-for-micro-small-and-medium-enterprises-in-india>.
273. MicroSave Consulting (2020). Impact of COVID-19 pandemic on micro, small, and medium enterprises (MSMEs): India Report. Available at: <https://www.microsave.net/wp-content/uploads/2020/06/Impact-of-COVID-19-pandemic-on-micro-small-and-medium-enterprises-MSMEs-India-report-1.pdf>
274. EY (2020). COVID-19: impact on the financial services sector.
275. Bain & Company and IVCA (2020). India Private Equity Report 2020. Bain & Company. Available at: [http://ivca.in/wp-content/uploads/2020/05/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://ivca.in/wp-content/uploads/2020/05/bain_report_india_private_equity_report_2020.pdf).
276. www.ey.com. (n.d.). 2019, a record year for PE/VC investments on the back of large investments in infrastructure: IVCA-EY report on a Y-o-Y basis, investments grew 28%. Available at: [https://www.ey.com/en\\_in/news/2020/03/record-year-for-pevc-investments-on-the-back-of-large-investments-in-infrastructure](https://www.ey.com/en_in/news/2020/03/record-year-for-pevc-investments-on-the-back-of-large-investments-in-infrastructure).
277. Bain & Company and IVCA (2020). India Private Equity Report 2020. Bain & Company. Available at: [http://ivca.in/wp-content/uploads/2020/05/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://ivca.in/wp-content/uploads/2020/05/bain_report_india_private_equity_report_2020.pdf).
278. Hindustan Times. (2020). The MSME sector is critical in times of Covid-19. Available at: <https://www.hindustantimes.com/analysis/msmes-is-critical-in-times-of-covid-19/story-6juui9zs4jKUdkHLobT6WJ.html>.
279. Dvara Research Blog. (2019). The RBI's proposed Public Credit Registry and its implications for the credit reporting system in India. Available at: <https://www.dvara.com/blog/2019/06/18/the-rbis-proposed-public-credit-registry-and-its-implications-for-the-credit-reporting-system-in-india/>.
280. MSME Pulse by SIDBI and TransUnion CIBIL, October 2019
281. Manikandan, A. and Shukla, S. (2020). RBI asks banks to speed up ATM upgrades as deadline looms large. The Economic Times. Available at: <https://economictimes.indiatimes.com/industry/banking/finance/banking/rbi-asks-banks-to-speed-up-atm-upgrades-as-deadline-looks-large/articleshow/76734853.cms>

282. IAMAI and Nielsen (2019). India Internet 2019. Available at: <https://iamai.in/KnowledgeCentre>
283. www.ETBFSI.com (2019). UPI transactions see over 130% growth since October 2018 - ET BFSI. ETBFSI.com. Available at: <https://bfsi.economicstimes.indiatimes.com/news/financial-services/upi-transactions-see-over-130-growth-since-october-2018/72136165>
284. IRDAI (2020). Master Circular on Standardization of Health Insurance Products. Available at: [https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral\\_Layout.aspx?page=PageNo4196&flag=1](https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_Layout.aspx?page=PageNo4196&flag=1).
285. The programme, which is currently being implemented in 117 districts of India focuses on Financial Inclusion as one of the key core areas besides health and nutrition, education, agriculture and water resources, skill development and basic infrastructure development.
286. SIDBI (2020). Microfinance Pulse. Available at: <https://www.sidbi.in/files/article/articlefiles/Microfinance-Pulse-June-2020.pdf>.
287. India Briefing News. (2020). Micro, Small, and Medium Enterprises in India – An Explainer. Available at: <https://www.india-briefing.com/news/micro-small-medium-enterprises-india-explainer-17887.html#:~:text=As%20per%20the%20official%20estimates>
288. Shukla, S. and Manikandan, A. (2020.). Remittances to Bharat hit by return of the native. The Economic Times. Available at: <https://economictimes.indiatimes.com/news/economy/finance/remittances-to-bharat-hit-by-return-of-the-native/articleshow/74974059.cms?from=mdr>
289. Mohan, R. (2020). RBI relaxes norms for the deployment of ATMs by white-label players. Business Standard India. 16 Jun. Available at: [https://www.business-standard.com/article/finance/rbi-relaxes-norms-for-the-deployment-of-atms-by-white-label-players-120061601463\\_1.html](https://www.business-standard.com/article/finance/rbi-relaxes-norms-for-the-deployment-of-atms-by-white-label-players-120061601463_1.html)
290. www.rbi.org.in. (n.d.). Reserve Bank of India - Notifications. Section 23 of the Banking Regulation Act, 1949 – Master Circular on Branch Authorisation Available at: <https://www.rbi.org.in/SCRIPTS/NotificationUser.aspx?id=9014&Mode=0>
291. V, N. (2019). TreDS platform charts explosive growth. Available at: <https://www.thehindubusinessline.com/companies/treds-platform-charts-explosive-growth/article27119220.ece>
292. PwC (2019). Emerging technologies disrupting the financial sector. Available at: <https://www.pwc.in/assets/pdfs/consulting/financial-services/fintech/publications/emerging-technologies-disrupting-the-financial-sector.pdf>.
293. United Nations Industrial Development Organisation (UNIDO) has identified 388 clusters spread over 21 states in various parts of the country and the Ministry of MSME has advised banks to focus their lending mandates for sectors on these.
294. RBI (2019). National Strategy for Financial Inclusion: 2019-2024. Available at: <https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/NSFIREPORT100119FF91DAA6B73B497A923CC11E0811776D.PDF>
295. NPCI - National Payments Corporation of India - Official Website. (August 2020). UPI Product Statistics. Available at: <https://www.npci.org.in/product-statistics/upi-product-statistics>.
296. KPMG (2019). Fintech in India: Powering Mobile Payments. Available at: <https://assets.kpmg/content/dam/kpmg/in/pdf/2019/08/Fintech-in-India%E2%80%93Powering-mobile-payments.pdf>.
297. PwC (2019). Global FinTech Survey 2016: How FinTech is reshaping banking. Available at: <https://www.pwc.com/gx/en/industries/financial-services/assets/fin-tech-banking-2016.pdf>.
298. Bain and Company, and IVC Association. India Private Equity Report 2020. Available at: [www.bain.com/globalassets/noindex/2020/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://www.bain.com/globalassets/noindex/2020/bain_report_india_private_equity_report_2020.pdf).
299. Mohan, R. (2020). RBI relaxes norms for the deployment of ATMs by white-label players. Business Standard India. [online] 16 Jun. Available at: [https://www.business-standard.com/article/finance/rbi-relaxes-norms-for-the-deployment-of-atms-by-white-label-players-120061601463\\_1.html](https://www.business-standard.com/article/finance/rbi-relaxes-norms-for-the-deployment-of-atms-by-white-label-players-120061601463_1.html).
300. www.rbi.org.in. (n.d.). Reserve Bank of India - Notifications. Section 23 of the Banking Regulation Act, 1949 – Master Circular on Branch Authorisation Available at: <https://www.rbi.org.in/SCRIPTS/NotificationUser.aspx?id=9014&Mode=0>
301. Electronic Payment and Services Ltd. (2016). REVOLUTIONIZING THE INDIAN ATM INDUSTRY. Available at: <https://www.electronicpay.in/wp-content/uploads/2019/01/EPS-Revolutionising-Th-Indian-ATM-Industry.pdf>.
302. Manikandan, A. (2019). Micro ATMs a big hit in rural India: Transactions may hit 33.5 million. [online] Available at: [https://economictimes.indiatimes.com/industry/banking/finance/banking/micro-atms-a-big-hit-in-rural-india-transactions-in-may-touch-33-5-million/articleshow/69983878.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/industry/banking/finance/banking/micro-atms-a-big-hit-in-rural-india-transactions-in-may-touch-33-5-million/articleshow/69983878.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst).
303. The Reserve Bank of India (2020). CREDIT DELIVERY AND FINANCIAL INCLUSION. Available at: <https://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/2IVCREDITDELIVERYA1FF80FBDB87490C9B01520D262DD431.PDF>.
304. IRDAI (2019). Notification: Insurance Regulatory and Development Authority of India (Insurance Intermediaries) (Amendment) Regulations, 2019. Available at: [https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral\\_Layout.aspx?page=PageNo3945&flag=1](https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_Layout.aspx?page=PageNo3945&flag=1).
305. Bain and Company, and IVC Association. India Private Equity Report 2020. Available at: [www.bain.com/globalassets/noindex/2020/bain\\_report\\_india\\_private\\_equity\\_report\\_2020.pdf](http://www.bain.com/globalassets/noindex/2020/bain_report_india_private_equity_report_2020.pdf).





# SUSTAINABLE ENVIRONMENT





# Sustainable Environment



## 1. Sector overview

As with other developing countries, India faces environmental challenges associated with inadequate management, segregation and treatment of both water resources and solid/wet waste. As per NITI Aayog, India is currently ranked 120th among 122 countries in the water quality index<sup>306</sup> and faces high to extreme water stress. By 2030, the country's water demand is projected to be twice the available supply<sup>307</sup>, due to water scarcity and water contamination. This could result in a ~6 percent<sup>308</sup> loss in the country's GDP. Solid Waste Management (SWM) needs greater attention, especially in urban centres, where an estimated 50 percent of India's population will reside by 2050, resulting in waste generation growing by 5 percent per year<sup>309</sup>. The existing waste management system in India is currently not fully equipped to cope with the volume of waste generated by an increasingly urban population. Capital inflow in these areas can help address many of these issues. India's wastewater treatment plants market stood at around USD 2.4 billion in 2019 and is projected to reach USD 4.3 billion by 2025, owing to increasing demand for sophisticated municipal water as well as sewage treatment plants across the country<sup>310</sup>. India's waste management sector is expected to be worth USD 13.62 billion by 2025, with an annual growth rate of 7.17 percent<sup>311</sup>.

The report includes initiatives under Sustainable Environment, particularly under waste management due to the high priority accorded to the sector from a development impact lens. Even though most initiatives fall in the 'white space' area, there is a significant opportunity for scale and subsequent commercial returns.



## 1.1. Sectoral development needs

Our review of key policy documents, human development reports and stakeholder consultations highlighted the following sectoral development needs in India:

### 1.1.1. Water resources (SDG 6, 12, 15)

- **Water scarcity:** As per the Central Water Commission (CWC), per capita water availability in India declined from 1,816 cubic metres (cu m) in 2001 to 1544 cu m in 2011<sup>312</sup>. With the urban population (where the rate of increase in demand for water is higher compared to rural areas<sup>313</sup>) set to rise to ~607 million in 2030, and ~877 million by 2050, water demand is projected to be twice its supply by 2030<sup>314</sup>
- **Access to drinking water:** As per NITI Aayog's report on Composite Water Management Index (CWMI), there is a scope for significant improvement as gaps exist in access to piped and potable drinking water. Only 25 percent of households have drinking water on their premises, and 16 percent of rural households have access to piped water which is largely unpotable<sup>315</sup>
- **Deteriorating groundwater resources:** Subsidized pricing of water in various states has resulted in non-revenue water and a sharp decline in groundwater levels in all states. According to the Central Ground Water Commission (CGWC), the annual replenishable groundwater resources in India stood at 432 billion cubic metres (bcm) in 2017, of which 393 bcm was the annual 'extractable' groundwater availability<sup>316</sup>. Out of this, ~230 bcm of groundwater is drawn each year for irrigation purposes, while overall groundwater depletion in India is in the range of 122–199 bcm<sup>317</sup>. As a result, many parts of the country are experiencing rapid depletion of groundwater
- **Need for improved agriculture practices:** There is a clear evidence of rising water stress and there continues to be a need to more effectively manage water usage, particularly in key sectors such as agriculture. Effective implementation and maintenance of projects, including participatory irrigation

management, alignment of cropping patterns to the agroclimatic zones and construction of field channels (Command Area Development (CAD) works) are some of the measures required to be undertaken

- **Impact of COVID-19:** Best practices in hygiene that are currently being endorsed by different development institutions involve behaviour change communication around handwashing, etc., which is likely to consume more water than conserve it. According to Centre for Science and Environment (CSE), ~20-40 litres of water is consumed each day, assuming that each person cleans their hands at least 10 times a day, instead of a usual average of five times a day<sup>318</sup>. Thus, there is an urgent need to come up with alternative methods for hygiene practices that push for water conservation behaviours

### 1.1.2. Waste management (SDG 11, 12)

- **Waste generation:** Solid waste generation and its treatment is a pressing concern. In 2016, GoI had estimated an annual waste generation of 62 million tonnes in the country, including 5.6 million tonnes of plastic waste, 0.17 million tonnes of bio-medical waste, 7.90 million tonnes of hazardous waste and 1.5 million tonnes of e-waste<sup>319</sup>. Of this, only ~22 to 28 percent was processed and treated<sup>320</sup>
- **Growing urban population resulting in rising Municipal Solid Waste (MSW):** MSW produced in India is composed of ~41 percent organic, ~40 percent inert (i.e., waste which is neither chemically, nor biologically reactive, and does not decompose easily), and ~19 percent potentially recyclable materials<sup>321</sup>. Cities producing the maximum level of garbage volume per day include Hyderabad, Ahmedabad, Bengaluru, Chennai, Kolkata, Delhi and Mumbai<sup>322</sup>
- **Improper management of waste:** In the absence of adequate sustainable management practices, specifically in the agriculture sector, approximately 92 metric tonnes of crop waste is burned every year in India, causing excessive particulate matter emissions and air pollution<sup>323</sup>. There is a need to establish alternative methods of disposal and offer economically productive use of crop



residues. Moreover, improper collection of waste in dump yards also adversely impacts both, the environment and public health.

- **COVID-19:** The pandemic has increased the level of bio-medical waste generated. As per public data, before the COVID-19 outbreak, a government or a private hospital generated an average of 500 grams of biomedical waste (like syringes, urine bags, gauze, etc.) per bed, per day. During the pandemic, this level has gone up to ~2.5 kg to 4 kg per bed, per day<sup>324</sup>

## 1.2. Policy momentum

'Sustainable Environment' has been highlighted as a priority sector by the country's apex policy think tank, NITI Aayog. GoI has undertaken several measures to facilitate water and waste management.

### 1.2.1. Water resources

GoI aims to establish an efficient water resource management system to harness the benefits of water by ensuring that there is sufficient water of adequate quality for drinking water and sanitation services, food production, energy generation, inland water transport, and water-based recreational, as well as sustaining healthy water-dependent ecosystems. Budget 2021 allocated USD 50.95 billion for Jal Jeevan Mission<sup>325</sup>, which aims to provide safe and adequate drinking water through individual household tap connections to all households in rural India by 2024. National Mission for Clean

Ganga has been launched to address the challenges posed by water pollution, particularly along the polluted riverine length of 12,363 km<sup>326</sup>. Central Pollution Control Board (CPCB) has identified 302 polluted river stretches on 275 rivers, spanning 28 States and 8 UTs<sup>327</sup>. Ministry of Jal Shakti was created to deal with matters relating to water at one place in an integrated manner. To regulate over-exploitation and consequent depletion of groundwater, a Model Bill has been circulated to all States/UTs to enable them to enact suitable groundwater legislation for the regulation of its development, which includes the provision of rainwater harvesting.

### 1.2.2. Waste management

In 2016, the Union Ministry of Environment, Forests and Climate Change (MoEF&CC), introduced new SWM Rules, i.e., the sixth category of waste management rules, which do not include plastic, e-waste, biomedical, hazardous and construction and demolition waste. The Waste Management and Handling Rules in India were introduced by MoEF&CC, although their compliance is variable and limited. The MoEF&CC issued MSW Management and Handling Rules, 2000 to ensure proper waste management in India. Municipal authorities are responsible for implementing these rules and for developing infrastructure for collection, storage, segregation, transportation, processing and disposal of MSW.





### 1.3. Private sector participation

#### 1.3.1. Water resources

Indian water market requires significant private investment to meet the development needs of the sector. As per a joint study by Associated Chambers of Commerce and Industry of India - Price Waterhouse and Coopers (ASSOCHAM-PWC), plugging the demand-supply gap for water (which is estimated to reach ~50 percent by 2030) would require an additional investment of ~USD 291 billion<sup>328</sup>. Govt has undertaken various initiatives to encourage private sector participation, including Jawaharlal Nehru National Urban Renewal Mission (JNNURM), which encourages PPPs and makes public funds available for such projects. Despite such initiatives, private sector players are reluctant to invest in this segment. As per investors, the water segment requires patient capital as not only is the revenue stream slow and spread out over time but also dealing with municipal corporations (as the end customer of services) is unviable for enterprises. Majority of players operating in this area participate through the PPP model because investors find it difficult to operate a business and generate profits without government incentives. Furthermore, water is treated as a public good and has largely remained outside the ambit of a strict regulatory framework, leading to overconsumption and inequitable distribution of this precious commodity. As a result, there are no visible business models that can work independent of government support and have proven to be sustainable in this space.

#### 1.3.2. Waste management

As per investors, solid and liquid waste management is an immediate priority and Govt has been encouraging private sector participation in this sector through Swachh Bharat Mission. Additionally, SWM Rules, 2016 encourage Urban Local Bodies (ULBs) to partner with private companies in planning and implementing waste management solutions. As a result of such initiatives, various startups and SMEs have already begun offering effective waste management solutions. With the planned creation of 100 smart cities in India, offering effective waste management solutions will

enable companies and investors to benefit from India's planned industrialization in the near future. Awareness among consumers towards adopting better waste management methods in their daily lives is growing, augmented by municipal level behaviour change communication. This change in attitude can be leveraged by business models and help attract private investment in this space.

#### 1.4. Priority subsectors

Review of the subsectoral development needs and policy priorities and deep-dive consultations with sector experts and investors led to 'waste management' emerging as a subsector with potential to address development needs, through the support of sufficient policy momentum. Thus, the same was shortlisted for further analysis.

'Water Resources' was excluded from our research as this area does not offer attractive commercial and operating environment for private sector participation.

Expert consultations highlighted that despite Govt's efforts to promote this segment, only a few successful outliers exist which are engaged in technology-based business models that enable efficiencies in water, energy and waste which may pique investors' interest.

#### 1.5. Investment Opportunity Areas - Overview

While 'waste management' came up as an IOA with a potential for strong development impact, the commercial viability of such models remains unproven. Business models in this 'white space' currently face significant commercial hurdles and need to develop further before they attract large-scale commercial private investments.

#### 1.6. White Spaces Deep Dive

##### 1.6.1. Waste management

Waste management in India has immense scope for development and is expected to reach a market size of USD 13.62 billion, at a YOY growth of 7.17 percent by 2025<sup>329</sup>. Growing urbanization, industrialization and economic growth have resulted in increased MSW generation per



person. Waste produced in urban areas of India is approximately 170,000 tonnes per day and is expected to increase by ~5 percent per year owing to growing population and changing lifestyles<sup>330</sup>.

Despite significant development in social, economic and environmental areas, SWM systems in India are relatively underdeveloped, with informal sector playing a key role in extracting value from waste. Thus, there is a growing need for a more sustainable SWM, requiring new management systems and waste management facilities. Investment in this sector can help address various issues (related to environmental and health) arising due to improper collection, segregation and treatment of waste. For instance, ~90 percent<sup>331</sup> of residual waste is dumped, instead of being efficiently landfilled. Disposal of residual waste after extraction of material resources needs engineered landfill sites and/or investment in

waste-to-energy facilities. Furthermore, improvement in waste collection and transport infrastructure can help create employment opportunities through the formalization of this sector, while also contributing to an improvement in public health.

Although players are working in this area that have been successful in raising private capital inflow, such businesses appear to be outliers in the system (examples include NEPRA Resource Management Pvt. Ltd. and Ramky Enviro Engineers Limited). Since business models in this space require government dealing and involvement, achieving scale and profitability is a challenge. However, given its strong potential to meet India's development need and growing policy momentum, we expect private investment in this space to pick up. Thus, waste management is recognized as a white space.

### 1.6.1. Waste Management - Market Insights

	<b>Overview:</b>	» Investors can focus on companies engaged in carrying out efficient waste management processes, including collection, storage, segregation, transportation, processing, treatment and disposal
	<b>Need case:</b>	<p>» Waste produced in urban areas of India is approximately ~170,000 tonnes per day, and is expected to increase by ~5% per annum owing to growing population and changing lifestyles</p> <p>» Such models could contribute directly to <b>SDG11 (Sustainable Cities and Communities)</b>, particularly 11.6.1. (Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities) and <b>SDG12 (Sustainable Consumption and Production)</b>, particularly 12.4.2. (Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment), while it contributes indirectly to <b>SDG3 (Good Health and Well-Being)</b>, <b>SDG14 (Life Below Water)</b> and <b>SDG15 (Life on Land)</b></p>
	<b>User or beneficiary:</b>	<p>» Efficient waste management can benefit the community with improved public health as a result of lesser land and air pollution</p> <p>» Improvement in waste collection and transport infrastructure can help create employment opportunities</p>
	<b>Risk factors:</b>	<p>» Although, municipal authorities are responsible for managing MSW in India, their budgets are insufficient to cover costs associated with developing proper waste collection, storage, treatment and disposal. The lack of strategic MSW plans, waste collection/segregation and a government finance regulatory framework are major barriers to achieving effective SWM in India</p> <p>» Limited environmental awareness combined with low motivation has inhibited innovation and the adoption of new technologies that could transform waste management in India</p>
	<b>Impact management:</b>	» Investments falling under this IOA are likely to contribute to solutions ( <b>IMP classification C</b> ), given that these business models can help in contributing towards sustainable development and improvement in public health through upgradation in waste management systems, which would in turn help in generating employment opportunities for the informal sector workers

Source: UNDP research for India Investor Map



## Sources:

306. Niti Aayog Water Index report 2018
307. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
308. By 2030, India's water demand to be twice the available supply indicating severe water scarcity: Report. (n.d.). The Economic Times. Available at: <https://economictimes.indiatimes.com/news/economy/agriculture/by-2030-indias-water-demand-to-be-twice-the-available-supply-indicating-severe-water-scarcity-report/articleshow/64679218.cms?from=mdr>
309. Niti Aayog (2019). SDG India Index 2019-20. Niti Aayog. Available at: [https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0\\_27-Dec.pdf](https://niti.gov.in/sites/default/files/2019-12/SDG-India-Index-2.0_27-Dec.pdf).
310. www.businesswire.com. (2020). India Wastewater Treatment Plants Market Stood at Around \$ 2.4 Billion in 2019 & is Projected to Reach \$ 4.3 Billion by 2025 - ResearchAndMarkets.com. Available at: [https://www.businesswire.com/news/home/20200313005294/en/India-Wastewater-Treatment-Plants-Market-Stood-2.4#:~:text=%26%20Opportunities%2C%202025%E2%80%9D-\[Accessed 27 Oct. 2020\]](https://www.businesswire.com/news/home/20200313005294/en/India-Wastewater-Treatment-Plants-Market-Stood-2.4#:~:text=%26%20Opportunities%2C%202025%E2%80%9D-[Accessed 27 Oct. 2020]).
311. Briefing, I. (2017). The Waste Management Industry in India: Investment Opportunities - India Briefing News. India Briefing News. Available at: <https://www.india-briefing.com/news/the-waste-management-industry-india-investment-opportunities-14032.html/>.
312. nwm.gov.in. (n.d.). Synopsis of Water Data in India | National Water Mission, Ministry of Jal Shakti, Department of Water Resources, RD & GR, Government of India. Available at: <http://nwm.gov.in/?q=synopsis-water-data-india>.
313. Qazi Syed Wamiq Ali, Nathaniel B Dkhar (2018). India's rampant urban water issues and challenges. www.teriin.org 28 Dec 2018. Available at: <https://www.teriin.org/article/indias-rampant-urban-water-issues-and-challenges>
314. Seetharaman, G. (n.d.). The private sector has transformed India's highways, airports. Can it do the same for water supply? The Economic Times. Available at: <https://economictimes.indiatimes.com/news/economy/infrastructure/the-private-sector-has-transformed-indias-highways-airports-can-it-do-the-same-for-water-supply/articleshow/66787613.cms?from=mdr>
315. NITI Aayog's report on Composite Water Management Index (CWMI)
316. Service, T.N. (n.d.). Atal Bhujal Yojana aims to arrest groundwater depletion. Tribuneindia News Service. Available at: <https://www.tribuneindia.com/news/features/atal-bhujal-yojana-aims-to-arrest-the-slide-22187>.
317. Prasad, R. (2018). Groundwater depletion alarming in northwest, central India. The Hindu. 10 Nov. Available at: <https://www.thehindu.com/sci-tech/groundwater-depletion-alarming-in-northwest-central-india/article25463716.ece#:~:text=With%20230%20billion%20metre%20cube>
318. www.downtoearth.org.in. (n.d.). COVID-19: The need is to decentralise how we manage wastewater. Available at: <https://www.downtoearth.org.in/blog/water/covid-19-the-need-is-to-decentralise-how-we-manage-wastewater-70991>
319. Sambyal, S. (2018). Government notifies new solid waste management rules. [online] Downtoearth.org.in. Available at: <https://www.downtoearth.org.in/news/waste/solid-waste-management-rules-2016-53443>.
320. Sambyal, S. (2018). Government notifies new solid waste management rules. [online] Downtoearth.org.in. Available at: <https://www.downtoearth.org.in/news/waste/solid-waste-management-rules-2016-53443>.
321. Kumar, S., Smith, S.R., Fowler, G., Velis, C., Kumar, S.J., Arya, S., Rena, Kumar, R. and Cheeseman, C. (2017). Challenges and opportunities associated with waste management in India. Royal Society Open Science, 4(3), p.160764.
322. Jun 9, S.A./ T./, 2018 and Ist, 07:28 (n.d.). Hyderabad tops in per capita waste generation | Hyderabad News - Times of India. The Times of India. Available at: <https://timesofindia.indiatimes.com/city/hyderabad/hyderabad-tops-in-per-capita-waste-generation/articleshow/64515720.cms>
323. Bhuvaneshwari, S., Hettiarachchi, H. and Meegoda, J. (2019). Crop Residue Burning in India: Policy Challenges and Potential Solutions. International Journal of Environmental Research and Public Health, 16(5), p.832.
324. Hindustan Times. (2020). India stares at biomedical waste crisis. ]Available at: <https://www.hindustantimes.com/india-news/india-stares-at-biomedical-waste-crisis/story-SpPZrA1tutAAuYhE57p7UI.html>.
325. www.ibef.org. (n.d.). Union Budget of India 2020 - 21 | IBEF. Available at: <https://www.ibef.org/economy/union-budget-2020-21>
326. Delhi February 14, A.V.N., April 4, 2015UPDATED: and Ist, 2015 07:48 (n.d.). Polluted rivers in country have doubled over past 5 years. India Today. Available at: <https://www.indiatoday.in/mail-today/story/polluted-rivers-indian-environment-survey-247101-2015-02-14#:~:text=The%20total%20polluted%20riverine%20length>
327. Koshy, J. (2018). More river stretches are critically polluted: Central Pollution Control Board. The Hindu. 17 Sep. Available at: <https://www.thehindu.com/news/national/more-river-stretches-critically-polluted-cpcb/article24962440.ece>
328. Jun 30, J.S./ T./ U., 2017 and Ist, 18:02 (n.d.). investments: Investments worth \$291 billion needed to plug water demand-supply gap in India: Study | Mangaluru News - Times of India. The Times of India. Available at: <https://timesofindia.indiatimes.com/city/mangaluru/investments-worth-291-billion-needed-to-plug-water-demand-supply-gap-in-india-study/articleshow/59387268.cms>
329. Briefing, I. (2017). The Waste Management Industry in India: Investment Opportunities - India Briefing News. India Briefing News. Available at: <https://www.india-briefing.com/news/the-waste-management-industry-india-investment-opportunities-14032.html/>.
330. Kumar, S., Smith, S.R., Fowler, G., Velis, C., Kumar, S.J., Arya, S., Rena, Kumar, R. and Cheeseman, C. (2017). Challenges and opportunities associated with waste management in India. Royal Society Open Science, 4(3), p.160764.
331. Kumar, S., Smith, S.R., Fowler, G., Velis, C., Kumar, S.J., Arya, S., Rena, Kumar, R. and Cheeseman, C. (2017). Challenges and opportunities associated with waste management in India. Royal Society Open Science, 4(3), p.160764.

# Next Steps

## Inputs from Invest India

UNDP and Invest India, in their organizational and collaborative capacities, endeavour to further drive dialogue and action between policymakers and investors. It is a vision to forge and foster multi-stakeholder partnerships to enable a strong ecosystem of SDG investment and facilitation in India.

Invest India, as the national investment promotion and facilitation agency of GoI, looks forward to developing strategic investor outreach and promotion initiatives, especially targeted to attract investments towards the 18 IOAs and 8 white spaces across 6 sectors and 13 subsectors highlighted in this report. It is equally crucial to address constraints and mitigate risks that foreign and domestic investors face, such as navigating entry barriers, information asymmetry, policy implementation gap, etc., especially in the domain of investments aligned towards the SDGs.

UNDP, in its strategic role in supporting the 2030 agenda, allows it to develop a globally unifying vision, framework and standards for what it means to invest for SDG achievement. Based on the SDG Investor Maps, the UNDP country offices will, through their network and collaborative partnerships, convene to facilitate matchmaking between enterprises and investors to increase SDG-aligned private sector investments. Public-private policy dialogues will also be convened to identify recommendations to improve the enabling environment for SDG-aligned investments.

Further, UNDP's SDG Impact's three pillars of work – **Impact Management, Impact Intelligence and Impact Facilitation** are closely tied to the market intelligence produced through the Investor Map. For instance, under Impact Management, the SDG Impact Assurance Standards have developed a set of global standards for how investors and enterprises manage and measure their impacts on the SDGs. There is currently no defined standard that enables auditors to assure that an investor's impact management practice is of sufficient quality to be considered 'SDG-enabling'. This is critical to driving consistency, comparability and accountability.

It is envisioned that a focused manoeuvre in this regard and effective promotion of bankable projects will help champion the push towards private investment for sustainable development in India.



## ANNEXURE I: Experts Consulted for the Report

Sector	Stakeholder Consulted	Type of Stakeholder	Name of Expert
Education	Elevar Equity	Venture Capital Fund	Amie Patel
	Gaja Capital	Private Equity Fund	Imran Jafar
	Global Innovation Fund	Impact Investors	Avinash Mishra
	Invest India	Investment Promotion Agency	Vishal Kumar
	Kaizenvest	Venture Capital Fund	Nirav Khambhati
	MSDF	Foundation	Geeta Goel
	Prayog Advisors	Venture Capital Fund	Sheeba D Mello
Healthcare	Accel	Venture Capital Fund	Barath Shankar Subramanian
	Bill and Melinda Gates Foundation	Foundation	Arnav Kapur
	Invest India	Investment Promotion Agency	Aakriti Bajaj
	Prayog Advisors	Venture Capital Fund	Sheeba D Mello
	Samara Capital	Private Equity Fund	Abhishek Thanvi
	UNDP		Dr. Manish Pant
Food & Beverages	Aavishkar	Impact Investors	Noshir Colah
	Elevar Equity	Venture Capital Fund	Amie Patel
	Global Innovation Fund	Impact Investors	Avinash Mishra
	Invest India	Investment Promotion Agency	Gaurav Sisodia
	Omnivore	Venture Capital Fund	Shruti Srivastava
	Samunnati	Impact Investors	Hari Rajagopal
Renewable Resources & Alternative Energy	Canada Investment Plan Pension Board (CIPPB)	Pension Fund	Sujeet Govinda Raju
	International Finance Corporation	DFI	Bhanu Mehrotra
	International Finance Corporation	DFI	Hemant Mandal
	Invest India	Investment Promotion Agency	Kanika Verma, Pallavi Bishnoi
	ReNew Power	Independent Power Producer of RE	Sukant Gupta
	The Bridgespan Group	Management Consulting	Sudershan Sampath Kumar
Financials	Aavishkar	Impact Investors	Sushma Kaushik
	Caspian Impact Investments Pvt. Ltd.	Impact Investors	Ragini Bajaj Chaudhary
	Elevar Equity	Venture Capital Fund	Amie Patel
	Gojo Capital	Private Equity Fund	Sanjay Gandhi
	Invest India	Investment Promotion Agency	Purna Soni, Rahul Agarwal
	KKR	Private Equity Fund	Simrun Mehta
	National Investment and Infrastructure Fund	Sovereign Fund	Nilesh Shrivastava



Sustainable Environment	Asha Impact	Impact Investors	Aditi Gupta
	Invest India	Investment Promotion Agency	Shivam Batham
	Sagana	Impact Investors	Akash Singh
General/Sector Agnostic	Brookings India	Think Tank	Vikram Singh Mehta
	Federation of Indian Chambers of Commerce & Industry (FICCI)	Industry Network	Abhay Singh, Eittee Gupta
	Impact Investors Council	Investment Promotion Agency	Ramraj Pai
	NITI Aayog	GoI Think Tank	Sanyukta Samaddar
	UNDP	UNDP Economist	Dr. Basudeb Guha-Khasnobis
Technology & Communications	Facebook	Corporate	Aankhi Das
	Invest India	Investment Promotion Agency	Atul Bist
	Samara Capital	Private Equity	Abhishek Thanvi
	UNDP - Accelerator Lab	UNDP	Krishnan, Rozita, Shwetha



## ANNEXURE II: Sector Relevant Policy Landscape

### EDUCATION

Policy/ Initiatives	Description	Implications
<b>Union Budget 2020-21</b>	GoI allocated USD 8 billion (0.3 percent of GDP) for the Department of School Education and Literacy	Thrust on enhancing access, retention, transition under RTE Act, 2009. Improving the quality of education including teacher training to improve learning outcomes. Reduction of gender gaps in education and improving access for SC, ST and other minorities
<b>Samagra Shiksha, 2019</b>	An overarching framework extending from pre-school to class 12 was prepared in 2019 subsuming all existing schemes for school education	To treat school education holistically without segmentation from pre-nursery to Class 12; To improve the quality of school education by focusing on the two T's – Teacher and Technology
	National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA) at the elementary stage (Classes I-VIII), customized for online mode of delivery owing to COVID-19, to be conducted through Digital Infrastructure for Knowledge Sharing (DIKSHA) and NISHTHA portals by the NCERT.	To train 4.2 million teachers to build teaching competencies, empower them with assessment frameworks, teaching aids with direct implications on quality of education and student learning outcomes.
<b>New Education Policy, 2020</b>	To improve early childhood care and education, increase foundational literacy and numeracy skills and ensure universal access to school education The New Education Policy 2020 lays out the blueprint to revamp the higher education system and create world-class multidisciplinary higher education institutions across India	Universalization of education from pre-school to secondary level with 100 percent GER in school education by 2030; to bring 20 million out-of-school children back into mainstream education
<b>PM eVIDYA, 2020</b>	A programme for multi-mode access to digital/online education	To promote online education across the country including hosting of online content; vocationalization of education
<b>National Skills Qualifications Framework (NSQF)</b>	A competency-based framework that organizes qualifications according to a series of knowledge, skills and aptitude The NSQF levels, graded from one to ten, are defined in terms of learning outcomes which the learner must possess regardless of whether they are obtained through formal, non-formal or informal learning	Enable a person to acquire desired competency levels, transit to the job market and opportunities for acquiring additional skills to upgrade competencies
<b>Education Quality Upgradation and Inclusion Programme (EQUIP)</b>	A five-year vision planned for ushering transformation in India's higher education system EQUIP has been prepared from reports of ten Expert Groups, suggesting more than 50 initiatives that would transform the higher education sector completely	Implementation Plan for the National Education Policy

<b>Skill India, 2015</b>	To enable youth to take up training to secure a better livelihood	To train 400 million Indians by 2022
<b>Skills Acquisition and Knowledge Awareness for Livelihood Promotion' (SANKALP) and 'Skill Strengthening for Industrial Value Enhancement' (STRIVE), 2017</b>	Outcomes-focused schemes marking a shift in the government's implementation strategy in vocational education and training from inputs to results	Develop a skilling ecosystem that will support domestic industrial sectors by a steady supply of skilled workforce
<b>Scheme for Higher Education Youth in Apprenticeship and Skills (SHREYAS), 2019</b>	To enhance the employability by providing 'on the job work exposure'	To cover 5 million students by 2022

## HEALTHCARE

<b>Policy/ Initiatives</b>	<b>Description</b>	<b>Implications</b>
<b>Union Healthcare Budget 2020-21</b>	USD 5.09 billion has been allocated for nutrition-related programmes The Government has announced USD 9.87 billion outlay for the health sector that is inclusive of USD 915.72 million for PM-JAY in Union Budget 2020-21	Implications for rural healthcare- improved primary healthcare services, screening and management of NCDs; increased availability of drugs and diagnostics; shifts in key healthcare indices such as anaemia, MMR, among others
<b>Foreign Direct Investment (FDI) Policy</b>	For Greenfield projects, 100 percent FDI is allowed under the automatic route. For brownfield projects, 100 percent FDI is permitted under the government route	Startups and businesses in the healthcare sector can supplement domestic capital for boosting local manufacturing, services and scaling operations thereby improving availability and access and reducing dependence on imports
<b>Production Linked Incentive Scheme, 2020</b>	Promotion of domestic manufacturing of critical KSM/Drug Intermediates and APIs in India Promoting domestic manufacturing of medical devices with financial implications of USD 466 million Incentive @ 5 percent of incremental sales over the base year 2019-20 will be provided on the segments of medical devices identified	Target is to support 25-30 manufacturers under several categories of medical devices, thereby improving domestic production and significant reduction of dependence on imports



Policy/ Initiatives	Description	Implications
<b>Scheme for Promotion of Medical Device Parks, 2020</b>	Financing Common Infrastructure Facilities in four Medical Device Parks with financial implications of USD 55 million to promote Medical Device Parks in the country in partnership with State governments. A maximum grant-in-aid of USD 13.6 million per park will be provided to the States	Expected to reduce the manufacturing cost of medical devices in the country The Schemes (Parks and PLI) will lead to the generation of additional employment of 33,750 jobs over five years
<b>The Medical Device (Amendment) Rules, 2020</b>	Regulate all medical devices falling under the definition and treat them as drugs	Ensuring the quality and safety of medical devices
<b>Ayushman Bharat, National Health Protection Scheme, 2018</b>	One of the world's largest healthcare schemes covering 100 million underprivileged five-member families. Providing USD 71,000 in insurance coverage to each family	Increased benefit cover to nearly 40 percent of the population, especially from the BoP segment and vulnerable populations  Covering almost all secondary and many tertiary hospitalizations (barring those from an exception list)
<b>National Health Policy, 2017</b>	Aimed at achieving universal health coverage and delivering quality healthcare services to all at affordable cost  Recommends establishing a regulatory body for medical device  Harmonizing domestic regulatory standards with international standards  Strengthening post-market surveillance for medical devices	Raising public health expenditure to 2.5 percent of the GDP in a time-bound manner The policy intends to increase life expectancy at birth from 67.5 to 70 by 2025 and reduce the infant mortality rate to 28 by 2019 and reduce under-five mortality rate to 23 by 2025
<b>E-portal Sugam, 2015</b>	All applications for import, manufacture, sale, distribution, or clinical investigation must be made via the single online central government portal with CDSCO	High level of transparency to its stakeholders enabling ease of business by providing an integrated workflow process
<b>National Pharmaceutical Pricing Authority (NPPA) monitoring Medical Devices under Drugs (Prices Control) Order, 2013</b>	The government started regulating 24 segments of medical devices which were notified/regulated as drugs under Drugs & Cosmetics Act, 1940 and Drugs & Cosmetics Rules, 1945. Of the above 24, 4 medical devices: (i) Cardiac Stents, (ii) Drug-Eluting Stents, (iii) Condoms and (iv) Intra-Uterine Device (Cu-T) are scheduled medical devices for and are under price control	To ensure uniformity and affordability of pricing for medical devices



<b>Government Initiatives</b>	Introduction of Indian Bio-medical Skill Consortium (IBSC) set up jointly by AMTZ, National Accreditation Board for Certification Bodies (NABCB) under the Quality Council of India (QCI), and Association of Indian Medical Devices Industry (AiMeD)	Strengthen the biomedical engineering skill sector
	The Indian Certification of Medical Devices (ICMED) is the first indigenously developed quality assurance system for medical devices as a Joint initiative of AiMeD, QCI, NABCB	Enhancing patient safety, to provide enhanced consumer protection along with product credentials to manufacturers for instilling confidence among buyers and users
<b>Tax Incentives</b>	All healthcare education and training services are exempted from service tax	Encourage investments in capacity building programmes for healthcare personnel and other stakeholders
	Artificial heart is exempted from basic customs duty of 5 percent	
	Income tax exemption for 15 years for domestically manufactured medical technology products	To promote 'Make in India' initiative
	Relaxation of taxes on hospitals in these cities for the first five years	To encourage the private sector to establish hospitals in Tier II and Tier III cities
<b>National Health Mission (NHS)</b>	The main programmatic components include Health System Strengthening, Reproductive-Maternal-Neonatal-Child and Adolescent Health (RMNCH+A)	Aims achievement of universal access to equitable, affordable and quality healthcare services that are accountable and responsive to people's needs
<b>Single Window System</b>	Drug Controller General of India (DCGI) has proposed to set up a single-window system for start-ups and innovators seeking approvals, consents and information regarding the regulatory requirement	To promote 'Make in India' initiative, boost ease of doing business
<b>Pradhan Mantri Swasthya Suraksha Yojana (PMSSY)</b>	With a financial outlay of USD 781 million, the scheme aims at correcting the imbalances in the availability of affordable healthcare facilities in different parts of the country in general and augmenting facilities for quality medical education in under-served States	Improved tertiary healthcare and medical education
<b>Telemedicine Practice Guidelines, March 2020</b>	The purpose of these guidelines is to give practical advice to doctors so that all services and models of care used by doctors and health workers are encouraged to consider the use of telemedicine as a part of normal practice	Improved outreach to medically vulnerable populations such as senior citizens and rural locations with limited healthcare infrastructure through quality medical advisory and diagnosis



Policy/ Initiatives	Description	Implications
<b>Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA)</b>	Launched in 2016 to ensure comprehensive and quality antenatal check-ups to pregnant women across India	As of September 2020, the scheme has benefited 25 million pregnant women who are availing government facilities with free antenatal care services, thereby formalizing institutional care for pregnant women
<b>Mission Indradhanush</b>	Aims at improving coverage of immunization in the country and reach every child under two years of age and all the pregnant women who have not been part of the routine immunization programme	Seeks to drive towards 90 percent full immunization coverage of India and provide vaccination against eight vaccine-preventable diseases

## FOOD & BEVERAGES

Policy/ Initiatives	Description	Implications
<b>Union Budget 2020-21</b>	USD 40.06 billion has been allocated to the segment comprising of Agriculture and allied activities, Irrigation and Rural Development for the holistic development of India's Agriculture (including USD 22.64 billion for Agriculture, Irrigation and allied activities and USD 17.40 billion for Rural Development and Panchayati Raj)	Promote the growth of the agriculture sector and ensure achievement of NITI Aayog's goal of doubling of farmers' income by 2022
	For the current fiscal, target of USD 212.31 billion has been set for providing agriculture credit. The budget also states that Pradhan Mantri Kisan Samman Nidhi (PM-KISAN) (offers income support to small and marginal farmers owning 2 hectares land) beneficiaries shall be covered under the Kisan Credit Card (KCC) scheme (offers financial support to farmers) and NABARD Re-finance Scheme shall be expanded	Provision of financial support and incentives to support the agriculture sector and its participants
	Under Budget 2021, USD 176.42 million has been allocated to the Ministry of Food Processing	Promote the growth of the food processing sector
	Under Budget 2021, USD 447 million has been allocated for Animal Husbandry and Dairying	Promote the growth of agriculture and allied sectors

<b>Reserve Bank of India (RBI) Circular</b>	RBI Circular on priority sector lending includes activities covered under Agriculture under three sub-categories viz. Farm credit, Agriculture infrastructure and Ancillary activities	Provision of financial support to support the agriculture sector and its participants
<b>Minimum Support Prices (MSPs)</b>	For 2019 season, GoI has approved an increase in MSPs for all Kharif crops, at a level of at least 150 percent of the cost of production	Provision of financial support and incentives to support the agriculture sector and ensure achievement of NITI Aayog's goal of 'doubling of farmers' income by 2022
<b>Foreign Direct Investment (FDI) Policy</b>	100 percent FDI permitted for food processing 100 percent FDI under government approval route for trading, including the same through e-commerce, for food products manufactured and/or produced in India	To boost food processing sector by encouraging private sector investment
<b>Agriculture technology (Agri-tech) sector</b>	In its attempt to turn the building blocks of the country's cooperative banking structure into multi-service centres, NABARD has earmarked USD 0.68 billion for computerization and up-gradation of PACS	To provide seamless credit services to their farmer members and create investment opportunities for rural youth in agriculture
<b>Electronic National Agriculture Market (eNAM)</b>	To strengthen the agriculture sector and enable farmers to reap benefits of their produce by selling it at the right price, GoI announced its plans to strengthen eNAM (which aims to create a unified national market for agricultural commodities) and dismantle APMCs, which required farmers to sell through mandis, instead of selling to end-consumers directly	Deployment of a common e-market platform of 585 selected regulated wholesale agriculture market yards by March 2018
<b>GoI Initiatives to strengthen the agriculture supply chain</b>	To combat the adverse effects of the pandemic, GoI announced a financing facility of USD 13.24 billion to fund agriculture infrastructure projects at farm gate and aggregation points	Strengthening Agriculture Infrastructure Logistics, Capacity Building, Governance and Administrative Reforms for Agriculture, Fisheries and Food Processing Sectors
	GoI plans to amend the Essential Commodities Act to deregulate food items like cereals, pulses and onion. This will help in making the agriculture sector more competitive, ensuring better price realization and removal of stock limits on all agri-commodities to offer farmers the freedom to produce, distribute and supply, resulting in economies of scale	To enable price realization for farmers by attracting investments and making agriculture more competitive



Policy/ Initiatives	Description	Implications
<b>Operation Green Scheme</b>	<p>With an allocation of USD 68 million, this scheme (for integrated development of TOP value chain) has been extended to ALL fruits and vegetables (TOTAL)</p> <p>It offers a 50 percent subsidy on transportation from surplus to deficient markets and 50 percent subsidy on storage, including cold storages</p>	<p>Protection of farmers engaged in the production of fruits and vegetables from making distress sale due to nationwide lockdown and reduce the post-harvest losses</p>
<b>Pradhan Mantri Kisan Sampada Yojana (PMKSY),</b>	<p>GoI launched PMKSY, a USD 936.38 billion project, which offers financing facilities for mega food parks, infrastructure for agro-processing clusters, integrated cold chain and value addition infrastructure. Ministry of Food Processing Industries (MoFPI) offers private investors incentives to provide integrated cold chain and preservation infrastructure facilities, without any break, from the farm gate to the consumer. Also, National Housing Bank (NHB), Ministry of Agriculture offer incentives to investors to promote the viability of setting up such models</p>	<p>The GoI plans to increase the capacity of the food processing sector in India as the current level of processing is less than 10 percent of agriculture produce. Opportunities for investments in areas of efficient storage infrastructure are present</p>
<b>Formalization of Micro Food Processing Enterprises (FME)</b>	<p>GoI announced this scheme (with an outlay of USD 1 billion) and new initiatives like planned infrastructure spend of ~USD 1 trillion and ~USD 340 billion to boost the rural economy to put the food processing sector on a high growth trajectory</p>	<p>Financial, technical and business support for upgradation of existing micro food processing enterprises</p>
<b>National Programme for Dairy Development (NPDD), Dairy Entrepreneurship Development Scheme (DEDS) and Dairy Processing and Infrastructure Development Fund (DIDF)</b>	<p>GoI is making efforts for strengthening infrastructure for the production of quality milk, procurement, processing and marketing of milk and milk products through various dairy development schemes</p>	
<b>GoI Initiatives in Dairy Sector</b>	<p>A new scheme has been announced by GoI, wherein interest subvention of 2 percent per annum will be provided to dairy cooperatives in 2021, and an additional interest subvention of 2 percent per annum will be provided on prompt payment of loans</p>	<p>Provision of financial support and incentives to promote the growth of the dairy sector</p>



<b>Pradhan Mantri Fasal Bima Yojana (PMFBY)</b>	Gov launched this scheme with insurance coverage and agricultural credit at a reduced rate of 4 percent per annum and to improve the last-mile reach of financial benefits	Stabilizing the income of farmers, encouraging farmers to adopt innovative and modern agricultural practices and ensuring the flow of credit to the agriculture sector
<b>Pradhan Mantri Kisan Scheme (PMKS)</b>	Gov launched this scheme to boost farmers' income by extending payment of ~USD 79 per year to every farmer in the country and to improve the last-mile reach of financial benefits	To boost farmers' income
<b>Krishi Vigyan Kendras (KVKs) or Farmers' Science Centers</b>	Farmers' access to new information, knowledge and skills is being strengthened through the network of KVKs or Farmers' Science Centers, and agriculture extension support As per Indian Council of Agricultural Research (ICAR) data 2020, 721 KVKs have been set up across India	To ensure farmers' knowledge enhancement and apprise them about new improved methods of agriculture by offering guidance from experts
<b>National Food Security Act (NFSA), 2013</b>	Public Distribution System has been revamped under NFSA, 2013 which covers about two-third of the population (including 75 percent rural and 50 percent urban population) to receive subsidized food grains – rice, wheat and coarse grains - at affordable prices per kg	A paradigm shift in the approach to food security from welfare to a rights-based approach Around 0.8 billion persons have been covered under NFSA at present for receiving highly subsidized food grains

## RENEWABLE RESOURCES & ALTERNATIVE ENERGY

<b>Policy/ Initiatives</b>	<b>Description</b>	<b>Implications</b>
<b>Government Targets and Budget Allocation</b>	Target to achieve RE capacity of 175 GW by 2022 (and 450 GW by 2030), including 60 GW of utility-scale solar PV, 40 GW of rooftop solar PV, 60 GW of wind power, 5 GW of small hydro and 10 GW of bioenergy	Harnessing non-conventional energy sources to meet the demand of growing economy and increase per capita electricity consumption
	Budget 2020-21 proposed allocation of USD 3.11 billion for power and RE sector	Support growth of the RE sector
	National Mission on advanced ultra-supercritical technologies, worth USD 238 million, to be implemented	To promote cleaner coal utilization
	Gov plans to release a new Hydropower policy for 2018-28	Pushing growth of hydro projects especially in north-eastern regions
	CCEA has approved financial support of USD 6.5 billion by 2022	Promoting the use of solar in the agriculture sector



Policy/ Initiatives	Description	Implications
<b>Government Targets and Budget Allocation</b>	India plans to add 30 GW of RE capacity along the desert region on its western border, covering the states of Gujarat and Rajasthan	Promoting the use of renewable energy sources at the pan-India level, and enabling achievement of GoI's target of 450 GW by 2030
	State government of Rajasthan, in Budget 2019-20 exempted solar energy from electricity duty, with an increased focus on utilization of solar power in agriculture and public health sectors	
	Indian Railways plans to adopt sustained energy efficient measures and maximum use of clean fuel to cut down emission level by 33 percent by 2030	
<b>Foreign Direct Investment (FDI) Policy</b>	Up to 100 percent, FDI is allowed under the automatic route for RE generation and distribution projects subject to provisions under the Electricity Act, 2003	To simplify and promote private sector participation in the RE sector to meet ambitious green energy targets set by GoI
	Changes in FDI rules which made prior approval of the government mandatory for foreign investments from countries that share a border with India (including China, Bangladesh, Pakistan, Bhutan, Nepal, Myanmar and Afghanistan)	Preventing opportunistic takeover of domestic firms amid COVID-19 pandemic under the FEMA law
<b>Solar Rooftop Targets and Initiatives</b>	Target of 40 GW of rooftop solar by 2022, GoI plans to undertake Renewable Purchase Obligations (RPOs), rooftop auctions and programmes	Facilitation of deployment of rooftop solar PV on government buildings across states
	Initiatives such as 'One Sun One World One Grid' for which India is the headquarter	Enable India to be recognized as a solar energy dependent country
	Under RBI's priority lending norms, RE projects and grid-connected solar rooftop systems have been accorded the status of priority sectors. Department of Financial Services has advised all public-sector banks to provide loans for grid-connected rooftop solar systems as a home loan or a home improvement loan, and the Department of Expenditure reduced the guarantee fee from 1.2 percent to 0.5 percent for multilateral loans totalling USD 1.370 billion	The underserved population shall be able to benefit from the use of RE-based electricity
<b>Solar Park Scheme</b>	Government and private land shall be available to successful bidders for setting up solar park projects with the assistance of State governments	Providing projects with a 'plug-and-play' interface such that developers can focus on other aspects of project development and reduce project risks

	Delhi government announced plans to shut down a thermal power plant in Rajghat and plans to develop it into 5,000 KW solar park	Promoting the use of RE sources, and enabling achievement of Gol's target of 450 GW by 2030
<b>Ministry of New &amp; Renewable Energy (MNRE)</b>	Providing central financial assistance for residential, institutional, social and government buildings	To incentivize and facilitate rooftop installations
<b>Policies/Initiatives for Solar Rooftop</b>	Advising States to implement net/gross metering regulations and tariff orders	Promote the use of solar power at the pan-India level through policy initiatives at state level
	Providing a model memorandum of understanding, PPA and CAPEX agreement for rooftop projects in the government sector	Promote the use of solar power at the pan-India level through policy initiatives at state level
	Appointing experts to support PSUs in the implementation of rooftop projects in ministries and departments	Promote use and implementation of solar rooftop through policy initiatives
	Provide custom and excise duty benefits to the solar rooftop sector to lower the cost of setting up, as well as generate power	Boosting growth and increasing the market reach for companies and enable them to serve the last mile markets that face power deficit and can leverage affordable solar power technology to bridge the gap
	Adopted guidelines for the implementation of Phase II of its Grid-Connected Rooftop Solar Programme	Promote the use of solar rooftop at the pan-India level through policy initiatives
<b>National Wind-Solar Hybrid (WSH) Policy, 2018</b>	Optimize and improve the efficacy of the usage of transmission infrastructure and land	To mitigate inconsistencies associated with the generation of renewable power and help in attaining better grid stability
	Stimulate the development of solutions and technological advancement in the field of wind-solar hybrid power generation	To minimize variability and optimal utilization of infrastructure including land and transmission systems
	In 2019, MNRE issued the Draft Guidelines for 'Tariff Based Competitive Bidding Process for Procurement of Power From Grid Connected Wind-Solar Hybrid Projects'	Offer a transparent bidding process for promotion and implementation of WSH projects
<b>SECI Initiatives for WSH Projects</b>	Issuing of Request for Selection (RfS) for development of solar-wind hybrid projects (tranche-I), under which letters of award (LoA) were issued for 840 MW capacity in 2019. RfS for tranche-II were issued in 2019	Optimal utilization of transmission infrastructure and land, reducing the variability in renewable power generation and achieving better grid stability
	To set-up 5 GW of solar and wind projects with storage under the EPC mode over the next 10 years, adding to the country's total of 37.69 GW of wind energy capacity and 35 GW of solar capacity as of fiscal 2020. It invited bids for 1.2 GW wind-solar hybrid capacity under its tranche-III tender for RE projects	Optimal utilization of transmission infrastructure and land, reducing the variability in renewable power generation and achieving better grid stability



Policy/ Initiatives	Description	Implications
<b>Andhra Pradesh's WSH Power Policy</b>	Andhra Pradesh formulated a Wind-Solar Hybrid Power Policy in 2018 to set a 5 GW generation target from WSH projects by 2022	Promote WSH projects through policy initiatives at state-level
<b>Other State's initiatives for WSH projects</b>	Windy states such as Gujarat and Maharashtra have also identified land parcels to develop WSH projects	Promote WSH projects through policy initiatives at state level
<b>Delhi Electric Vehicle Policy 2020</b>	To increase the market share of battery-electric vehicles to 25 percent of all new vehicles by 2024	To drive rapid adoption of Battery Electric Vehicles (BEVs) and bring about a material improvement in Delhi's environment by bringing down emissions from the transport sector
<b>National E-Mobility Program, 2018</b>	To facilitate demand for EVs through greater public procurement to be implemented by Energy Efficiency Services Limited (EESL)	India to emerge as a leader in 2-W and 4-W EVs market in the world by 2020, with total sales of 6-7 million units thus enabling Indian automotive industry to achieve global manufacturing leadership and contributing to National Fuel Security
<b>National Mission on Transformative Mobility and Battery Storage and the FAME-II (Faster Adoption and Manufacturing of (Hybrid) and Electric</b>	To develop and promote effective means of sustainable transportation, a budget of over USD 1.4 billion upfront incentives for the purchase of EVs USD 1.35 billion and for supporting the deployment of charging infrastructure to the tune of USD 0.14 billion	To incentivize the procurement and usage of EVs and relevant charging infrastructure
<b>Vehicles in India) Scheme, 2019</b>	Grant-In-Aid for test facility infrastructure for EV performance Certification from National Automotive Testing and R&D Infrastructure Project (NATRIP) Implementation Society under FAME scheme	To promote R&D in the space of EVs
<b>Tax Cut on Electric Vehicles</b>	GST Council decided to cut tax rates on e-vehicles from 12 percent to 5 percent	Accelerating the adoption of EVs by offering financial incentives



## FINANCIALS

Policy/ Initiatives	Description	Implications
<b>National Financial Inclusion Strategy, 2019-2024</b>	RBI, the central bank for India and the regulator for the banking and payments sector launched the NFIS 2019-24 with the vision to reduce income inequality and poverty, promote social cohesion and shared economic development	Guidance for new policies that can help in creating improved and diversified access to financial services, particularly for unserved and underserved geographies and population segments. The document also focuses on creating pathways for creating a competitive market ecosystem for the private sector to participate in and bolster business models that can scale
<b>Pradhan Mantri Jan-Dhan Yojana (PMJDY) scheme, 2014</b>	The programme leverages on the existing large banking network and technological innovations to provide every household with access to basic financial services, thereby bridging the gap in the coverage of banking facilities. The scheme also offers products such as an overdraft facility of USD 132, accidental death-cum-disability insurance cover, term-life cover and old age pension to improve social protection measures for the low-income population	Approximately 409.8 million accounts have been opened as of September 2020. Out of the accounts opened, 60 percent are in rural areas and 40 percent are in urban areas. Share of female account holders is about 55 percent of the total accounts opened  The focus has also shifted from opening account for every household to every individual to increase the depth of coverage
<b>Unique Identification Authority of India (UIDAI)</b>	A statutory authority under the provisions of Aadhar (Targeted Delivery of Financial and other Subsidies, Benefits and Services) Act, 2016 under the Ministry of Electronics and Information Technology (MeitY)  UIDAI, responsible for issuing unique identification based on a biometric authentication system to every citizen of India. So far, 1.24 billion of the Indian population has been covered by Aadhar	Since August 2018, more than 83 percent of operational PMJDY accounts are Aadhaar seeded and the biometric identification programme has played a significant role in allowing digitally-enabled financial services to rapidly achieve scale. Aadhar has direct implications on the financial inclusion agenda for India since it provides a cost-effective KYC authentication system in a digital, biometric format allowing banking institutions and agent networks to provide a range of financial services in underserved regions with significantly reduced infrastructure costs
<b>Pradhan Mantri Suraksha Bima Yojana (PMSBY)</b>	Gol introduced the PMSBY, a renewable one-year accidental death-cum-disability cover of ~USD 2,735, offered to all the bank account holders in the age group of 18-70 years for a premium as low as ~USD 0.16 per annum	To bolster social protection for its citizens, especially for the population engaged in the unorganised sector Potential demand-side usage may lead to greater private sector participation
<b>Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)</b>	PMJJBY is an insurance product, offering one-year term life cover of ~USD 2,735 and has also been introduced to bank account holders between the age of 18- 50 years at an annual premium of ~USD 4.5	Creating a universal social security system, targeted especially for the BoP segment



Policy/ Initiatives	Description	Implications
<b>Atal Pension Yojana (APY)</b>	To improve penetration of pensions, especially for workers engaged in the informal sector, guaranteed by GoI has been introduced for newly enrolled PMJDY account holders. Under the scheme, a subscriber in the age group of 18 to 40 years will receive a fixed monthly pension in the range of ~USD 14 to ~USD 68 after completing 60 years of age	To create a universal social security system for all Indians, especially the BoP segment and workers in the unorganised sector
<b>Certified Credit Counsellors (CCC) Scheme, 2017</b>	Launched by SIDBI for creating a structured mechanism to assist MSMEs in preparing financial plans and project reports to facilitate banks in making informed credit decisions	Advisory to entrepreneurs by offering help in preparing business proposals, financial documents and financial statements and bridge the gap between MSMEs and formal banking services
<b>psbloanin59minutes</b>	These web portals were launched to simplify and reimagine the process to raise funds by MSMEs by providing in-principle loan approvals in less than 59 minutes	Seamless access to loans through formal sources in a short turnaround time
<b>RBI licenses for Trade Receivables Discounting System (TReDS) platforms</b>	TReDS platforms, an institutional mechanism set up to facilitate the trade receivable financing of MSMEs from corporate buyers through multiple financiers	An alternative means of accessing finance for MSMEs based on trade receivables on invoices raised by MSMEs potentially addressing the working capital needs arising due to delayed payments
<b>Pradhan Mantri Mudra Yojana (PMMY), 2015</b>	A scheme to finance small business enterprises has been launched whereby lending institutions would finance to non-corporate, non-farm micro-entrepreneurs up to USD 13,240. Interest subvention scheme has been launched for MSMEs to reduce the cost of borrowings	Sanctioning of USD 23.8 billion across states and UTs. MUDRA has created three products namely 'Shishu', 'Kishore' and 'Tarun' to signify the stage of growth/development and funding needs of the beneficiary micro unit/entrepreneur and also provide a reference point for the next phase of graduation/growth
<b>GoI initiative for COVID-19</b>	To address the distress caused by the COVID-19 pandemic, GoI announced guarantee free and collateral-free loans for the MSME sector, amounting to total ~USD 40 billion	It is expected that about 4.5 million units can potentially access benefits accorded by this scheme, resume business activity and safeguard people in the employ of these business units
<b>Self-Reliant India (SRI) Fund</b>	As part of fiscal measures taken to ease distress caused by COVID-19 pandemic in the MSME sector, GoI introduced MSME Fund of ~USD 6.8 billion to boost equity financing for MSMEs  These fiscal measures also include an extension of the credit moratorium period for MSMEs	To provide funding support to the Daughter Funds for onward provision to MSMEs as growth capital, in the form of equity or quasi-equity
<b>Unified Payments Interface (UPI), 2016</b>	To boost digital infrastructure to increase acceptance of digital financial services, GoI, through NPCI, an initiative of RBI and Indian Bankers Association (IBA) launched UPI	To allow multiple bank accounts to be hosted on a single platform and enable real-time settlement of payment transactions and ubiquity in ensuring uptake and adoption of digital payments services

<p><b>Special Purpose Vehicle (SPV) as a liquidity scheme to de-stress NBFCs/HFCs</b></p>	<p>NBFCs including those offering microfinance services and Housing Finance Companies (HFCs) will be eligible for this scheme that will be managed by SBI Capital Markets Ltd. (SBICAP), a subsidiary of State Bank of India (SBI) that has set up a SPV for this purpose</p> <p>The direct financial implication for GoI, under this scheme, is ~USD 0.7 million. However, on invocation, the extent of government liability would be equal to the amount of default subject to the Guarantee ceiling. The ceiling of aggregate guarantee has been set at ~USD 4.1 billion, to be extended as per need</p>	<p>Given the impact on the liquidity of NBFCs following the COVID-19 pandemic, SPV is slated to avoid any potential systemic risks to the financial sector</p>
<p><b>Other Initiatives by GoI</b></p>	<p>Initiatives such as granting of licenses to FinTechs, introduction of Bharat QR, a contactless Quick Response (QR) code</p>	<p>To make transactions more seamless in a bid to strengthen the supply side ecosystem and demand-side acceptance of digital financial services at different levels of the value chain (for example- Peer-to-Peer (P2P), B2B)</p>

## SUSTAINABLE ENVIRONMENT

Policy/ Initiatives	Description	Implications
<p><b>Jal Jeevan Mission</b></p>	<p>Union Budget 2021 allocated USD 50.95 billion for Jal Jeevan Mission</p>	<p>To provide safe and adequate drinking water through individual household tap connections to all households in rural India by 2024</p>
<p><b>National Mission for Clean Ganga</b></p>	<p>The Act envisages five-tier structure at national, state and district level to take measures for prevention, control and abatement of environmental pollution in river Ganga. CPCB has identified 302 polluted river stretches on 275 rivers, spanning 28 States and 8 UTs ensure continuous adequate flow of water to rejuvenate the river Ganga</p>	<p>To address the challenges posed by water pollution, particularly along the polluted riverine length of 12,363 km</p>
<p><b>Ministry of Jal Shakti</b></p>	<p>To deal with matters relating to water at one place in an integrated manner. To regulate over-exploitation and consequent depletion of groundwater, a Model Bill has been circulated to all States/UTs to enable them to enact suitable groundwater legislation for the regulation of its development, which includes the provision of rainwater harvesting</p>	<p>Optimal development, maintenance of quality and efficient use of water resources to meet the growing demand for water in the country</p>
<p><b>Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)</b></p>	<p>An umbrella scheme for irrigation prioritized 99 major and medium irrigation projects for completion by December 2019</p>	<p>To achieve convergence of investments in irrigation, expand cultivable area under assured irrigation, improve on-farm water use efficiency to reduce wastage of water, enhance the adoption of precision-irrigation and other water-saving technologies</p>



Policy/ Initiatives	Description	Implications
<b>Namami Gange, 2015</b>	Aims to clean and rejuvenate River Ganga to maintain 'Aviral' and 'Nirmal Dhara' and ensure its ecological and geological integrity	Data for the period 2015-17 indicates an improvement in water quality in terms of dissolved oxygen and coliform bacteria
<b>National Water Policy, 2012</b>	The objective of the National Water Policy is to take cognizance of the existing situation, to propose a framework for the creation of a system of laws and institutions and a plan of action with a unified national perspective	Planning and development of water resources and their optimum utilization
<b>Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD &amp; GR)</b>	Providing technical and financial assistance to encourage sustainable development and efficient management of water resources through various schemes and programmes such as Repair, Renovation and Restoration (RRR) of water bodies scheme and Dam Rehabilitation and Improvement Programme (DRIP)	To promote conservation of water bodies
<b>National Groundwater Management Improvement Scheme (NGMIS), 2017</b>	The scheme is worth USD 794 million and partially funded by the World Bank, was launched to manage groundwater resources in India	Enhance the recharge of aquifers and introduce water conservation practices; promote activities related to water harvesting, water management, and crop alignment
<b>Master Plan for Artificial Recharge to Ground Water in India, 2017</b>	Central Ground Water Board prepared this conceptual document which involved the construction of about 2.3 million artificial recharge and rainwater harvesting structures in rural areas and 8.8 million rainwater harvesting structures in urban areas	The plan resulted in an annual recharge of 2.14 million cubic meters (MCM) of groundwater
<b>Solid Waste Management (SWM) Rules, 2016</b>	MoEF&CC Change introduced the sixth category of waste management rules, which do not include plastic, e-waste, biomedical, hazardous and construction and demolition waste	Source segregation of waste mandate to channelize the waste to wealth by recovery, reuse and recycle
<b>Waste Management and Handling Rules</b>	Rules were introduced by the Ministry of Environment and Forests (MoEF), although their compliance is variable and limited	To promote improved methods of waste segregation and management
<b>MSW (Management and Handling) Rules, 2000</b>	The MoEF issued MSW Rules, 2000 to ensure proper waste management in India. Municipal authorities are responsible for implementing these rules and for developing infrastructure for collection, storage, segregation, transportation, processing and disposal of MSW	Specific directives to the Local Bodies, District Administrations and the Urban Development Departments of the State Governments for proper and scientific management of municipal solid waste



# ANNEXURE III: Process Deployed for Investment Opportunity Areas Shortlisting

## EDUCATION

Themes that were pressure tested for the Education sector for 'Development Needs' and 'Potential for Investment' ranking

	Alignment to development needs and policy priorities	Potential for private sector participations	Examples of scalable models	Identified roadblocks to scale	Average priority order ranking from expert consultations	
					Development needs	Private sector interest
Use of technology to improve access and learning outcomes in K12 education	High	Demonstrated investment momentum	B2C models have demonstrated proof of concept and raised late stage investments	NA	4	1
Use of technology to impart vocational, practical and digital skills	High	Growing investment momentum	Early stage businesses models which have raised funding recently	NA	2	2
Access to education financing	High	Demonstrated investment momentum	Models have achieved scale and raised funding	NA	4	3
High quality and affordable schools	Medium	Demonstrated investment momentum in early years space	Models have achieved scale in the early years space	NA	3	4
High quality tertiary education	Lower	Low investment momentum	Limited scaled examples but some new universities are coming up	High CAPEX requirements and relatively lower cash flows	6	5
Skills development of the unorganised workforce	White Space: Aligned to development needs but not enough policy clarity for private sector	Low investment momentum	No notable scalable models	Highly fragmented market with low purchasing power of target group; need for policy momentum	1	6

Shortlisted    Eliminated    White Space

### Ranked themes evaluated for 3 criteria for final shortlist

Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Education Technology	Online supplementary education for K12	Models can lead to sufficient market returns at scale	Potential to address the need of 200 million students	Models which cater to higher income groups have been successful and are expanding to lower income groups	Yes
	Online upskilling platforms for working professionals (linked to outcomes)	Models can lead to sufficient market returns at scale	Potentially (early success)	Companies have not reported profits, but have potential for revenue growth	White Space
	Online upskilling platforms for unorganised workforce	Systemic hurdles exist which hinder the growth in this segment	High potential to scale (400 million workers)	No notable models at scale	No
Formal Education	Affordable school chains for early childhood education	Models can lead to sufficient market returns at scale	Potential to scale and impact female workforce participation	Segment has attracted PE investment and seen successful exits	Yes
	K12 school chains	Regulations prohibit for-profit operations	Potential to address the need of 200 million students	No notable models at scale	No
	Coaching centres for non-Tier 1 cities	Models can lead to sufficient market returns at scale	While after school coaching is popular in India, the market size remains small	Companies are profitable and have attracted PE investment	No
Informal Education: Skills Development	Vocational training centres	Systemic hurdles exist which hinder the growth in this segment	High potential to scale (400 million workers)	No notable models at scale	No
Education Financing	Institute financing	Models can lead to sufficient market returns at scale	63 million students attend 'affordable private schools'	Segment has attracted PE investment and seen successful exits	Yes
	Student financing	Systemic hurdles exist which hinder the growth in this segment	Potential to address needs of lower purchasing power to access education	No notable models at scale	No

Yes    No    Potential



# HEALTHCARE

Themes that were pressure tested for the Healthcare sector for 'Development Needs' and 'Potential for Investment' ranking

	Alignment to development needs and policy priorities	Potential for private sector participations	Examples of scalable models	Identified roadblocks to scale	Average priority order ranking from expert consultations	
					Development needs	Private sector interest
Low-cost healthcare delivery at the last mile	White Space: Aligned to development needs but not enough policy clarity for private sector	Growing investment momentum	Models have achieved scale and reduced costs	Highly fragmented market, need for policy momentum	1	4
Use of technology to improve accessibility and affordability of healthcare delivery	High	Demonstrated investment momentum in early years space	Early stage businesses models have achieved scale	Penetration of digital infrastructure and internet connectivity	2	1
Affordable healthcare equipment and supplies	Medium	Growing investment momentum	Models have achieved scale and raised funding	Capacities to manufacture quality products at scale	3	3
Universal health coverage	Medium	Low investment momentum	Limited scaled examples as this segment is not well developed	Need for policy momentum	5	5
Life sciences innovations	Medium	Demonstrated investment momentum	Models have achieved scale	NA	4	2
Alternative medication systems and wellness products	Lower	Low investment momentum	No notable scalable models	NA	6	6

Shortlisted Eliminated Potential

## Ranked themes evaluated for 3 criteria for final shortlist

Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Healthcare Delivery	Primary care infrastructure	Systemic hurdles exist which hinder the growth in this segment	Potential to address need for primary healthcare, especially in rural areas	No notable commercially viable models at scale	White Space
	Tertiary care outside Tier I cities	Models can lead to sufficient market returns at scale	Potential to increase bed/people to doctor ratio	Models are profitable and expanding to lower Tier cities	Yes
	Specialty centres	Models can lead to sufficient market returns at scale	Potential to expand models into Tier II and Tier III cities	Companies have potential for revenue growth	Yes
	Decentralized preventive, primary and secondary care centres	Models can lead to sufficient market returns at scale	Potential to increase bed/people ratio and government doctors	Companies have potential for revenue growth	Yes
MedTech	Telemedicine/digitally-enabled remote treatment	Models can lead to sufficient market returns at scale	Potential to increase access to expert healthcare advisory in the absence of brick and mortar healthcare facilities	Models are profitable and expanding, especially given the surge in the COVID-19 pandemic	Yes
	Data management in healthcare	Systemic hurdles exist which hinder the growth in this segment	Potential of system is concentrated in urban areas	No notable models at scale	No
	Content platforms	Systemic hurdles exist which hinder the growth in this segment	Potential to increase market awareness in rural areas	Companies are at early stages with challenges around customer stickiness	No
Managed Care	Medical insurance products	Models can lead to sufficient market returns at scale	High potential to scale	Few companies have seen early success	No

Yes No Potential

Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Affordable equipment & supplies	B2B hospital equipment (ventilators, etc.)	Models can lead to sufficient market returns at scale	Potentially (early success)	Segment has seen successful models	Yes
	B2B diagnostic equipment	Models can lead to sufficient market returns at scale	Potential to reach rural areas by reducing cost of equipment	Segment has seen successful models but do not address affordability	No
	B2B: Consumables	Models can lead to sufficient market returns at scale	Potentially (early success)	Segment has seen successful models	Yes
	B2B2C services, e.g., stents	Models can lead to sufficient market returns at scale	Potential to reach rural areas by reducing cost of equipment	Segment has seen successful models but do not address affordability	No
	B2C: Medical devices	Models can lead to sufficient market returns at scale	Potential to reach mass market by reducing cost of devices	Few companies have seen early success	Yes
Life Sciences Managed Care	Vaccine manufacturing	Systemic hurdles & regulations hinder the growth in this segment	Potential model is highly scalable	Few companies have seen early success	No
	Drug development and research	Regulatory hurdles of clinical trials to be eliminated for growth in this segment	Potentially (early success)	Segment has seen successful models	No
	APIs manufacturing	Models can lead to sufficient market returns at scale	Potentially (early success)	Few companies have seen early success	Yes
	Drugs manufacturing	Models can lead to sufficient market returns at scale	Potentially (early success)	Segment has seen successful models	Yes

Yes	No	Potential
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## FOOD & BEVERAGES

Themes that were pressure tested for the F&B sector for 'Development Needs' and 'Potential for Investment' ranking

	Alignment to development needs and policy priorities	Potential for private sector participations	Examples of scalable models	Identified roadblocks to scale	Average priority order ranking from expert consultations	
					Development needs	Private sector interest
Agri-tech (including E-markets and technological interventions in the agriculture space)	High	Demonstrated investment momentum	Models have achieved scale and raised funding	NA	3	1
R&D in agriculture and agri-biotechnology	Aligned to development needs but not enough policy clarity for private sector	Growing investment momentum	No notable scalable models	Need for policy momentum	2	5
Rural markets, logistics and supply chain to be strengthened	High	Demonstrated investment momentum	Limited scaled examples as this segment is not well developed	NA	2	2
Food processing	High	Growing investment momentum	Models have achieved scale and raised funding	NA	3	3
Poultry, Fish and Dairy farming	High	Growing investment momentum	Models have achieved scale and raised funding	NA	3	3
Agri-financing	Aligned to development needs but not enough policy clarity for private sector	Low investment momentum	Limited scaled examples as this segment is not well developed	NA	2	4

Shortlisted	Eliminated	Potential
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## Ranked themes evaluated for 3 criteria for final shortlist

Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Food Retailers & Distributors	Using digital tools and physical operations to service and increasing farmer reach	Models can lead to sufficient market returns at scale	Potential to create impact through farmer or specialized platforms	Companies have attracted PE investment	Yes
	Use of digital platforms to solve for supply-chain issue	Digital trade can boost the activity	High potential to scale for fresh produce	Companies have attracted PE investment	Yes
	Use of technology for efficient farming processes	Systemic hurdles if overcome can support the growth in segment	Potentially (early success)	Companies have attracted PE investment	White Space
	Reduction in wastage of farm produce	Models can lead to sufficient market returns at scale	Potential to reach farmers by increasing momentum	No notable models at scale	White Space
	Storage infrastructure for agri-produce	Systemic hurdles if overcome can support the growth in segment	Potential to be scalable with demand for storage infra	Few companies have seen early investments	White Space
Processed Foods	Food processing for value addition and improving life of food products	Systemic and policy hurdles if overcome can support the growth in segment	Segment has attracted PE investment and seen successful exits	Segment has attracted PE investment and seen expansion in Tier I and Tier II cities	Yes
	Export of processed foods	Systemic hurdles exist which hinder the growth in this segment	Potential to maintain the international quality norms	Companies have attracted PE investment and high growth	No

Yes	No	Potential
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Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Meat, Poultry & Dairy	Production and delivery of meat/dairy/fish market products	Systemic hurdles of cold chain exist to manage supply-demand	Potential in value added dairy products segments is scalable	Companies have not reported profits, but have received investments from PE	No
	Biotech inputs that can help in servicing value chains for meat/dairy/fish market	Systemic hurdles hinder the growth of segment	Potential to scale is seen among few players	Companies have attracted PE investment	No
	Post-harvest infra for servicing value chains for meat/dairy/fish market	Models can lead to sufficient support from government	Potential model lacks scalability	No notable models at scale	No
Agriculture Financing	Formal modes of financing for financing	Systemic and regulatory hurdles exist which hinder the growth in this segment	Potential to reach last-mile customer by increasing models in the market	No notable models at scale	No
	Risk-mitigation products to safeguard farmers from future price falls in case of excess produce	Regulatory and policy reforms can accelerate growth in this segment	Potentially (early success)	Companies have attracted PE investments	White Space
	Agri-insurance	Regulatory hurdles exist which hinder the growth in this segment	Potential to reach last-mile customer by increasing models in the market	No notable models at scale	No

Yes	No	Potential
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# RENEWABLE RESOURCES & ALTERNATIVE ENERGY

Themes that were pressure tested for the RE sector for 'Development Needs' and 'Potential for Investment' ranking

	Alignment to development needs and policy priorities	Potential for private sector participations	Examples of scalable models	Identified roadblocks to scale	Average priority order ranking from expert consultations	
					Development needs	Private sector interest
Scalable solar energy projects	High	Demonstrated investment momentum	Models have achieved scale and raised funding	NA	1	1
Electric vehicle manufacturing and infrastructure	High	Growing investment momentum	Early stage businesses models which have raised funding recently	NA	3	3
Harnessing wind resources to meet energy needs	Medium	Demonstrated investment momentum	Models have achieved scale and raised funding	NA	2	2
Harnessing hydro power to meet energy needs	Medium	Low investment momentum	Limited scaled examples as this segment is not well developed	Not very eco-friendly, highly capital intensive	5	4
Converting waste to energy (such as biofuels)	Medium	Low investment momentum	Limited scaled examples as this segment is not well developed	Waste segregation is not followed, which reduces the quality of raw materials	4	4
Upgrading industrial and agricultural technology to reduce emissions	Aligned to development needs but not enough policy clarity for private sector	Low investment momentum	No notable scalable models	Need for policy momentum	6	5
Forestry Management and processing of forest produce	Lower	Low investment momentum	No notable scalable models	Need for policy momentum	7	6

Shortlisted   Eliminated   Potential

## Ranked themes evaluated for 3 criteria for final shortlist

Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Solar Technology & Project Developers	Solar component manufacturing, as well as assembly lines, to help reduce dependence on imports	High lending rates and capital cost prohibit for-profit operations	Potential to address manufacturing capacity of 10 GW	No notable models at scale	No
	Manufacturing of batteries used in solar panels	Potential to grow if import dependence for raw materials can be reduced	Potential to uplift the segment through introduction of policies	No notable models at scale	No
	Rooftop solar to serve energy needs of residential, commercial and industrial needs	Models can lead to sufficient market returns at scale	Potential to scale and impact employability in the country	Companies have attracted PE investment	Yes
	Operating off-grid solar energy projects to supply electricity in remote areas	Models can lead to sufficient market returns at scale	Potential to be scalable by resolving political/regulatory issues	No notable models at scale	No
	Manufacture of solar utility products to encourage use of clean energy based products	Less commercially viable demand prohibit for-profit operations	Potential to reach economies of scale via OPEX subsidies	Schemes/initiatives undertaken by GoI to help farmers	No
	Trading/supply of solar energy based products to last-mile consumers	Demand-supply gap exists due to high selling costs (due to component cost)	Potential to reach last-mile customers by solarizing remote areas	Companies have attracted PE investment	No
	Innovative solutions for resolving limited land-bank issues which plague the solar industry	Potential to grow if issues related to tariff are resolved	Potential to resolve limited land availability with floating solar	Floating solar tenders have been issued by SECI but models will take time to show results	White Space

Yes   No   Potential



Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Electric Vehicle (EV)	Manufacturing of EVs	Models can lead to sufficient market returns at scale	Potential of 81% of total vehicles and incentives under FAME	Segment witnessed CAGR of 7.33% with sales volume of ~25 million	Yes
	Use of EVs in other industries for logistics, hyperlocal delivery and micro-mobility	Models can lead to sufficient market returns at scale	Potential to get implemented for short-distance commute options	Segment has market size of USD 4.5 billion in shared mobility space	No
	Charging infrastructure for EVs	Delicensing to set-up charging infra will boost private participation	Potential to set-up charging infra through capital subsidies	Segment has attracted PE investment	White Space
Wind Technology & Project Developers	Component manufacturing for Wind energy sector	High capital and low returns prohibit for-profit operations	Potential to be scalable by being cost effective	No notable models at scale	No
	Wind energy projects	High capital cost prohibit for-profit operations	Potential experience high speed wind turbines only in few regions	No notable models at scale	No
	Innovative solutions for resolving issues affecting the renewable energy sector	Models can lead to sufficient market returns at scale	Potential to evaluate issues through utility dependent model	Segment has attracted interest of investors in tendering process	Yes

Yes	No	Potential
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## FINANCIALS

Themes that were pressure tested for the Financials sector for 'Development Needs' and 'Potential for Investment' ranking

	Alignment to development needs and policy priorities	Potential for private sector participations	Examples of scalable models	Identified roadblocks to scale	Average priority order ranking from expert consultations	
					Development needs	Private sector interest
Access to credit by SMEs and last-mile population for income generating purposes and consumption	High	Demonstrated investment momentum	Models have achieved scale and raised funding	Demand side awareness; availability of adequate data to determine credit-worthiness	1	1
Access to insurance by last-mile population, particularly from the informal sector	High	Low investment momentum	Limited scaled examples as this segment is not well developed	Challenges in underwriting, high transaction costs for last mile outreach, low demand side awareness	3	3
Access to pensions by last-mile population, particularly from the informal sector	Medium	Low investment momentum	Limited scaled examples as this segment is not well developed	Unviable to scale in rural areas; low demand side awareness	4	5
Asset lean models for last-mile delivery of financial services	High	Growing investment momentum	Models have achieved scale and raised funding	NA	2	2
Payment services for last-mile population, particularly from the informal sector	Medium	Growing investment momentum	Early stage businesses models which have raised funding recently	Supply side initiatives to create models for vernacular populations	4	6
Financial infrastructure to support banking at last mile, particularly the informal sector and SMEs	High	Growing investment momentum	Models have achieved scale and raised funding	NA	3	-
Financial services for sector-specific value chains	Medium	Low investment momentum	Limited scaled examples as this segment is not well-developed	Scalability for	4	-

Shortlisted	Eliminated	Potential
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## Ranked themes evaluated for 3 criteria for final shortlist

Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Consumer Finance	MSME financing through digital and offline channels	Models can lead to sufficient market returns at scale	Potential to address the credit gap of USD 397 billion	Segment has attracted PE investment and seen expansion rural areas, serving last mile segments	Yes
	Fintech platforms for facilitating payment transactions	Models can lead to sufficient market returns. Potential in rural areas	High potential to scale in rural areas with appropriate product design and use case	Segment has seen successful models in urban and peri-urban areas with increasing reach in rural.	Yes
	Asset lean acceptance infrastructure for last-mile banking	Systemic hurdles if overcome can support the growth in segment	Infrastructure such as ATMs and agent networks have reach in rural areas with potential for expansion	Investor activity is present but successful exits awaited. Recent regulatory changes for ATMs expected to spur growth and expansion	Yes
Insurance	Digital and offline insurance for low income segments	Absence of models, specifically for low-income segments with evidence of sufficient returns on investments	Expected changes in market dynamics due to scale of GoI's Ayushman Bharat scheme likely to pave way for greater private sector participation	Absence of business models/companies that have proven, scalable models serving rural, low income populations	White Space

Yes No Potential

## SUSTAINABLE ENVIRONMENT

Themes that were pressure tested for the Sustainable Environment sector for 'Development Needs' and 'Potential for Investment' ranking

	Alignment to development needs and policy priorities	Potential for private sector participations	Examples of scalable models	Identified roadblocks to scale	Average priority order ranking from expert consultations	
					Development needs	Private sector interest
Water resource management (including focus on food security), Water treatment and harvesting	High	Growing investment momentum	Limited scaled examples as this segment requires policy momentum for development	Need for policy momentum	2	2
Access to clean drinking water - especially in rural areas	Aligned to development needs but not commercially viable for private investment	Low investment momentum	No notable scalable models	Willingness to pay for water is limited; thus it is restricted to CSR activities	3	3
Waste management, including solid urban waste	High	Growing investment momentum	Limited scaled examples as this segment requires policy momentum for development	Need for policy momentum	1	1
Toilet infrastructure to eliminate OD. Expediting construction and leveraging technology	Aligned to development needs but not commercially viable for private investment	Low investment momentum	No notable scalable models	Limited to CSR activities	4	3

Shortlisted Eliminated Potential

## Ranked themes evaluated for 3 criteria for final shortlist

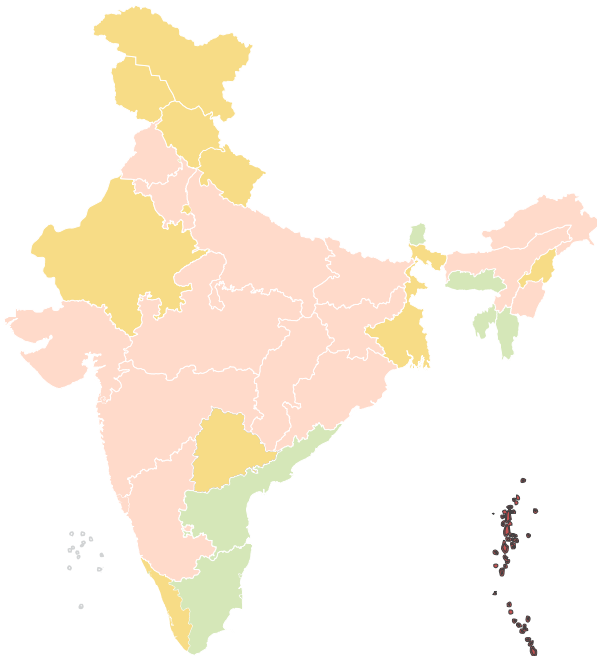
Subsector	Investment Opportunity Areas identified in consultations	Fundamentally marketable	Sufficiently at-scale	Proven in-market	Investment Opportunity Area shortlisted
Waste Management	Solid waste management/treatment	Regulatory and policy reforms can accelerate growth in this segment	Potential to scale is seen among few players	Only a few outliers have been successful in raising private sector funding; but policy momentum is required for growth and development of this segment	White Space

Yes No Potential



# ANNEXURE IV: SDG Performance Index for India

## SDG 1: No Poverty

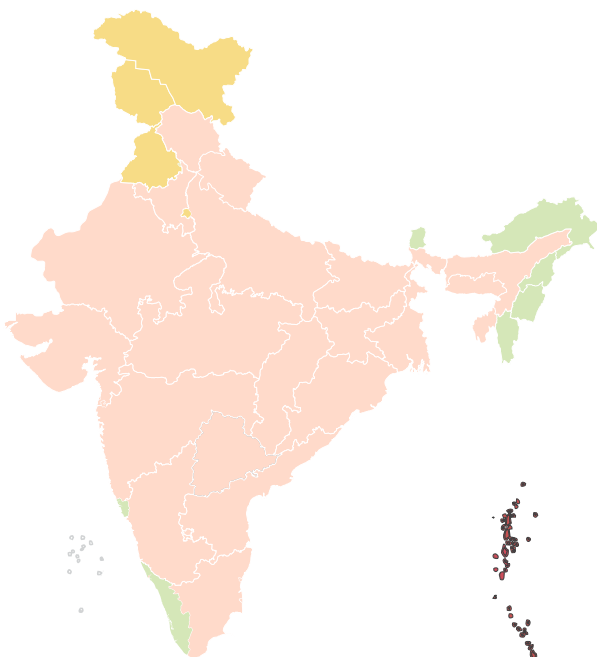


- Achiever (>99)
- Front Runner (65 - 99)
- Performer (50 - 64)
- Aspirant (0 - 49)

### Indicators

- Population living below National Poverty Line
- Households with any usual member covered by any health scheme or health insurance
- People, who demanded employment under Mahatma Gandhi National Rural Employment Guarantee Act 2005 (MGNREGA), were provided the employment
- Population receiving social protection benefits under Maternity Benefit
- Households living in kutcha houses

## SDG 2: Zero Hunger

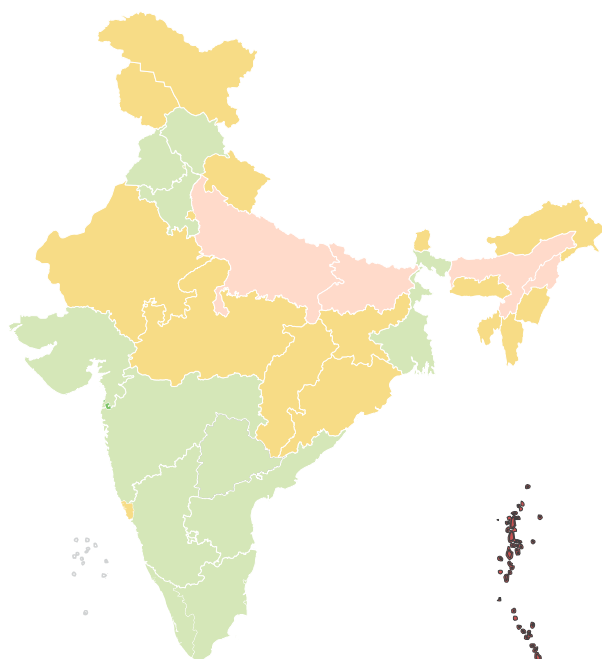


- Achiever (>99)
- Front Runner (65 - 99)
- Performer (50 - 64)
- Aspirant (0 - 49)

### Indicators

- Ratio of rural households covered under public distribution system to rural households where the monthly income of the highest earning member is less than ₹ 5,000
- Children under 5 years of age are stunted and under 4 years are underweight
- Pregnant women aged 15-49 years are anaemic
- Children between 6–59 months are anemic
- Rice, wheat and coarse cereals produced annually per unit area
- Gross value added in agriculture per worker

### SDG 3: Good Health and Well-Being

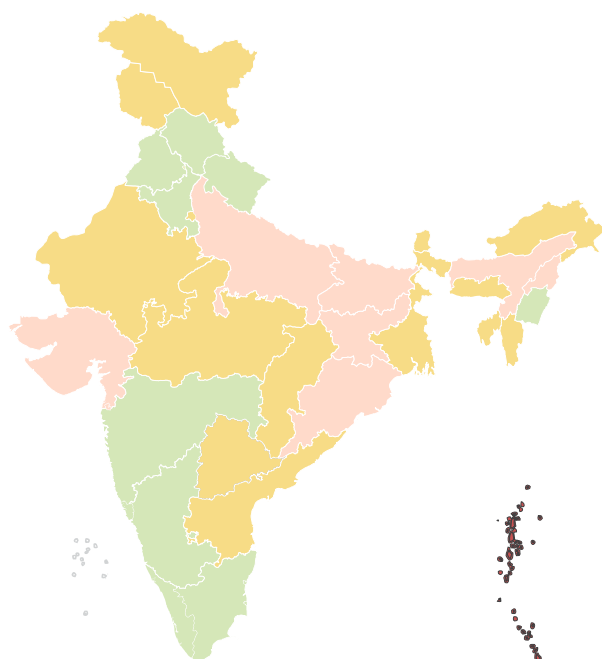


- Achiever (>99)
- Front Runner (65 - 99)
- Performer (50 - 64)
- Aspirant (0 - 49)

#### Indicators

- Maternal Mortality Ratio
- Proportion of institutional deliveries
- Under-five mortality rate per 1,000 lives
- Fully immunized children in age group 0-5
- Total case notification rate of Tuberculosis per 1 lakh population
- HIV incidence per 1,000 uninfected population
- Currently married women aged 15-49 years who use any modern method of family planning
- Total physicians, nurses and midwives per 10,000 population

### SDG 4: Quality Education



- Achiever (>99)
- Front Runner (65 - 99)
- Performer (50 - 64)
- Aspirant (0 - 49)

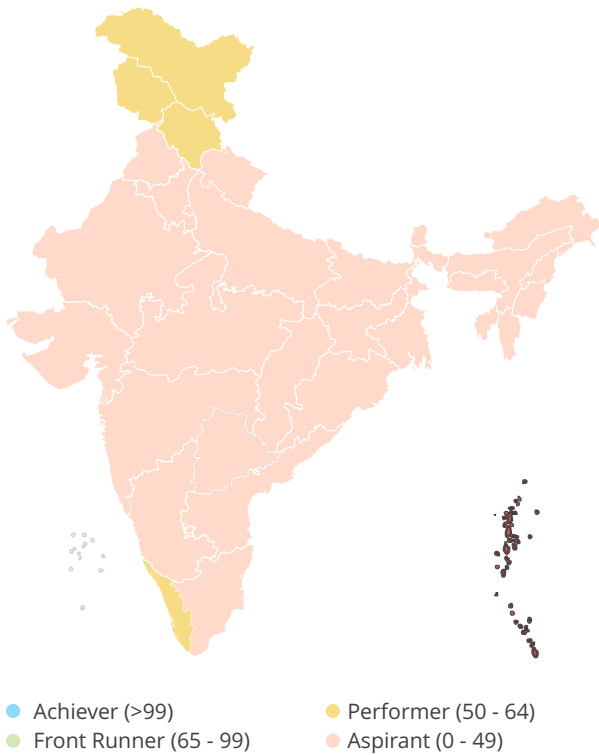
#### Indicators

- Adjusted Net Enrolment Ratio at elementary and secondary education
- Children in the age group 6-13 are out of school
- Average annual drop-out rate at secondary level
- Percentage of students in grade III, V, VIII and X achieving at least a minimum proficiency level in terms of nationally defined learning outcomes to be attained by pupils at the end of each of above grades
- Gross Enrolment Ratio in higher education
- Gender Parity Index for higher education
- Disabled children attending educational institution
- Proportion of trained teacher by education level
- Percentage of schools with Pupil Teacher ratio less than/equal to 30





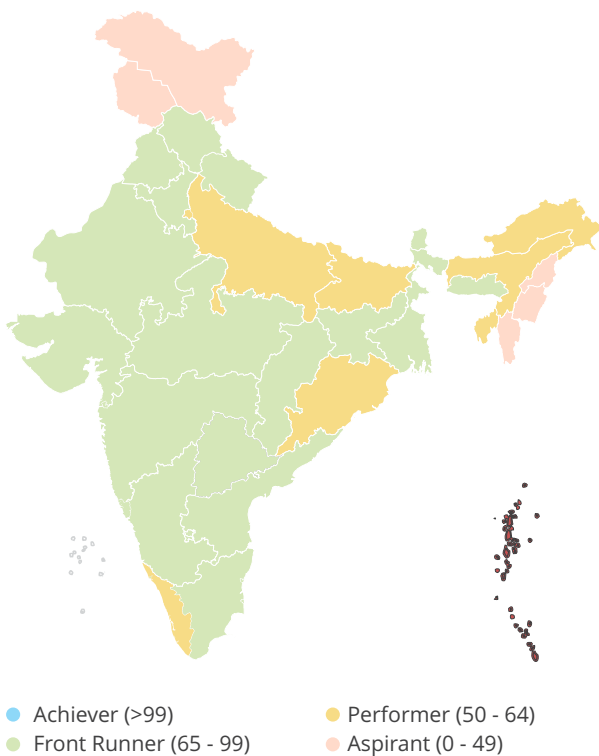
### SDG 5: Gender Equality



#### Indicators

- Female to male ratio of average wage/salary earning received during the preceding calendar month among the wage salaried employees (rural + urban)
- Rate of crimes against women per 100,000 female population
- Married women aged 15-49 who have ever experienced spousal violence
- Proportion of sexual crime against girl children to total crimes against children
- Seats won by women in the general elections to state legislative assembly
- Female labour force participation rate (LFPR)
- Operational land holdings- gender-wise

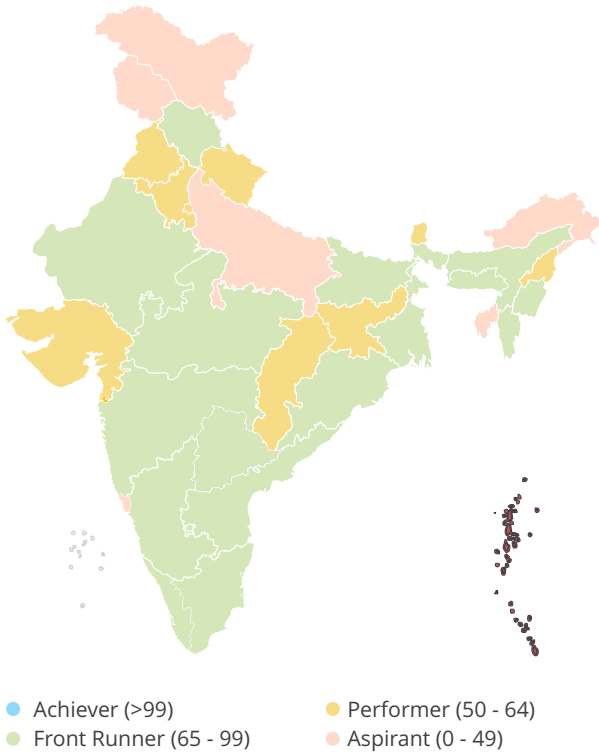
### SDG 8: Decent Work and Economic Growth



#### Indicators

- Annual growth rate of Net Domestic Product (NDP) per capita
- Ease of doing business score (EODB)
- Unemployment rate
- Labour Force Participation Rate
- Number of banking outlets per 100,000 population
- Households with a bank account
- Population of women account holders under PMJDY

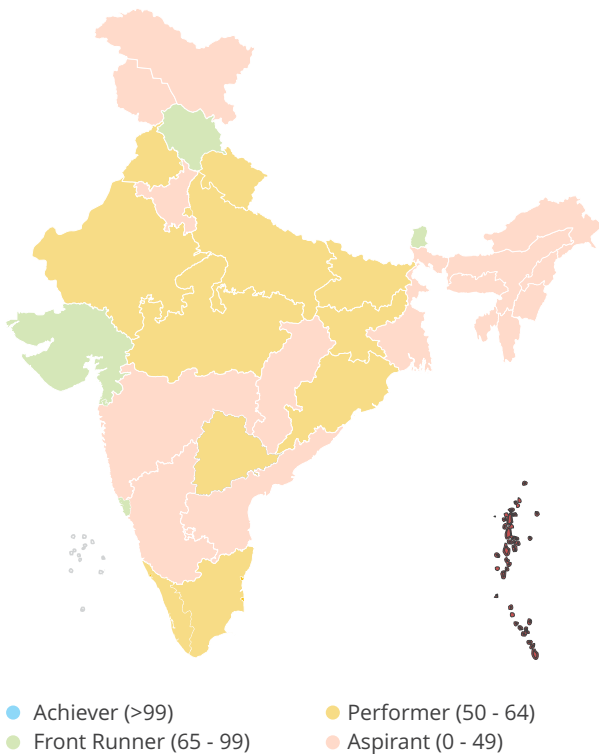
## SDG 10: Reduced Inequality



### Indicators

- Growth rates of household expenditure per capita among the bottom 40 percent of population in rural India
- Growth rates of household expenditure per capita among the bottom 40 percent of population in urban India
- Gini coefficient of household expenditure in rural India
- Gini coefficient of household expenditure in urban India
- Proportion of seats held by women in Panchayat Raj Institutions
- Proportions of SC/ST persons in state legislative assemblies
- Ratio of transgender labour force participation rate to male labour force participation rate
- Schedule caste sub plan fund utilized
- Tribal sub plan fund utilized

## SDG 11: Sustainable Cities & Communities

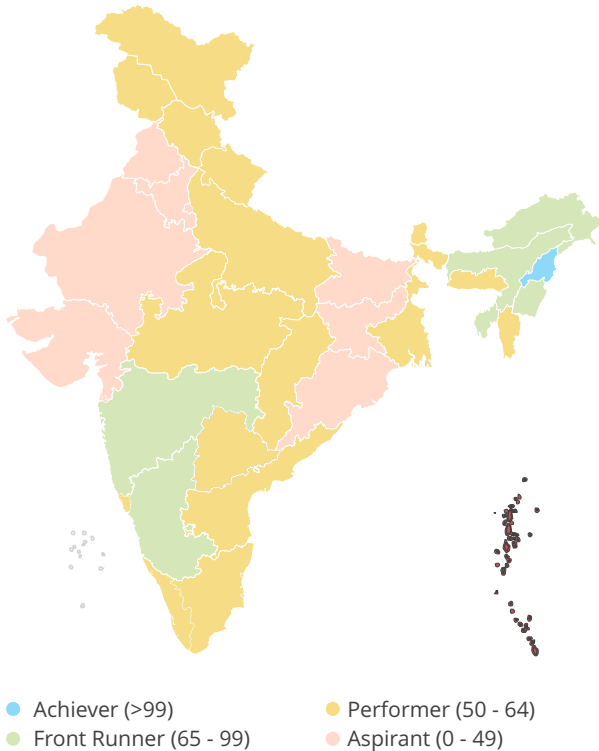


### Indicators

- House completed under Pradhan Mantri Awas Yojana (PMAY) as a percentage of net demand assessment for houses
- Urban households living in slums
- Wards with 100% door to door waste collection
- Waste processed
- Installed sewage treatment capacity as a proportion of sewage generated in urban areas



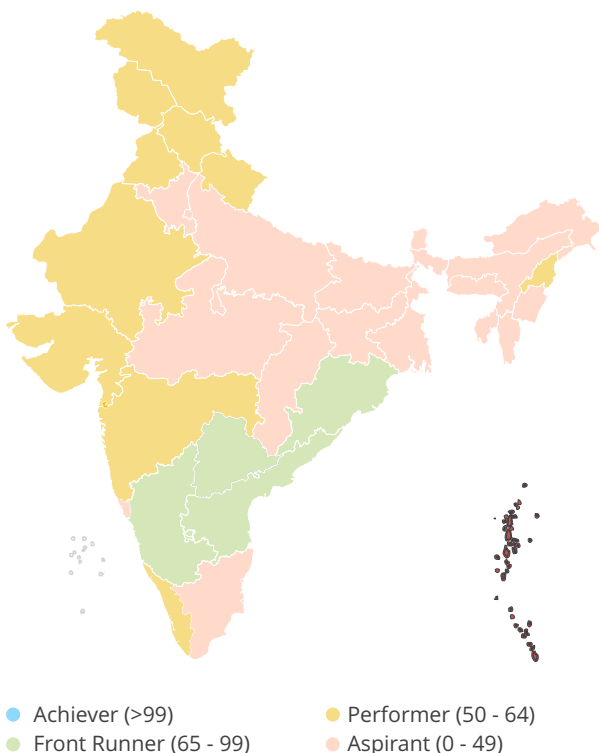
## SDG 12: Sustainable Consumption & Production



### Indicators

- Groundwater withdrawal against availability
- Percentage use of nitrogen fertilizers out of NPK
- Per capita hazard waste generated
- Ratio of processed quantity of hazard waste sent to recycle to hazard waste generated
- Municipal Solid Waste (MSW) treated to MSW generated
- Installed capacity of grid interactive bio power per 100,000 population
- Wards with 100% source segregation

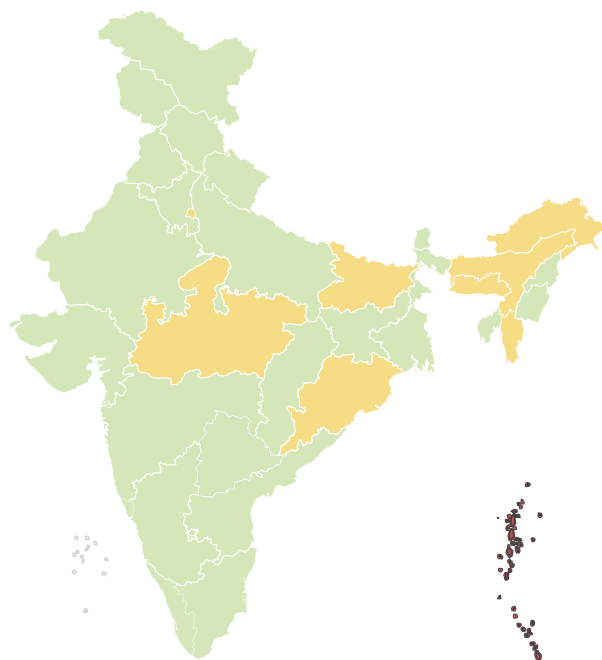
## SDG 13: Climate Action



### Indicators

- Number of human lives lost per 1,000,000 population due to extreme weather events
- Renewable share of installed generating capacity
- CO<sub>2</sub> saved from LED bulbs per 1,000 population
- Installed capacity of solar power as proportion of installed grid interactive renewable power

## SDG 16: Peace, Justice & Strong Institutions



- Achiever (>99)
- Front Runner (65 - 99)
- Performer (50 - 64)
- Aspirant (0 - 49)

### Indicators

- Reported murders per 1 lakh population
- Proportion of population subjected to physical, physiological or sexual violence in the previous 12 months
- Reported cognizable crimes against children per 1 lakh population
- Number of victims of human trafficking per 100,000 population by sex, age and form of exploitation
- Estimated number of courts per 10 lakh persons
- Cases reported under Prevention of Corruption Act & related sections of IPC per 100,000 population
- Births registered
- Population covered under Aadhar

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