Pathways to Progress

A Sectoral Study of Indian Social Enterprises

Intellecap
SHAPING OUTCOMES

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ABBREVIATIONS

ACRONYMS	FULL FORM
ADB	Asian Development Bank
AIDIP	Agribusiness Infrastructure Development Investment Programme
AMCS	Automated Milk Collection Systems
APMC	Agricultural Produce Marketing Committee
APS	Affordable Private Schools
ATM	Automated Teller Machine
B2B	Business to Business
BoP	Base of the economic Pyramid
BOPEEI	Bottom of Pyramid Energy & Environmental Innovations
CAGR	Compound Annual Growth Rate
CHC	Community Health Centers
CLTS	Community Led Total Sanitation
COCO	Company Owned Company Operated
CPA	Central Procurement Agency
DFI	Development Finance Institution
ECCE	National Early Childhood Care and Education
EPC	Engineering, Procurement and Construction
ESI	Employees State Insurance
FCI	Food Corporation of India
FDI	Foreign Direct Investment
FPO	Farmer Producer Organizations
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaftfür Internationale Zusammenarbeit GmbH
GW	Gigawatt
HP	Horse Power
ICT	Information and Communications Technology
IFC	International Finance Corporation
IISc	Indian Institute of Science
IMD	India Meteorological Department
IREDA	India Renewable Energy Development Agency
IVRS	Integrated Voice Response System
JNNSM	Jawaharlal Nehru National Solar Mission
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
KWh	Kilowatt Hour

ACRONYMS	FULL FORM
LIS	Low-Income State
MDGs	Millennium Development Goals
MFI	Microfinance Institution
MNRE	Ministry of New and Renewable Energy
MoU	Memorandum of Understanding
MSP	Minimum Support Price
MSW	Municipal Solid Waste
NABARD	National Bank for Agricultural and Rural Development
NACMF	National Agricultural Cooperative Marketing Federation
NDDB	National Dairy Development Board
NGO	Non-Governmental Organisation
NRHM	National Rural Health Mission
NSDC	National Skill Development Commission
NSSO	National Sample Survey Office
OASIS	Organization for Awareness of Integrated Social Security
PF	Provident Fund
PHC	Primary Health Centers
PPP	Public Private Partnership
RBH	Rural Business Hub
RBI	Reserve Bank of India
RMP	Rural Medical Practitioners
RTE	Right to Education
SC	Sub-Centers
SHG	Self Help Groups
SHS	Solar Home Systems
SME	Small and Medium Enterprise
SSI	Sustainable Sugarcane Initiative
T&D	Transmission and Distribution
TIDE	Technology Informatics Design Endeavour
TSC	Total Sanitation Campaign
VLE	Village Level Entrepreneurs
VSDI	Vocational and Skill Development Institutes
WHIMS	Wireless Health Incident Monitoring System
WHO	World Health Organization

EXECUTIVE SUMMARY

April 5, 2013 marked 1000 days to the end of 2015. At the end of 2015, India and all the other signatory countries will reach the deadline for achieving the Millennium Development Goals (MDGs). Discussions around the development agenda beyond 2015 are already underway, with calls for continuing the efforts and perhaps adding some new elements to the MDG framework such as security, equality and good governance.

For a small, but very agile and lively group of social entrepreneurs in India and around the world, 2012 was business as usual and a particularly eventful period – some enterprises scaled out of their original geographies, others built the blueprint to do so. Many of them found smart answers to resolve their operational challenges, while others refined and introduced innovative solutions to market needs. Looking forward toward 2015 and future years, these social enterprises will continue their efforts toward helping to achieve the MDGs and thus improve the lives and livelihoods of around the nearly 2 billion people around the world living at the base of the economic pyramid (BoP).

We, at Intellecap, are pleased to participate in the development of social enterprises in India and around the world. Through our Research efforts, we seek to contribute towards documenting the growth of the social enterprise industry and building the repository of knowledge about social enterprises. This report is our second installment in landscaping the social enterprise space, and focuses on building sector specific research in five critical needs sectors – Agribusiness, Clean Energy, Education, Healthcare and Water & Sanitation. It forms the backdrop for more detailed reports we plan to release during the course of 2013.

Each of the social enterprise sectors we showcase in this report is poised for growth. Each has its share of challenges, but each also presents an exciting array of solutions that can contribute to the improvement of lives and livelihoods for people at the BoP. And many of these solutions are highly innovative, home-grown, and community led. Some common threads we observe in this report include:

Large Markets, but Significant Challenges to Scale:
India presents large un-penetrated markets in each of the five sectors covered in this report. Rates of penetration are particularly low in the Low Income States (LIS)[1] and the North East Region (NER).[2] Each of these sectors therefore presents a huge opportunity for social enterprises to grow and scale. At the same time, however, the social enterprises currently working in these sectors are young and relatively inexperienced, and thus are significantly challenged to meet unmet demand. Achieving scale and sustainability therefore continues to be the biggest single challenge for the social enterprises covered in this report.

Limited Access to Financial and Human Capital Continues to be a Significant Constraint:
Across the five sectors, social enterprises continue to be constrained by lack of access to finance and human resources. Without adequate funding and people with the experience and expertise to manage and grow these unique businesses, the challenges of growth and scale required to meet market demand are not likely to be addressed. For instance, in the Healthcare sector, lack of availability of medical doctors in Tier 2 and Tier 3 locations is a major constraint for several social enterprises seeking to establish new delivery system. In our 2012 report "Understanding Human Resource Challenges in the Indian Social Enterprise Sector", we spoke about how social enterprises are bridging the talent gap through smart hiring (interns, consultants, part-time high quality staff) and training local communities. Enterprises across sectors – be it Energy, Education or Water & Sanitation – find that they need to repeat the training process in every location. This is time consuming, expensive and does not always deliver the best results. And across all sectors, access to financial capital is frequently constrained because young and emerging social enterprises are not yet "investor ready" in terms of their business models and plans to scale.

Innovative Business Models Still in Early Stages:
Many of the social enterprises covered in this report are developing new and innovative business models. This is the case across each of the sectors that we considered. In several of the sectors, however, such as Water & Sanitation and Clean Energy, there are "free"or subsidized alternatives for the products and services that social enterprises provide to the BoP. For communities with access to these "free" products or services and used to 'making do', paying for a better alternative does not come easy – especially when there are competing demands for the same budget. Enterprises across sectors have devised interesting and innovative ways to make products affordable, modular and bite-sized. We see evidence of this in the way affordable private schools and vocational training enterprises charge their fees; how enterprises price water and clean toilets and the way Energy companies retail electricity and solar and biomass products. These business models, though, are at very early stages, and need further development to demonstrate scale and deliver on their promises.

New Collaborative Approaches have Significant Potential:
One way social enterprises across sectors are seeking to address the challenges of scale and developing new business models is through building networks and other collaborative approaches to their businesses. In the Clean Energy sector, for example, we see a network of village level entrepreneurs

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[1] The Low Income States (LIS) in India include Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Odisha, Rajasthan, Uttar Pradesh and West Bengal.

[2] The North East Region (NER) of India comprises Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim.

and local trained technicians. In Water & Sanitation, we see networks of waste workers as well as entrepreneurs. Further, the Healthcare and Education sectors are exploring a variety of innovative Public-Private Partnerships while the Healthcare sector has established an elaborate health worker system. These new collaborative approaches are distinctive among the social enterprises in the sectors that we covered, and we expect to see more of these approaches as the enterprises evolve their business models and seek to scale.

Technology Adaptation Presents New Opportunities:
Social enterprises are generally quick to pick new and updated technologies and adapt them to cater to their markets. Across the sectors covered in this report, enterprises are leveraging mobile telephony and other communications devices to deliver services and build the last mile connect with customers. In Healthcare, tele-medicine is an emerging format, while Agribusiness enterprises use mobile phones to inform farmers of weather forecasting, farming techniques, best prices and more. Enterprises are also building smaller decentralized solutions that are not only affordable, but also more efficient and supportive of rapid scale. In Energy, enterprises provide electricity through mini and micro grids, while in Water & Sanitation, examples of water purification and decentralized at-source waste management technologies abound. Thus, many social enterprises in each of the sectors covered in this report are attempting to bring current technology at affordable prices to the BoP, and the opportunities for further development and use of existing and new technologies is significant in each sector.

Investment in Stakeholder Education and Awareness is Required: Every social enterprise we spoke with shared experiences of how they needed to first create a market in terms of building awareness for the need and then for their product or service. Interestingly, they not only needed to educate their customers but also different stakeholder groups who financed them or supported them up and down the sector value chain. For most enterprises, therefore, investment in education and awareness building became a part of their business and operational plans as they evolved. In the every sector, we saw examples of enterprises creating outreach programs, road shows, mobile demonstration units, and information kiosks.

Social Enterprise Space Remains Attractive for Investment:
Social enterprises across the sectors we studied will remain attractive for investment for many years to come. The enterprises are generally young but growing quickly, and they will require and benefit from investment capital and in some circumstances loans, grants, and other forms of financial support as they seek to scale their businesses and prove their business models. Further, interviews with impact investors and several business incubators indicate that much capacity building remains to be done for social entrepreneurs in each of the sectors that we looked at. From an investment perspective, it seemed to us that impact investors will see the best investment opportunities in the Clean Energy and Healthcare sectors, where there is greater proliferation of social enterprises as well as business models that can scale.

Other sectors that seem to have significant investment potential are in the post-harvest segments in Agribusiness and the delivery and medical equipment segments of the Health Care sector. "Venture philanthropists" and Development Finance Institutions may find particularly fruitful opportunities to engage with social entrepreneurs in the pre-harvest segment of the Agribusiness sector, as well as in the Education and Watsan sectors, where there are important initiatives from an impact perspective that may require grants or subsidies in their early stages of development but that could present significant sustainable business opportunities over time.

INTRODUCTION

L ast year, we set out to chart the social enterprise landscape in India. Emerging out of a dual focus – to achieve social impact and sustainability – these enterprises hold the promise of facilitating inclusive growth. In our maiden attempt to map the space, we focused on challenges to scale and sustainability that these enterprises faced as a group. Surveying over 100 social enterprises, we found that access to human resources and capital emerged as the top two challenges. (Our next section presents a brief recap of our 2012 study.)

Our research also indicated that while all social enterprises share the dual focus, they are very much a part of the industry vertical they operate in, and the state of that sector impacts them significantly. Considering that social enterprises emerge and evolve most often in response to the failure of other public and market-driven solutions to meet critical needs at the BoP, conditions in the sector will dictate their strategies and business models. While the enterprises' mission and vision strategically aligns them to the social enterprise space, they are operationally and through their for-profit focus, equally if not more, aligned to the sector they belong to. With this learning, we now add one more layer to our landscape efforts with a sectoral overview of the social enterprise space in India.

Social enterprises have emerged in several sectors as well as domains that cut across all sectors. We see strong activity in sectors like Agribusiness, Clean Energy, Education, Healthcare, Water & Sanitation, and cross-cutting domains like livelihoods and ICT for development. Even within sectors, they are present in several links across the value chain. Identifying these links and how social enterprises carved out their space within them is just the beginning.

Our research indicates that while all social enterprises share the dual focus, they are very much a part of the industry vertical they operate in, and the state of that sector impacts them significantly.

OBJECTIVES AND METHODOLOGIES

Given the sheer scale and scope of the task, we started out with mapping social enterprises in the critical needs sectors first. We sought to:

» Present a birds' eye view of different sectors and social enterprises present in them;
» Understand social enterprise activity across the industry value chain;
» Identify different or innovative business models that target the BoP;
» Understand different industry specific challenges that social enterprises face;
» Identify emerging trends and opportunities in the sector.

Our research involved two phases. In Phase One, our first port of call was our social enterprise database, which is a live document that we continuously polish and update. Simultaneously, we built our sector knowledge through secondary research combined with focused and detailed discussions with our colleagues from other practice areas. This helped us create the segmentation or the analytical framework that we would use to map social enterprise activity.

In Phase Two, we analyzed the sectoral population to draw out samples of enterprises that we would engage with for primary research. We reached out over 100 enterprises, sector enablers and impact investors in this phase and spoke with 92 respondents. The report was created using findings from the two phases.

As we present this report, we are cognizant of the fact that we have only scratched the surface of this fascinating space. Having laid the foundation to understanding social enterprise activity, we set ourselves an agenda for the year ahead. We plan to follow this overview effort with deep-dive reports on each of the sectors as well as the cross-cutting domains that further draw out the themes we touch upon in the pages that follow.

Understanding the multiple challenges that social enterprises face and the way they deal with them is inspiring. Speaking with the entrepreneurs and being allowed a peek into a regular day at work in these enterprises has whetted out appetite for learning more. While we get busy with planning for our next research idea, we hope this report marks a good beginning to the journey ahead.

SOCIAL ENTERPRISES: CRITERIA FOR SELECTION

» **For-profit:** They operate as independent businesses with the goal of generating a profit.

» **Committed to social impact:** They have a clear and explicit mission to create a positive social impact.

» **Base of the economic Pyramid (BoP) focus:** Business operations directly improve the lives and livelihoods of those residing at the BoP by:
  ① Increasing access to critical goods and services for BoP consumers; or
  ② Improving the productivity, output quality or market linkages for BoP producers.

» **Critical-needs sector:** They operate in one of the following sectors that has a direct impact on the quality of life for individuals at the BoP: Agriculture, Education, Energy, Healthcare, Livelihood development and Water & Sanitation.

RECAP – ON THE PATH TO SUSTAINABILITY AND SCALE

In order to set the context, we present here a summary of the findings from our 2012 research. We had conducted an online survey and follow-up interviews of for-profit social enterprises operating in India across six sectors — Agriculture, Education, Energy, Healthcare, Livelihood development and Water & Sanitation — that directly impact the quality of life for individuals at the BoP. The results we summarize below were drawn from 95 survey responses and numerous interviews with a representative sample of enterprises.

» India's social enterprises are a young but ambitious industry. Nearly half of the enterprises have been operational for less than two years. The industry took off in 2005-06 and has grown dramatically since then.

» Social enterprises base their headquarters in India's metropolises but operate across the entire country. The majority of social enterprises establish their headquarters in major urban centers in the southern and western regions. Yet, their collective operations reach across the entire country. Nearly 60% operate in at least one LIS.

» The majority of social enterprises are small, reflecting the industry's youth, but not it's potential. Half of surveyed enterprises generate less than INR 5 million (~US$ 92000) in revenue annually while 64% have fewer than 20 employees.

» India's social enterprises are capital hungry businesses, with only 7% reporting that they do not need any form of external capital currently.

» Finding and retaining good talent, raising capital, and building the value chain create the greatest barriers to sustainability and scale for social enterprises.

» The greatest financing challenge is not a limited supply of capital but social enterprises' limited access to it. Social enterprises report that they cannot secure available funding either because they do not meet investor requirements or because their business model needs further refinement before they are "investor ready."

» Despite the challenges, social enterprises are making a major impact in India. Nearly one-third of them are operating in more than 100 localities, and almost one-third are serving more than 50,000 BoP beneficiaries annually.

» Social enterprises are operating across the spectrum of critical needs sectors. Twenty-eight percent of surveyed enterprises are in Agriculture while 25% are in Energy. These sectors claim the most enterprises that have been operational for six or more years. Agriculture and Energy also have a large portion of younger enterprises, with 44% and 60% in each respective sector launching in 2010 or 2011.

» The vast majority of social enterprises target rural markets. Forty percent of enterprises in our survey only operate in rural markets, while another 35% target rural and urban markets.

THE AGRIBUSINESS SECTOR

The Agri-Business Sector

The Agricultural sector supports an estimated 70% of the country's population, and accounts for 14% of the country's Gross Domestic Product (GDP).[3] The average Indian household spends almost half of its total expenditure on food, while roughly half of India's work force is still engaged in Agriculture for their livelihood. Although the shares of industry and tertiary sectors in the GDP are increasing, Agriculture is likely to retain its dominant position as a critical needs sector.

During the past five years, the Agriculture sector has witnessed advances in production and productivity. However, with the declining share of Agriculture in India's GDP, the continuing high pressure of growing populations on India's food industries and the increasing fragmentation of land holdings, the availability of cultivated land area per household is decreasing. Since the 1980s, as some of the limitations of Green Revolution technologies were realized, the emphasis shifted to sustainable land use systems and improving the efficiency of resources and inputs. There is also significant scope for irrigation in the country, with a potential of 140 million hectares of rain-fed land, of which approximately 80 million hectares have been utilized.[4]

[3] Shares of Agriculture in GDP Witnesses Decline, Economic Times, published Sept. 12, 2012. http://articles.economictimes.india-times.com/2012-09-09/news/33713635_1_agriculture-sector-gross-capital-formation-cent

[4] State of Indian Agriculture 2011-12. 2012. http://agricoop.nic.in/sia111213312.pdf

LAND USE IN INDIA 2011 - 12 (MILLION HECTARES)

- Farmed Land (142)
- Area Under Forests (67)
- Non-arable Land (40)
- Culturable Wasteland (38)
- Fallow Land (17)
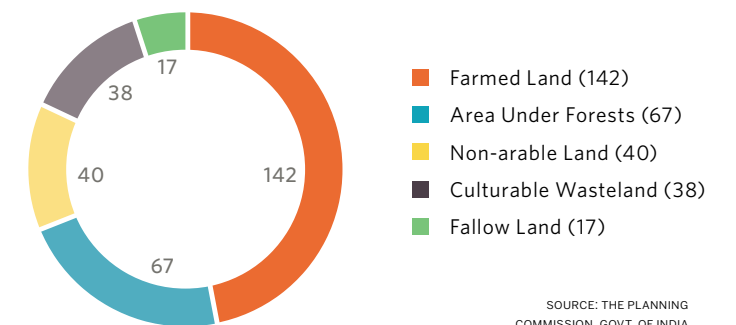
AGRICULTURAL FOOD GRAIN PRODUCTION 2011 - 12 (MILLION TONNES)
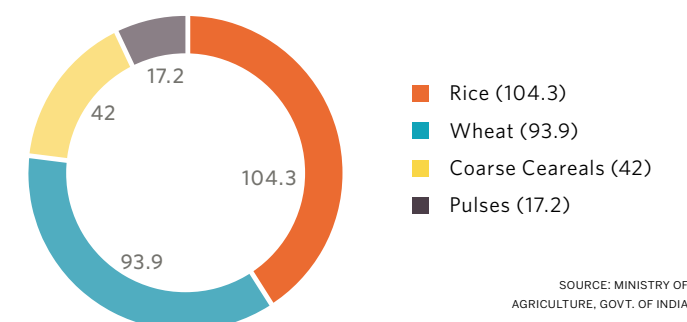
- Rice (104.3)
- Wheat (93.9)
- Coarse Cereals (42)
- Pulses (17.2)

PHOTO BY JAYNE ANDD

By focusing on modernizing outdated technologies, creating basic infrastructure and encouraging diversification in high value horticultural crops, private sector investment is expected to address the gaps in the pre and post-harvest production segments in the value chain.

In recent years, the sector has seen a number of successful improvements, both in pre-harvest and post-harvest activities.

Adoption of advanced technology has been a key mark of success in Agriculture. This has led to higher yields as well as more efficient supply and service systems. For example, the rapidly growing adoption of micro-irrigation systems (drip and sprinkler) over the past seven years in Maharashtra has brought nearly 1.2 million hectares under its coverage, which is approximately one-third of the state's total irrigated area. This has improved farm productivity and prevented water wastage.

Private investment in Agriculture has increased since 2004. Public Private Partnerships (PPPs) in Agriculture include models which integrate rural business or service hubs (RBHs) at the back-end with the agro-processing industry and organized retailing at the front end, to create more integrated platforms for farmers, wholesalers and retailers. For example, the Maharashtra State Government is expected to launch a PPP scheme, named the Agribusiness Infrastructure Development Investment Program (AIDIP) in partnership with the Asian Development Bank, to address infrastructure development needs in the Agriculture sector, such as cold storage and pack houses, grading machinery and artificial ripening equipment for farmers.[5] By focusing on modernizing outdated technologies, creating basic infrastructure and encouraging diversification in high value horticultural crops, private sector investment is expected to address the pre and post-harvest production segments in the value chain, and promote more professional practices and strict quality metrics in the sector.

Improved seeds, fertilizers and pesticides, have played a vital role in augmenting agricultural production in India. Research has made it possible to develop seeds which are quick to mature, provide higher agricultural yield and are resistant to insects, diseases and droughts. The shift from a state-dominated seed industry to a competitive private seed industry is most visible for hybrid crops because the biologi-

cal properties of hybrids provide private firms with a greater ability to recoup their investments in agricultural cultivation.[6] There has been an increasing use of bio-fertilizers in agricultural production, which being both relatively cheap and convenient for use, have had a beneficial impact on soil. The usage of bio-fertilizers has reduced dependence on chemical fertilizers for future agricultural growth. Traditionally, chemical fertilizers induced loss in soil quality and furthered possibilities of water contamination.[7] In the Union Budget for 2013-2014, subsidies have been reduced, and these chemical fertilizers have been made more expensive to promote better usage.[8]

Improvements in weather forecasting and information to farmers have helped boost farm productivity. Weather patterns, especially monsoon rain movements, are crucial for Indian agriculture as more than half of the total arable land in the country is dependent on monsoon rains. Although the India Meteorological Department (IMD) provides weather forecasting, there are private sector players, such as IBM, which have launched agriculture meteorological services for farmers. The Ministry of Earth Sciences also provides SMS and an Integrated Voice Response System (IVRS) service to farmers (launched in 2009), which gives them climatic information to help them meet agricultural targets.

[5] The Times of India. May 20, 2012. http://articles.timesofindia.indiatimes.com/2012-05-20/pune/31787794_1_agriculture-private-investment-total-project-cost

[6] Organic Input Production and Marketing in India – Efficiency, Issues and Policies. September 2010. http://www.iimahd.ernet.in/users/webrequest/files/cmareports/10OrganicInputProduction.pdf

[7] Promoting Bio-Fertilizers in Indian Agriculture. 2011. http://www.ipni.net/ipniweb/portal.nsf/0/94cfd5a0ed0843028525781c0065437e/$FILE/12%20South%20Asia.Ghosh.Promoting%20Bio-fertilizers%20in%20India%20Agri.pdf

[8] Reuters. March 1, 2013. http://in.reuters.com/article/2013/03/01/india-budget-2013-fertiliser-idINDEE92004Y20130301

Information about price trends and market demand is critical to providing better market linkages in Agriculture. Indian farmers generally have only an approximate idea of price trends and have to accept prices offered by traders on the day that they bring their crops to the market or mandi.[9] New ICT initiatives aim to leverage digital technology to improve efficiency in Agriculture, promoting greater information exchange on market prices and farming techniques and the creation of an alternative market structure. ICT Services provide locally relevant and accessible content to farmers, thereby reducing the expert-farmer gap through knowledge management initiatives. For example, Reuters Market Light (RML), a business subsidiary of Thomson Reuters, is a mobile SMS system that provides personalized information to subscribed farmers, which today number about a million unique subscribers in more than 40,000 villages in India. Similarly, Digital Green is a non-profit organization that works to improve the effectiveness of field extension services by disseminating agricultural practices using video as a medium, and encourages innovative practices in farming. To date 1,918 videos have been produced, been screened 68,988 times and have involved 75,107 farmers globally.[10]

DEMAND

One of the key drivers of growth for the Indian agricultural sector is increased demand. India is home to a growing youth population estimated to reach 242 million by 2015. The rich and middle income households are expected to grow from 64 million in 2015 to 100 million households by 2020.[11] India's population of 1.2 billion, growing at 1.4% annually,[12] is a large consumer base for agricultural processed goods. The rapidly growing middle class segment in the country is increasingly incentivized to buy protein-rich and high-nutrient foods, such as fruit, vegetables, dairy and poultry. According to the National Sample Survey Office (NSSO), in 2010, the average household monthly per capita of household consumer expenditure was estimated as INR 1,053.64 (US\$ 19.41) in rural India (of

which roughly 50% was food expenditure) and INR 1,984.46 (US\$ 36.55) in urban India (of which roughly 35% was food expenditure).

With increasing prices of inputs such as bio-fuel and fertilizers, prices of agricultural products are also shifting towards a higher equilibrium. Along the supply chain, products at retail outlets are becoming more expensive, leading to reinvestment in the farming and production process. In addition, the price of land has increased significantly over the last 5-7 years (by 2-5x).[13] This has been the result of two factors. The first is that capitalization rates have remained constant in the face of increased prices, so the value of land has increased. Secondly, increased urbanization and infrastructure has led to an increased value of land.

Credit to the sector has improved, which has facilitated public and private investments, particularly in the area of irrigation. The government partnered with the Reserve Bank of India and the National Bank for Agricultural and Rural Development (NABARD) in 2008 to address the issue of timely and adequate credit to farmers. This has led to significant credit expansion in Agriculture over the past decade. By October 2011, 107.8 million Kisan Credit Cards (through which farmers can avail short-term loans for crops from banks) were issued to eligible farmers across the country. As per the Union Budget for 2013-2014, a fund of INR 50 billion (US\$ 921 million) to NABARD has been established to finance the construction of warehouses and cold storage units, which is likely to reduce dependency on food grain imports.

[9] A local, government-mandated marketplace

[10] The International Food Policy Research Institute. 2012. http://www.ifpri.org/sites/default/files/publications/ifpridp01180.pdf

[11] Agriculture, Food and Beverage Sector Profile – India. January 2011. http://www.ats.agr.gc.ca/asi/4476-eng.htm

[12] World Bank Statistics 2011

[13] The Time is Ripe. 2011. http://www.kotak.com/kotaklp/agriculture_roadtoprosperity/GameChanger_Agriculture_Report.pdf

SUPPLY

SUPPLY CHAIN FOR PRE AND POST-HARVEST SEGMENTS
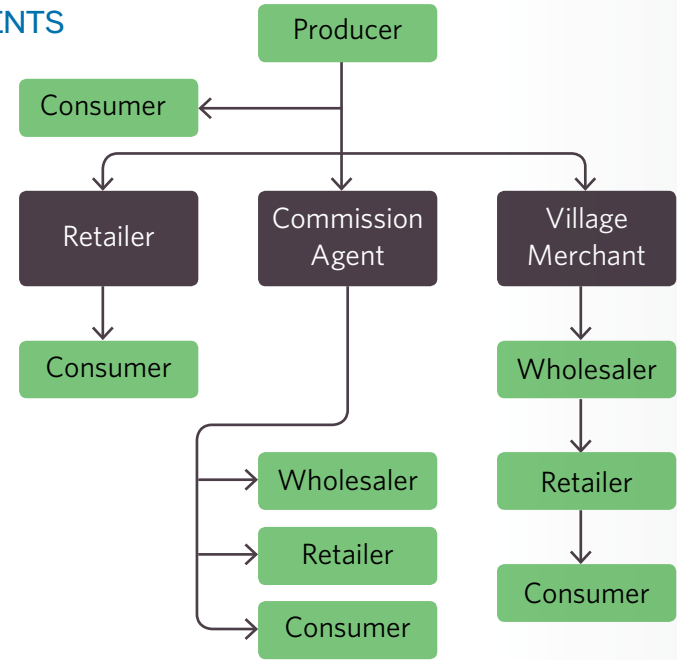
The customer segments for Agribusinesses (across the pre-harvest and post-harvest value chains) are the government, retailers, other farmers and household consumers. The various stages of the agricultural supply chain include producers (farmers), procurement, storage, distribution and the wholesale markets.

Efficient supply chain management allows for timely delivery of produce and price stabilization. It also helps in building farmers' capacity to integrate marketing efforts between the producer and consumer market segments, so that a value addition occurs at each stage of the value chain. The structure of the Agriculture supply chain allows for middle-men who at times may not lend as much efficiency to price transparency, delivery timings and producer relationships. In addition, demand forecasting may be absent and the farmers have difficulty bringing their produce to market. Opportunities therefore exist to make improvements in data integration,

financial flow management, supply-demand matching, collaborative forecasting, information sharing, and goods movement synchronization through efficient transport infrastructure.

Farmers sell their produce either at the Agricultural Produce Marketing Committee (APMC) markets or to wholesalers. An APMC market is a regulated market yard where a licensed commission agent facilitates the sale of agricultural produce brought by the farmer to the market. The produce is sold by means of an open auction managed by the commission agent who then deducts his commission. The functioning of these markets is regulated by respective state APMC Acts. At times, a commission agent or village merchant is involved, and generally functions as a collector, purchasing produce from farmers at the village level and then selling it either at the APMC markets or to the wholesalers from the cold storages in the off-season.

Wholesalers often sell the produce to small unorganized retailers. These include street vendors, as well as modern, organized retail formats such as supermarkets in urban areas. While urban households may purchase finished products from retailers, rural and other consumer segments may acquire the produce directly from the farmers, at mandis, the APMC markets or the wholesalers, depending on their level of access.

There is an elaborate system for food procurement by the state. The Food Corporation of India (FCI) and other state agencies such as National Agricultural Cooperative Marketing Federation (NACMF) and the Central Procurement Agency (CPA) establish a large number of purchase centers at various mandis, market yards, FCI depots, Rice Receiving Centers and interim storage facilities. The number of procurement purchasing centers and their locations are determined by state governments, based on various parameters, so as to maximize Minimum Support Price (MSP) operations or subsidy schemes. For instance, Punjab and Haryana together recorded the highest-ever procurement figures for wheat in 2012 at 20.1 million tonnes, where more than 1,750 procurement centers were operated.[14]

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[14] Newstrack India. May 11, 2012. http://article.wn.com/view/2012/05/11/Punjab_Haryana_procure_record_200_lakh_tonnes_of_wheat/#/related_news

REGULATORY ENVIRONMENT

Broadly, agricultural development policies in India can be divided into four sets of policy packages. These are institutional reforms, public investment policies, incentive policies and globalization policies. Examples of institutional reforms include land reform as per the Five Year Plans, introduction of collective farming and consolidation of land holdings. Public investment policies comprise government investments in irrigation technology; establishment of cooperative societies and credit facilities; and the application of modern agricultural practices. Incentive policies include agricultural credit and subsidies; rural development programs; provision for crop insurance against droughts and floods; and remunerative and procurement prices. Globalization policies include educating farmers on the need to meet the standards required in the export markets.

The Government has instituted schemes and support organizations to promote investment in the post-harvest space. A key government intervention is the MSP for agricultural commodities. The objective of this scheme is to protect farmers from making distress sales in the event of bumper crop during the peak harvesting periods, when prices tend to fall below the economic cost of production. The MSP is implemented when there is at least a 10% increase in production or a 10% decrease in the ruling market prices over the previous normal year. The National Dairy Development Board (NDDB) is an example of a government support organization which supports 140,227 village level societies and 14 million farm families. It has a daily procurement of 22 million litres of milk. The NDDB builds self-sustaining dairy cooperatives to help promote village-based milk procurement systems, enhancing female participation as well as offering needs-based consultancy services to farmers.

AGRIBUSINESS ENTERPRISES – RESEARCH SAMPLE

AGRIBUSINESS ENTERPRISES

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                    AGRIBUSINESS ENTERPRISES
                    ┌──────────────┴──────────────┐
               FARMING                        NON-FARMING
          ┌───────┴───────┐              ┌───────┴───────┐
    PRE HARVEST    POST HARVEST    DAIRY SERVICES    PRODUCTIVITY
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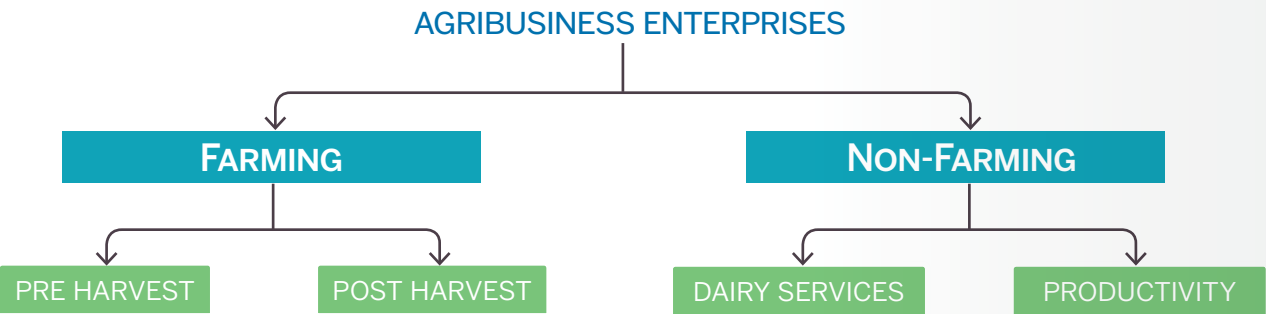
The majority of Agribusiness social enterprises operate in a niche market, with few competitors. Partnerships with governments and foundations are frequent with NGO hybrids; and partnerships with large companies and Development Finance Institutions (DFIs) are frequent with for-profit enterprises. Primary research in this study has shown that enterprises measure social impact by three metrics, namely, annual farmer income, agricultural productivity and the number of beneficiaries. Most Agribusiness enterprises target the BoP as producers, and the mid-market as consumers.

In this sector study, 16 social enterprises were interviewed from a database of 65 enterprises across the value chain. Most Agribusiness entrepreneurs attribute their motivation for entering the sector to organizing the fragmented rural landscape and creating more rural entrepreneurs for a sustainable ecosystem. These Agribusiness entrepreneurs help to consolidate food supply chains, train groups of farmers, utilize existing resources to build accountability, add value for consumers and enhance the efficiency of BoP producers.

The sample consisted of two broad segments, Farming and Non-Farming Activities. The Farming enterprises were further categorized as pre-harvest and post-harvest. The non-farming segment was categorized into dairy services and productivity.

PRE HARVEST

Agritech:
Akshamaala
Bhushan Agro
Sahaj Agro
Kautilya Phyto-extracts
Janani Agriserve

Seeds
AgSri

Organic Farming:
Chetna Organics
Ek Titli
Ulink Organics

EcosystemBuilding:
AquAgri
Grassroots India

POST HARVEST

Supply Chain Management:
KNIDS Green

DAIRY SERVICES

Supply Chain Management:
Arohana Dairy
Milk Mantra
SKEPL

PRODUCTIVITY

Agricultural Productivity:
Under the Mango Tree

SOCIAL ENTERPRISE ACTIVITY IN THE AGRIBUSINESS SECTOR

PHOTO BY EK TITLI

PRE-HARVEST

Over 50% of the sample falls within the pre-harvest farming space. These enterprises have two objectives: one, to raise farm productivity through higher crop yields and two, to increase farmer incomes. They work closely with farmers and are actively involved with farmer training through ICT services as well as seed, fertilizer and irrigation usage on the land.

The majority of pre-harvest social enterprises target rural markets. Many of India's BoP producers live in underserved rural areas, and rural markets hold significant profit potential for pre-harvest operations. However, certain enterprises such as Ek Titli cater to urban farmers and its post-harvest operations target urban consumers. An increasing number of social enterprises have tapped into opportunities in Northern and Eastern India to support low-income farming communities with access to improved livelihoods.

In the pre-harvest space, agritech enterprises incorporate efficient use of modernized technology to increase crop yields and achieve maximum production. These enterprises are often either capital or service intensive, operating at the village level and can often involve the use of IT platforms to provide knowledge and training to farmers. For example, Janani Agriserve uses digital cameras to capture the crop status and detect the effect of weather patterns. Kautilya Phytoextracts has constructed a Gobar biogas plant to support over 500 farmers by providing electricity during the harvesting period. The agritech sub-segment can also incorporate irrigation and other farming equipment enterprises which work towards engendering more sustainable usage of the land. Global Easy Water Products is a social enterprise which delivers low-cost irrigation solutions such as drip tape, micro sprinklers, fertilizer tanks and flexible water storage to small and marginalized farmers across seven states in India.

A number of pre-harvest social enterprises focus on organic agriculture. Degraded soil is thus enriched through the restoration of nutrients, which increase the long-term yield and potency of crops, and allows for a naturally clean water supply. Aside from health advantages of the organic farming method for individual producers and their families, the long-term preservation of bio-diversity and climate protection benefits nature. For example, Chetna Organics uses non genetically-modified seeds to grow organic and filtrate cotton, with 15,295 farmers in three states manufacturing safely harvested, high quality cotton.

The usage of seed, bio-fertilizers and crop protection methods is also a component of the social enterprise activity in the organic agriculture sub-segment. AgSri, a farm-based technology enterprise, through its Sustainable Sugarcane Initiative (SSI), focuses on growing sugar seed links in nurseries rather than harvesting sugarcane in the soil. By using fewer seeds and following new planting methods, with wider seed spacing, improved water and nutrient management, it demonstrates a significant increase the cane yields. Additionally, when the buds from sugarcane are extracted, the remainder is sent to sugar mills for crushing, resulting in little wastage. The product is targeted towards farm clusters and cooperatives which function as the primary demand aggregators.

Enterprises also focus on ecosystem-building, whereby local farming communities are empowered for the purposes of restoring farm areas to their ecological optimum. These enterprises organize multi-stakeholder platforms to facilitate the role of appropriate technologies and establishment of community-owned enterprises. Grassroots India works with self-help farm groups to develop an intervention strategy which channels resources – managerial, technical and financial – directly to community associations and promotes market access for farming goods, as well as all-round supply and improved processing. Similarly, AquAgri, a sea plant cultivation enterprise, builds a financially viable and sustainable model for producers and offers an attractive livelihood opportunity for the coastal communities. In order to scale-up the business, multi-stake holder partnerships have been established involving self-help groups, supporting NGOs, government developmental agencies and nationalized banks.

GRASSROOTS INDIA

Grassroots India is a Himalayan producer company which focuses on providing an ecological intervention platform for sustainable farming.

Its future growth strategies include expanding the product range to include walnuts, aggregating its network to partner with e-commerce organizations, and branching out into the post-harvest technology area.

POST-HARVEST

In the post-harvest sub-segment, enterprises attempt to eliminate supply chain inefficiencies while ensuring economic profits for value chain actors. Social enterprises in this space are actively involved in procurement, storage, transport, processing and retailing. Operations in the post-harvest space require a substantial amount of capital and operational expenditure. For example, KNIDS Green works in the supply chain distribution network, providing fruit and vegetable packaged goods to retail outlets in Bihar. Their competitors are the traditional vegetable street-sellers and the larger retail malls. With a loan of INR 10 million (US$ 184,203) from the State Bank of India, they have signed an MoU partnership with the Bihar government, and have expanded from 10 farmers to over 3,000 farmers in their network since 2008.

Post-harvest enterprises also focus on packaging, warehouse management and procurement solutions. These enterprises take advantage of the natural clusters or areas developed for respective crops and support the growth of allied processing industries around the crop cultivation area. Champion Agro is an example of a post-harvest enterprise which is involved in food processing as well as agriculture retail. The "Champion Fresh" brand includes fresh quality fruits and vegetables and its retail distribution efforts bring baby corn, bananas, pomegranates, wheat and oilseeds to market. Champion Agro has also established a chain of agro retail malls in Gujarat named "Champion Agro World" that sell quality inputs such as fertilizers and provide financial services as well as information access for farmers in the region.

KNIDS GREEN

KNIDS Green is a hybrid supply chain management enterprise focused on the production of fruits, vegetables and packaged goods to retailers.

Their not-for-profit entity works with farmer training and recruitment, while the for-profit company handles distribution and retail in the market.

Their innovation strategies have helped to reduce vegetable wastage from 30-40 % to 5-7% by creating markets for leftover, unsold and low-grade vegetables. Currently based in Bihar, the team plans to expand operations to Jharkhand by 2015.

UNDER THE MANGO TREE

Under The Mango Tree (UTMT) is a hybrid enterprise dedicated to raising agricultural productivity through bee-keeping.

With 12 bee-keeping technicians, UTMT has now trained 3,000 farmers. It has also published research on agricultural productivity to impact policymakers. It partners with governments and NGOs on the ground, allowing for more value addition to its programs.

Zoraly Solutions is another example of an integrated service provider which focuses on procurement and warehousing, assisting farmers to manage pricing of the produce based on pre-defined quality levels, as well as testing for nutrients. Zoraly's storage and transportation services take into account contamination risks, timeliness of delivery and vehicle cleanliness. Its facilities provide a controlled atmosphere and address the increased pest threat faced by organic produce. The entire supply chain – from logistics, customs, exports and final delivery – is managed by the enterprise.

DAIRY SERVICES & PRODUCTIVITY

Within the non-farming segment, dairy enterprises focus on productivity, supporting longer shelf lives, data analytics, milk collection systems and supply chain management. Improved technology and marketing strategies help to boost the growth of dairy cooperatives and milk products, and build milk as a commodity output for the private sector market. For example, Arohana Dairy works with village clusters to boost dairy farmer productivity through prototypes. They also train village leaders in over 30 villages with over 75 progressive farmers, to run their cooperatives by promoting the Arohana brand. Dairy services enterprises such as Milk Mantra and SKEPL move beyond core dairy farmer training, and use functional innovation strategies to support milk products and build robust systems and mobile applications for the live capture of milk collection data.

Productivity enterprises focus on optimizing non-farming activities and boosting agricultural productivity. Under the Mango Tree (UTMT) promotes bee-keeping among small and marginalized farmers to increase agricultural productivity and boost farmer incomes in Gujarat, Madhya Pradesh and Maharashtra. The main by-product is organic honey, which is produced by "boxing the bee" and other pollination methods. UTMT is a hybrid organization where the not-for-profit arm trains farmers in bee-keeping while the for-profit arm retails organic honey.

INNOVATIVE BUSINESS MODELS AND STRATEGIES

Social enterprises in the Agribusiness space create economic and social value by eliminating inefficiencies that exist in the current value chain. Their strategies and business models therefore reflect solutions that are being refined throughout their growth cycle.

Enterprises tap into the supply chain and retail distribution model to provide forward linkages to the farmer community. Given the vast and fragmented nature of the distribution networks within Agribusiness, enterprises see potential in creating economized linkages between urban markets and rural farm centers, as well as developing effective means of storage and warehousing for perishable produce. KNIDS and Milk Mantra are enterprises that provide innovative extension services such as collection points, storage facilities and market access for farmers through linkages to retail outlets.

Farmers in Odisha who are heavily dependent on the seasonal income of paddy farming see promise in the dairy industry, which offers regular income. As part of the distribution strategy, Milk Mantra established the 'Ethical Milk Sourcing Programme' in 2012. Approximately 8,000 farmers are associated with this program at over a 100 collection points. The model provides extension services such as cold storage, refrigeration, paneer packaging, product distribution and insulation. Milk Mantra has also used marketing strategies to providing transparency in product quality and systems governance to farmers.

KNIDS, a hybrid, has built a large network of over 3,000 farmers, many of whom are marginal and landless. The not-for-profit arm focuses on farmer training and recruitment, and has signed an MoU with the Bihar government. The for-profit entity works on retail distribution of fruits and vegetables to Bihar Fresh shops in Patna through uniquely designed vegetable carts. The supply chain distribution works through collection points where lead farmers collect the produce and deliver it to the family processing center.

Enterprises adopt unique approaches to promoting agricultural productivity. These forms of sustainable farming involve an adaptation of less chemical and more environmentally safe methods of farming. Ulink Organics creates impact through increased farmer yields and building long-term sustainable agriculture practices. The Ulink fertilizer adds more nutrients to the soil and helps to restore the soil balance from its previous chemical degradation. Their distribution channel

MILK MANTRA

Milk Mantra is a for-profit, VC-funded dairy enterprise focusing on the dairy supply chain across urban supermarkets in Eastern India, particularly Odisha.

Its future growth strategies include developing products with a longer shelf life to cater to consumers in major Indian cities. It also plans to grow its village training facilities to compete with state milk cooperatives.

ULINK ORGANICS

Ulink Organics manufactures organic fertilizers including organic manures, micronutrients and organic growth promoters.

The organic fertilizers significantly improve the condition of the soil. The result is that crops are grown with no chemical residues and a higher nutrient content. This has a direct impact to the health of end-consumers. Ulink trains farmers on the benefits of balanced soil nutrition, crop rotation and use of organic fertilizers.

SKEPL

SKEPL is a VC-funded firm, founded in 1996 and operating in eight states. It provides technology-based products and services to help state milk cooperatives become more efficient and productive.

SKEPL's products are currently being used by approximately 1,800 cooperatives and have improved the lives of approximately 400,000 farmers to date. Through its system, milk can be sent to the cooperative for quicker processing, reducing spoilage and allowing farmers to gauge the milk quality. Local farmers are hired and equipment is often subsidized by the government.

in Gujarat has an outreach to over 300 retail stores. Ulink does not manufacture the fertilizer product; instead it uses a contract manufacturer and rebrands the product. Demand is fuelled by number of users (repeat consumers) and the area of customer farms.

Another unique productivity enhancing approach is promoted by UTMT, a hybrid organization. Its not-for-profit arm, UTMT Society, focuses on bee-keeper training and agricultural productivity. UTMT Naturals and Organics, the for-profit company, focuses on providing sustainable market access for the organic honey. UTMT is a unique player in the space as it looks at pollination through bees as agents, and not only at pure honey production, which sets it apart from other productivity enterprises.

Modernized technology helps farmer training, increase product awareness and boost agricultural yield. The result is higher farmer incomes, greater empowerment, an understanding of technology at the rural level, and the enforcement of best practices. Delivering this farmer training ranges from

ICT services in the case of Akshamaala, to the "lease your land" concept employed by Bhushan Agro farms, where soil analysis and land preparation techniques allow previously subsistence farmers to generate marketable surplus and become more commercially profitable.

In order to deliver its training to farmers, Akshamaala partners with leading companies in the seeds, agri-chemicals and rural finance space. Knowledge and content are critical in order to providing ICT services such as farmer advocacy and farming lifecycle support services through multi-lingual and interactive platforms. Akshamaala receives support from the state government in the areas of marketing programs, customer retention, up-selling and customer servicing.

SKEPL, a dairy enterprise, offers several post-harvest technological solutions including electronic weighing scales, milk analyzers, dairy cooperative accounting software and automated milk collection systems (AMCS). It has also developed certain products for national level dairy producers, and is currently developing a new product called the "Nano," a smaller, more energy efficient, handheld milk collection processor, targeted at small and medium-sized cooperatives that cannot afford a full AMCS. Compared to earlier manual procedures of milk collection, this system is faster, more accurate, and more transparent.

Sahaj Agro Farms has also created a dedicated education vertical to build entrepreneurship training for youth, focusing on water management, agritech consulting services and milk production. When creating product awareness through digital media, Vaibhav Dugar, Founder of Ek Titli says, "For our product expansion, push-market, social media and on-the-ground workshops and events are effective means of spreading awareness."

Enterprises also use traditional forms of livelihood improvement to empower self-help farming groups and cooperatives. These enterprises create holistic integrated platforms which extend beyond sustainable agriculture and apply to the needs of the community-at-large, in the areas of water, sanitation, carbon reduction and habitat preservation. The aim is to build viable communities where agricultural employment and empowerment (for both genders) is made a key priority for long-term growth.

The seaweed cultivation industry gives opportunities to women farmers due to the flexible working hours, and provides viable and sustainable alternative livelihood opportunities for small fishing communities through daily rather than seasonal incomes. AquAgri, an enterprise that provides livelihoods in sea plant cultivation, utilizes B2B services to partner with ingredient companies and provide solutions to their consumers. AquAgri has also introduced a new saving scheme (APPL-GIP-Growers' investment program) and an incentive scheme to improve farmers' quality of life.

AKSHAMAALA

Akshamaala is a small-scale agritech firm, focused on HR, IT solutions, ICT services, marketing and promotional activity for farmers. It operates on an e-governance model, through PPP schemes and trains commercially-oriented farmers in wheat, vegetables, mustard-growing to become more profitable.

The team comprises technology experts and specialized resources who understand Agriculture, consumer sales, IT solutions and are able to address the impact of climate concerns for bottom-line revenues.

Another unique livelihoods program by Grassroots India includes the training of women and school drop-outs into barefoot engineers, and combines broad-based ecosystem building with ecological restoration of value-added crops such as chamomile, honey, lentils, spices and temperate fruits.

CHALLENGES

Social enterprises in the Agribusiness sector face difficult challenges rooted in infrastructure, human resources and unpredictable climatic conditions. While enterprises continue to develop sustainable solutions to address these challenges, it may take a while longer for structural changes to emerge in the system.

Agribusiness enterprises, particularly in the pre-harvest sub-segment, face challenges in scaling their activities beyond the local farm units. Replicating production practices, farmer training and supply chain distribution across geographical locations, can be demanding, time-intensive and may require additional resources. Pre-harvest enterprises tend to be highly dependent on weather conditions in particular local areas, market food prices and regulatory controls. For this reason, only a small number of pre-harvest enterprises can scale sustainably. For example, Sahaj Agro Farms, an enterprise which serves a niche market in agri-services, rural tourism and milk production, faces difficulties in creating long-term change and scaling its model while operating in the rural areas of Rajasthan.

Transportation linkages for delivery of raw products to manufacturing units face infrastructural inefficiencies, and affect the quality of perishable goods. Due to the vast scale and geographic spread of operations, many Agribusiness enterprises encounter challenges in bringing products to market. This presents an opportunity for social enterprises to enter the value chain. Anuj Kumar, Co-Founder of KNIDS says, "Connecting with farmers in interior areas calls for more expensive supply chain linkages and working in complementary partnerships helps to cut costs." Social enterprises such as KNIDS work in rural areas in Bihar and aim to expand to Jharkhand. While entrepreneurs strive to take advantage of modernized technology to tackle operational, supply, labor or funding issues, partnerships with governments and other organizations could help build the necessary linkages.

AQUAGRI

AquAgri is a seaweed cultivation enterprise based in Tamil Nadu which aims to extract the sap (rich in nutrients) from fresh weed.

By creating entrepreneurs and providing continuous technical support and supervision through its extended field team, AquAgri holistically improves the livelihoods of these coastal communities.

The team plans to expand operations to the Gujarat coastline as well as adopt other technologies from research institutions.

Poor access to reliable weather information impacts enterprises that rely heavily on climatic conditions for generating revenue and increasing agricultural productivity. With adverse weather comes uncertainty and low productivity in yields, which can affect long-term sustainability of the enterprise. New advances in mobile weather forecasting and crop rotations are increasingly being utilized by social enterprises as part of their operating models to mitigate the risks of drought or other conditions. This presents an opportunity for new enterprises to enter the sector. Sundar Rajan, Chief Executive Officer of Janani Foods says, "Climate is a major part of this business; there needs to be an integration of weather (current and forecast) information with appropriate advisories to local farmers, in addition to providing risk mitigation through insurance and commodity exchange operations."

Enterprises strive to change existing farm practices and attitudes of farmers who may be skeptical about new Agribusiness enterprises. Enterprises such as AgSri, which focus on growing sugar seedlinks, have faced difficulties in changing farmer practices while adopting new scalable models. Grassroots India, which trains women to restore the gender imbalance in the farming sector in Himachal Pradesh, has realized that the younger generation has a lower inclination to join the

agricultural sector. Vigyan Gadodia, Chief Executive of Sahaj Agro Farms, says, "We need to get the right people with the right attitudes", indicating that commercially-focused farmers should be trained to understand that the new business models are aimed to raise their incomes and increase marketable surpluses.

Currently, social enterprises lack an appropriate delivery channel for the provision of seasonal capital. For example, Sahaj Agro Farms realized a higher need for debt or equity capital in drought-prone months. Organizations such as Intellegrow, a finance company which provides customized venture debt financing to small and growing businesses in India, could address this issue of seasonal capital by developing innovative structured capital products during periods of drought. Farmers also often struggle with working capital as there is a large gestation period between seasons. The Union Budget for 2013-2014's new matching equity proposal of INR 1 million (US$ 18,420) in registered Farmer Producer Organizations (FPOs) will help to address this issue and create greater liquidity for the Agriculture sector.[15]

Organic producers need to find ways to differentiate their products and claim premium prices to compensate for costs of higher input, production and sourcing costs. Organic fertilizers are not as effective as chemical fertilizers, and therefore, organic farm produce is expensive. Innovative marketing strategies and awareness programs, as well as adjustments to business models, would be necessary to shift consumer attitudes in favor of these products. For example, Chetna Organics' cotton product is 30% more expensive than seed cotton, as consumers pay a premium to ensure that farmers are provided with collateral for the following year. Similarly, UTMT natural honey is sold at the cost of procurement, which is more expensive than the products of established brands. Ek Titli also faces price differentials when selling their organic urban farm produce in city retail outlets, where it competes with rural mainstream products grown in village farms.

15 Top News. Feb 28, 2013. http://www.topnews.in/law/rs27049-crore-outlay-agriculture-ministry-2132843

CONCLUSION

Increasing investment in the rural distribution network will allow for a greater production flexibility and faster market access for Agribusiness products, and tackle the vast and fragmented nature of the sector. More blended capital could be made available for Agribusiness social enterprises, as the industry has shown growth potential for debt and equity investors. Increased capital could support improved technology, supply chain distribution, IT platforms and product and geographical expansion.

Opportunities exist in the provision of better mobile weather forecasting, cold storage and other innovations to maximize yield production, train farmers in new techniques and facilitate better farmer awareness of market prices. Both farming and non-farming social enterprises have taken advantage of technological modernization; therefore, there are plenty of opportunities for new enterprises to make their imprint in the value chain. Additionally, raising consumer awareness of organic brands and other less conventional products through integrated media and marketing platforms can help scale growth and promote enterprise visibility in the social enterprise landscape among partner organizations.

Income and livelihood creation is a large priority for Agribusiness social enterprises who offer new forms of regular rather than seasonal income. Supplementing traditional crop farming, this regular income flow allows farmers to find stability. Social enterprises are creating a new structured learning curve for farmers and encouraging them to adapt new techniques to boost productivity. These efforts combine to ensure sustainable growth in the ecosystem for the Agribusiness sector.

The Clean Energy Sector

PHOTO BY GUERITO
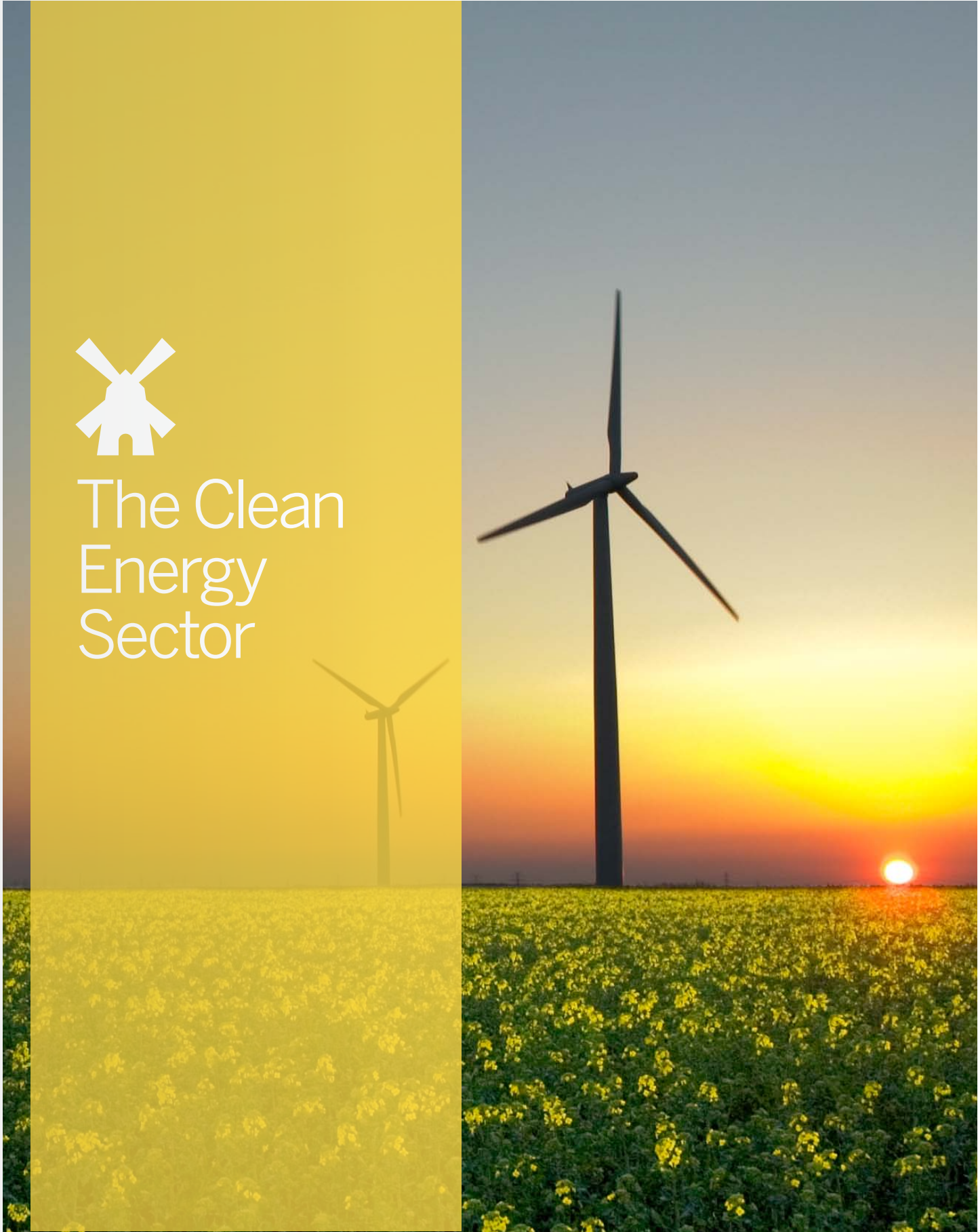
THE CLEAN ENERGY SECTOR

The Clean Energy sector includes all activities associated with the provision of products and services using renewable sources of energy such as solar, wind, biomass, hydro and others. The opportunities for creating and increasing energy access in India are immense, given that India's share in world energy consumption stands at a meagre 4.2%,[16] despite being the world's second most populous country.

India is energy-deficient, despite an increase in the installed capacity of power through conventional energy sources. Installed capacity of power has been steadily increasing in India from about 1.71 GW in 1950[17] to around 214 GW at the end of February 2013.[18] Similarly, electricity generation increased from about 5.1 billion KWh (kilowatt hour) in 1950[19] to 877 Billion KWh in 2011-12.[20] However, India experiences significant energy and peak[21] shortages. Between 2007 and 2012, the energy and peak shortages stood at 8.7% and 9% respectively.[22]

INDIA INSTALLED CAPACITY

SOURCE: NATIONAL ELECTRICITY PLAN 2012, VOL 1, GENERATION, MINISTRY OF POWER, GOVERNMENT OF INDIA

POPULATION USING DIFFERENT SOURCES OF HOUSEHOLD ENERGY IN INDIA (2011)
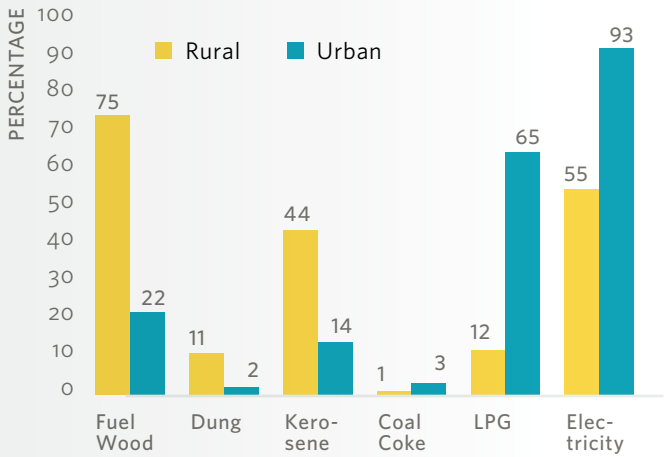

SOURCE: 'ENERGY ACCESS TO INDIA 2012'. http://www.energyaccess.in/FinalEnergyBook.pdf PERCENTAGES DO NOT ADD UP TO 100% AS MOST HOMES USE MORE THAN ONE FORM OF FUEL FOR COOKING AND LIGHTING PURPOSES

Energy access is poorest in remote and rural areas, which has roughly 70% of India's total population of 1.2 billion people. Around 90% of the villages are deemed electrified in the country[23], and overall electricity access of rural households has increased from 36% in 1994 to around 56% in 2011.[24] However, electricity access is limited even in electrified villages due to inadequate generation and distribution infrastructure, and transmission and distribution (T&D) losses that are about 5 to 6 times the global average[25].

Kerosene and other traditional sources of energy make up for the energy deficit, especially in rural areas. Around 44% of the households in rural areas use kerosene to meet their basic lighting requirement as opposed to 14% of urban households. In rural households with electricity, kerosene is often used as a backup lighting source during power cuts, which are frequent. For cooking, three-fourths of the rural population relies on locally available, traditional forms of energy such as fuelwood and dung cakes. In terms of total energy use, biomass accounts for 89% of household energy consumption in rural areas and 35% in urban areas.[26] These fuels are not only inefficient, but also have a long-term impact on the health of the users.

There is significant inter-state disparity in energy availability and access, and across rural and urban areas. The household electrification level of the low income and the North-eastern states such as Bihar, Assam, Uttar Pradesh, Odisha, and Jharkhand are below 40% as compared to states such as Delhi, Chandigarh, Tamil Nadu, Punjab and Andhra Pradesh, where household electrification level is over 90%.[27]

Lack of reliable power supply adversely affects life and productivity for students, home based workers, small and medium scale industries, and farmers. Home based workers lose many productive hours due to lack of lighting; students are unable to study in the darkness. For many rural enterprises, the lack of electricity acts as a significant growth constraint – limiting their ability to increase output, employ more efficient technologies or to raise product quality. In addition, alternatives to grid power such as diesel generators significantly increase the cost of production.

[16] Energy Access in India. 2012. http://www.energyaccess.in/FinalEnergyBook.pdf

[17] Central Electricity Authority. January 2012. http://www.cea.nic.in/reports/powersystems/nep2012/generation_12.pdf

[18] Central Electricity Authority. 2013. http://www.cea.nic.in/reports/monthly/executive_rep/feb13/8.pdf

[19] Central Electricity Authority. January 2012. http://www.cea.nic.in/reports/powersystems/nep2012/generation_12.pdf

[20] India Power Sector. 2013. http://indianpowersector.com/home/wp-content/uploads/2013/01/power-plus-10-page.pdf

[21] Peak demand refers to the period of highest consumer demand for power.

[22] Economic Survey 2012-13. http://indiabudget.nic.in/es2012-13/echap-11.pdf.

[23] Ministry of Power. http://powermin.nic.in/index.htm

[24] Securing tomorrow's energy today: Policy & Regulations Energy Access for the Poor. Deloitte. February 2013. http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/IEC%202013/Energy_Access_for_the_Poor.pdf

[25] Shifting Goal Posts. Rural Electrification in India. A Progress Report. 2010. http://www.christianaid.org.uk/images/shifting-goal-posts.pdf

[26] The World Bank 2010. http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2010/11/01/000158349_20101101152446/Rendered/PDF/WPS5463.pdf
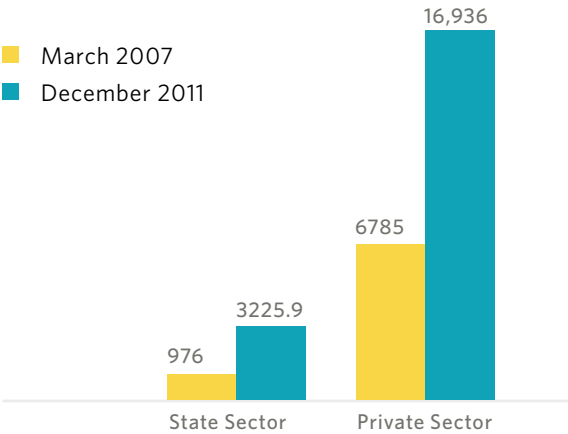
RENEWABLE ENERGY

Given the limitations in meeting the country's growing energy needs through conventional sources, the emphasis is on renewable energy, especially for the rural and far-flung regions.

India has a significant renewable energy power generation potential. The estimated total renewable energy potential (other than large hydro projects) of India stood at 89.76 GW as of March 2011,[28] as compared to 24 GW of installed capacity in March 2012.[29] Between 2007 and 2011, the share of renewable energy installed capacity in India increased almost by 2.5 times, from 7,761 MW to 20,000 MW.

The share of grid-interactive renewable energy projects is higher than off-grid renewable energy projects. In 2010, while grid-connected projects formed 97.4% of the total renewable energy installed capacity, off-grid systems contributed the remaining 2.4%. However, given energy shortage and the challenge of reaching the last mile, grid connected capacity addition is unlikely to significantly support the energy deprived population.

GROWTH OF INSTALLED CAPACITY OF RENEWABLE ENERGY IN INDIA (MW)

- March 2007
- December 2011

16,936

6785

3225.9

976

State Sector   Private Sector

Total RE installed capacity
(December 2011): 20 GW

SOURCE: NATIONAL ELECTRICITY PLAN 2012. VOL. 1. GENERATION. MINISTRY OF POWER, GOVT. OF INDIA.

Off-grid or decentralized[30] generation and distribution of renewable energy systems have the potential to create energy access in rural and far-flung regions of India. Given the large un-served potential market, and the subsidies

TYPE	ESTIMATED MARKET POTENTIAL OF CLEAN ENERGY AMONG INDIA'S RURAL POOR
Solar Home Systems	INR 1.26 billion (US$27.39 million) per year
Solar Lanterns	INR 855 million (US$18.58 million) per year
Energy-Efficient Cookstoves	INR 1.11 billion (US$24.13 million) per year
Mini and Micro Grids	INR 94.06 billion (US$2.04 billion) per year

SOURCE: BAIRIGANJAN, SREYAMSA, ET AL. 'POWER TO THE PEOPLE. INVESTING IN CLEAN ENERGY FOR THE BASE OF THE PYRAMID IN INDIA'. WORLD RESOURCES INSTITUTE. IFMR RESEARCH. CENTER FOR DEVELOPMENT FINANCE. 2010

provided by the Government, a number of private companies have emerged in the off-grid clean energy space in India. They can be divided broadly into two kinds - those that provide products using renewable energy, and those that produce power for sale using renewable energy sources, such as micro and mini grids.

[27] Energy Access in India. 2012. http://www.energyaccess.in/FinalEnergyBook.pdf

[28] Government of India. 2012. http://mospi.nic.in/mospi_new/upload/Energy_Statistics_2012_28mar.pdf

[29] Economic Survey 2012-13. http://indiabudget.nic.in/es2012-13/echap-11.pdf

[30] Government of India. 2012. http://mospi.nic.in/mospi_new/upload/Energy_Statistics_2012_28mar.pdf
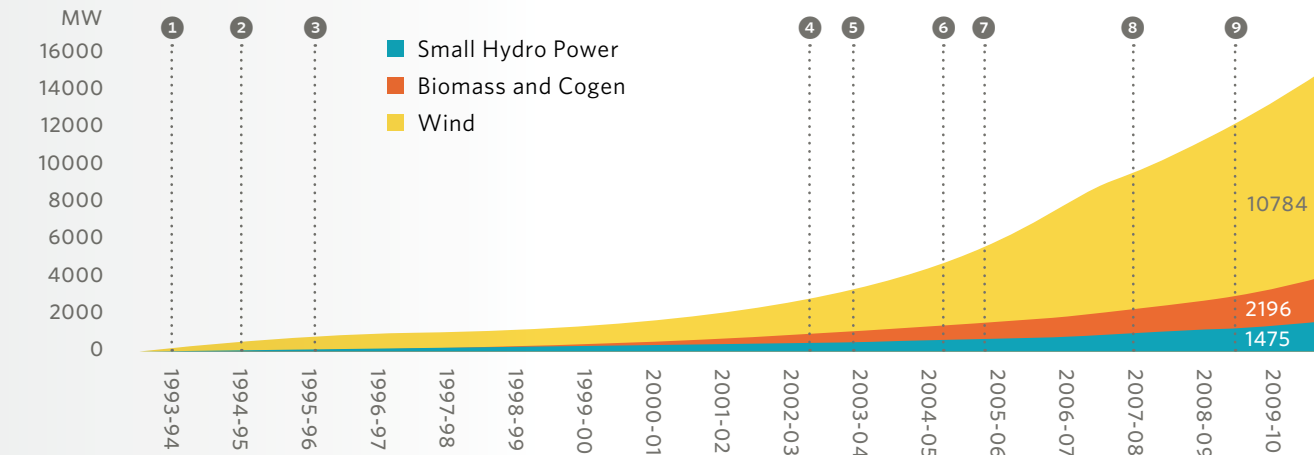
REGULATORY ENVIRONMENT

Government policy and regulatory framework have had a major influence on the growth of energy access in India. The focus on renewable sources of energy started in 1980s. A concerted effort to promote renewable energy and rural electrification started with the Electricity Act of 2003. The Act introduced a number of important reforms such as allowing captive generation, establishing provisions for power trading, and unbundled transmission and distribution, while supporting decentralized generation through renewable sources. This encouraged private sector investment in the power sector.

A number of dedicated organizations were created to facilitate development of renewable energy. In 2006, the Ministry of New and Renewable Energy (MNRE), replaced the Department of Non-Conventional Energy Sources and identified key areas to promote renewable energy such as rural electrification, provision of cooking energy, and reduction in electricity

demand through use of solar water heating and construction of energy efficient buildings. The India Renewable Energy Development Agency (IREDA) provided financial support to renewable energy projects. Additionally, agencies for promoting renewable energy have been set up in most states.

The Government provides subsidies on capital costs, products and capacity building in the clean energy space. Capital subsidies are provided for setting up plant and machinery. Product subsidies are offered largely for solar products through the Jawaharlal Nehru National Solar Mission (JNNSM). Many government schemes are based on using Self Help Groups (SHGs) and other community based institutions to promote use of renewable energy and create income generating opportunities for local entrepreneurs. The government has provisions for capacity building grants that may be used to assist renewable energy companies in creating the necessary local capacity for its operations.

MW

16000
14000
12000
10000
8000
6000
4000
2000
0

- Small Hydro Power
- Biomass and Cogen
- Wind

10784

2196

1475

1993-94 1994-95 1995-96 1996-97 1997-98 1998-99 1999-00 2000-01 2001-02 2002-03 2003-04 2004-05 2005-06 2006-07 2007-08 2008-09 2009-10

SOURCE: SARGSYAN, G. ET AL. UNLEASHING THE POTENTIAL OF RENEWABLE ENERGY IN INDIA. THE WORLD BANK. ESMAP.2010.

① Creation of Ministry of New and Renewable Energy 1992

② MNRE Policy and Tariff Guidelines

③ Accelerated Depreciation of Wind

④ Electricity Act 2003

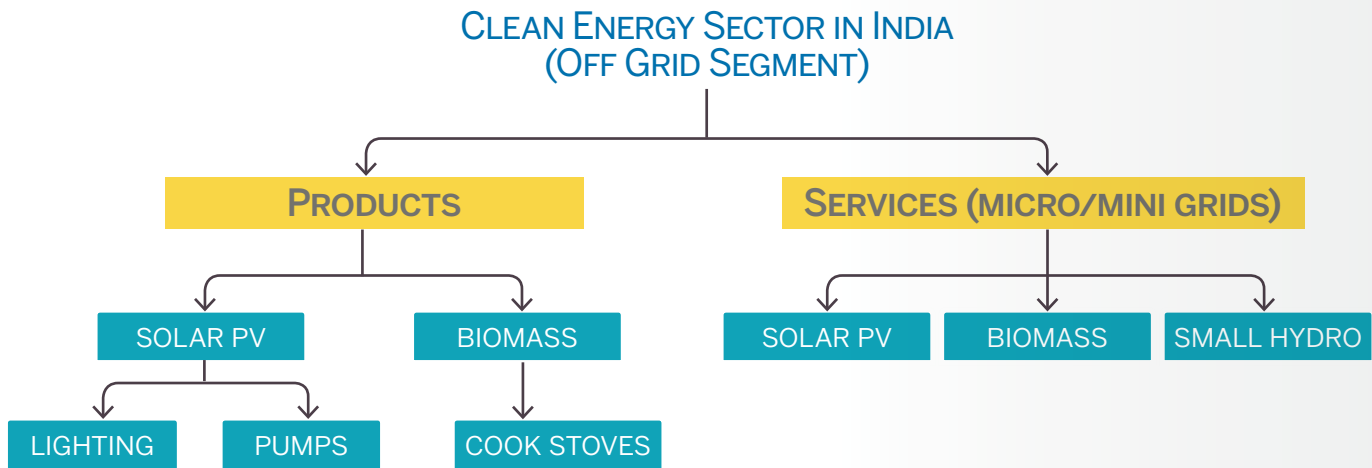⑤ State Electricity Regulatory Commission start setting up feed in tariff for renewable energy

⑥ National Tariff Policy Renewable Purchase Obligations

⑦ Integrated Energy Policy sets renewable energy targets

⑧ National Action Plan on Climate Change

⑨ Generation Based incentives for Wind

CLEAN ENERGY – RESEARCH SAMPLE

CLEAN ENERGY SECTOR IN INDIA (OFF GRID SEGMENT)

```
                    Clean Energy Sector in India
                        (Off Grid Segment)
                    │                          │
            ┌───────┴───────┐          ┌───────┴───────┐
            │   PRODUCTS    │          │ SERVICES (MICRO/MINI GRIDS) │
            └───────────────┘          └───────────────┘
          ┌───────┴───────┐        ┌───────┬───────┬───────┐
      SOLAR PV        BIOMASS   SOLAR PV  BIOMASS  SMALL HYDRO
    ┌─────┴─────┐         │
 LIGHTING    PUMPS    COOK STOVES
```

PRODUCTS

- Nuru Energy
- Bottom of Pyramid Energy and Environmental Innovations (BOPEEI)
- ONergy
- SELCO
- Simpa Networks
- Greenlight Planet
- Urja Unlimited
- Claro Energy
- Greenway Grameen Infra
- First Energy
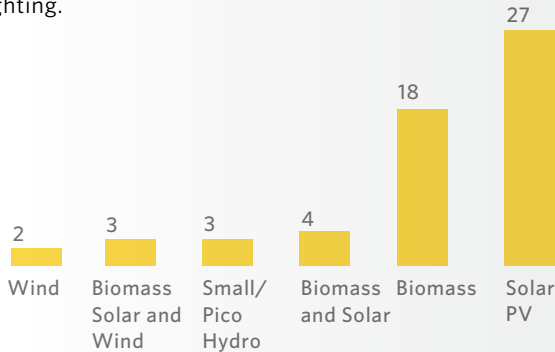- Sustaintech
- Servals Automation

SERVICES

- Mera Gao
- DESI Power
- Vana Vidyut
- SBA Hydro
- Prakruti Hydro

Our database had a listing of 57 for-profit enterprises that were categorized by type of clean energy resource and type of products and/or services. The enterprises offered a range of products and services based on factors such as rural household energy demand, government programs, geographic location and availability of clean energy resources. Since access to electricity, especially lighting is extremely poor and holds a huge market potential, a majority of the enterprises are concentrated in providing affordable lighting.

We reached out to a representative sample of 17 enterprises for information about their enterprises. The mapping of social enterprise activity in the RE space is based on findings of this primary research, supplemented by secondary research. Although their common objective is to reach a greater number of the rural, low-income households, the approach of social enterprises depends on the market need and size, customer affordability, clean energy resource availability and potential competition.

BREAK-UP OF ENTERPRISES IN THE CLEAN ENERGY SECTOR

Category	Value
Wind	2
Biomass Solar and Wind	3
Small/ Pico Hydro	3
Biomass and Solar	4
Biomass	18
Solar PV	27

SOCIAL ENTERPRISE ACTIVITY IN THE CLEAN ENERGY SECTOR

Social enterprises serve energy deprived markets in two ways. They provide clean energy products for efficient lighting and heating/cooking, as well as provide electricity through micro/mini grids that mimic grid based power. Clean energy products include solar lanterns, solar home systems (SHS), solar pumps, solar PV water heating and energy efficient cook stoves. Mini and Micro-grids use technologies such as biomass-gasifiers, small hydro, solar PV and wind to supply power to un-electrified and under-electrified communities.

CLEAN ENERGY PRODUCTS

Fourteen out of 27 enterprises in the solar PV segment offered clean energy products for domestic use, lighting and cooking. Enterprises such as Greenlight Plant, Urja Unlimited and ONergy among others offer solar PV lighting products that largely cater to household and small shop consumption demand, including that for lighting and mobile charging.

A few enterprises also sell solar PV based pumps to facilitate irrigation and drinking water in under-electrified villages. Claro Energy designs and installs solar-based 2-5 HP (horse power) pumps in Bihar. The use of solar pumps is likely to make irrigation more cost effective. Typically, capital costs per HP are about INR 1.2 -1.3 lakh (US$ 2,210 – 2,394) and operating costs are negligible. Claro Energy also facilitates loans through regional rural banks to make solar pumps affordable to more customers.

Some social enterprises provide cycle pedal generators to power LED lights and mobile phones. Nuru Energy offers POWERCycle that can charge 5-6 lights at one time when pedaled for 20 minutes. The fully charged lights can be used for 30 hours in low setting, 20 hours in mid setting and 10 hours in high setting. Similarly, Bottom of Pyramid Energy & Environmental Innovations (BOPEEI) offers Chakra Pedal Generator, which can be shared by up to 20 families in off grid and under-electrified villages. These products are cheaper when compared to solar PV(Photovoltaic) lighting systems and provide additional source of income for VLEs (Village Level Entrepreneurs).

Enterprises have developed innovative biomass-based cooking solutions, which forms an important segment under products. Greenway Grameen Infra and Sustaintech India have developed biomass-based, fuel-efficient cook stoves for consumers that rely extensively on biomass for cooking. The objective is to not replace the fuel but make efficient use of existing fuels, leading to savings on energy costs. For instance, Greenway stoves save almost 50% of the firewood consumed and Sustaintech's Pyro cook stoves require 30% to 50% less firewood for cooking.

Enterprises have also developed improved cook stoves that use biomass pellets as fuel. For instance, First Energy offers Oorja cook stoves and biomass pellets to commercial establishments such as hotels, canteens that either buy biomass fuel or use unsubsidized LPG cylinders, which are very expensive. Fuel performance of biomass pellets is much closer to that of LPG stoves and can save around 30% to 50% on fuel costs for customers.

Social enterprises serve larger villages and semi-urban markets. Enterprises such as Nuru Energy, Urja Unlimited and Greenway Grameen Infra are motivated to serve poor households in remote rural areas. However, low income levels, inefficient supply chains, and poor consumer awareness have made

PHOTO BY NURU ENERGY

it challenging for enterprises to reach deeper than large villages. For instance, Greenway cook stoves are sold primarily in larger villages where biomass fuel is bought, as opposed to fuel that is collected. In this case, the economics of energy savings are much higher. Similarly, Nuru Energy is able to sell more number of POWERCycle pedal generators in semi-urban markets because they find it difficult to identify VLEs in un-electrified, remote rural areas and model the POWER-Cycle based on the requirements of the village.

Social enterprises work closely with research organizations to develop and patent product design. First Energy developed and patented its Oorja cook stoves with the Indian Institute of Science (IISc), Bangalore. Similarly, Sustaintech works closely with Technology Informatics Design Endeavour (TIDE) to develop its PYRO energy efficient cook stoves. This association results in greater flexibility for social enterprises to test and develop a range of high-quality products based on consumer feedback and requirements.

CLEAN ENERGY SERVICES: MICRO/MINI GRIDS

There are a large number of social enterprises using solar PV based technologies in the micro-grid segment. Enterprises such as Mera Gao Power provide basic lighting facilities to rural households in off-grid areas. Typically, one solar power plant can light up two bulbs for about seven hours, primarily in the night in a village with 50 households. Since, Mera Gao operates in off-grid areas, distribution lines have to be built.

There are fewer social enterprises setting up small hydro and wind energy based plants. Both small hydro and wind energy are site-specific. For instance, pico hydro power plants depend on factors like water flow, topography and soil around the system. Moreover, for small hydro power plants, the government allots projects to private sector entities through a tendering process. Enterprises such as Delhi-based SBA Hydro, which installs small hydro power plants, works closely with government agencies for project allocation and land acquisition.

Social enterprises that install clean energy micro/mini grids supply power to small enterprises and households. While enterprises such as Mera Gao Power offer basic lighting services to households in rural areas, others like DESI Power and Vana Vidyut supply power to grid or corporate entities at pre-defined tariffs. Some entities also use anchor loads such as mobile towers as their primary customers to keep their plant load factor high, while also supplying power for household consumption.

PHOTO BY GREENWAY GRAMEEN INFRA

MERA GAO POWER

Set up in 2010, Mera Gao Power uses solar PV technologies to provide affordable lighting through micro grids in remote off grid communities in Uttar Pradesh.

Each micro grid plant produces 1.5kwh/day and provides lighting to about 50 rural households. Mera Gao charges for services provided at INR 25/week (US$ 0.46) from each household. Each micro-grid costs INR 50,000 to 60,000 (US$ 921 – US$ 1105).

Solar panels are mounted on top of households, thus eliminating the need for land. In addition, they provide a reliable source of power.

INNOVATIVE BUSINESS MODELS AND STRATEGIES

Social enterprises use existing rural distribution channels to reach out to a larger customer base. While a few social enterprises such as Nuru Energy and Greenlight Planet sell their products directly to customers, many social enterprises use established NGOs, VLEs and MFI (Microfinance Institutions) networks in rural areas to reach target customers. First Energy partnered with rural distribution networks such as Adharam Energy and Villgro Stores to sell cook stoves. Typically, a margin is built into the product's MRP to incentivize the distributor; this is typically about 8-12%.

Enterprises have devised new payment methods in response to the customer's inability to pay for clean energy products. Simpa Networks initially offered a progressive purchase model based on per watt usage of the SHS. However, over time the enterprise realized that such a payment model depended on the usage of electricity by consumers, which was difficult to predict accurately. This sometimes increased the payback period for the SHS from 3 to 6 years, which proved to be risky for the enterprise. To address this challenge, Simpa has introduced a time-based pricing model, where a customer buys days of usage of the system, such that INR 500 (US$ 9.2) buys 25 days at a price of INR 20/day (US$ 0.37). Once the credit is added to the SHS, the system will work for the period of time the customer has paid for, then lock (i.e. not allow access to the power generated) until the customer purchases the next time-based recharge. "We're excited about this model, as it is more predictable from the repayment perspective and much simpler to communicate to the end customer", says Michael MacHarg, co-founder of Simpa Networks.

Social enterprises that offer solar-based lighting products typically use recharge-for-a-fee model and social enterprises that offer biomass-based cook stoves typically use a

Deepak Punwani, Co-founder of Nuru Energy believes that "partnerships with distributors can work only if there is an alignment of interests, both social and financial. This would lead to sustainable enterprise growth."

rental model. Companies such as SELCO provide solar lights without a charging mechanism to the customer. Charging is offered by micro entrepreneurs for a fee in centralized charging stations. This reduces the cost of the product to the customer as they do not have to buy the charging equipment, ensures customer stickiness through the recharging stations, and promotes local entrepreneurship. Similarly, enterprises such as First Energy and Sustaintech rents cook stoves to the commercial segment such as tea shops, small eateries and restaurants for a small initial deposit and a monthly fee. The service and maintenance is provided by the enterprise.

Enterprises are creating a network of reliable supply chains and product distribution networks in rural areas to bridge the last mile. Deepak Punwani, Co-founder of Nuru Energy believes that "partnerships with distributors can work only if there is an alignment of interests, both social and financial. This would lead to sustainable enterprise growth." As enterprises expand into newer geographies this would be an ongoing effort, although they share that this is often challenging to find the right kind of partners. Greenway Grameen Infra, which sells energy efficient cook stoves mostly in Karnataka, uses a very thorough selection process to identify retail outlets at the taluka level before forming partnerships. "Before we appoint retailers, we interview them and thoroughly review the market opportunity in the region. This has resulted in higher sales over a shorter span of time." notes Neha Juneja, Co-founder of Greenway Grameen Infra.

After-sales service and maintenance is critical for success, and is increasingly becoming core to the business model. BOPEEI provides factory trained technicians to overcome issues of poor after-sales service. The enterprise ensures this while forming partnerships with dealers. "In addition to servicing the products, technicians spend time with the customers to explain the cause of the problem. This has resulted in lowering the number of service requests", explains Ashish Gawade, co-founder of BOPEEI.

Enterprises are exploring new avenues to create robust business models. Simpa Networks, as a part of its business development strategy, is planning to launch B2B models. This will include sale of Simpa's meters to companies, who will integrate the meter with the SHSs. They are also planning to sell Simpa-enabled kits, where SHSs will include the meters.

Urja Unlimited sells solar lighting products through VLEs and distributor networks. In order to increase sales in rural markets, it provides training to VLEs. So far, it has trained seven VLEs, and aims to incorporate a training model in its business development strategy that could become an additional source of revenue generation for the enterprise.

Customer stickiness is being managed through the appropriate payment and access control mechanisms. Micro grid enterprises collect payments either on a weekly or monthly basis for (distribution and maintenance) services provided to the rural households. There is no check on the amount of electricity consumed by individual households. Hence, social enterprises are developing and incorporating systems that accurately measure usage, and link payment to energy consumed. Micro grid enterprises, for instance are piloting models with Simpa Networks to integrate meters into households. Here, households buy access to power and the power is switched off at the household level after the credit expires.

Most biomass based social enterprises use flexible technologies that can use a broad range of locally available fuel, even as they ensure stable and reliable supplies of feedstock. Many biomass power plants suffer from inadequate or seasonal supply of feed stock. In addition, the presence of the power plant tends to increase the economic value of

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Started in 2006, Prakuti Hydro Labs designs and installs 1-3 KW pico hydro, which is primarily used for lighting purposes in rural areas. Each plant can serve one household. Typically, a 1 KW system costs INR 150,000 to INR 175,000 (US$ 2763 – US$ 3224). Prakruti Hydro has installed about 500-600 systems in the last 5 years.

Once installed, the system is almost maintenance free and supplies 24 hours of power. Since the capital cost of the systems is high, Prakruti Hydro facilitates loans through a cooperative bank.

Biomass based social enterprises use flexible technologies that can use a broad range of locally available fuel, even as they ensure stable and reliable supplies of feedstock.

feedstock that may otherwise have been considered waste, thereby increasing the cost of procuring it. Enterprises such as Husk Power Systems, Avani Bio Energy and DESI Power integrate technologies that can use diverse fuel sources effectively to produce power, and enter into long-term agreements with feedstock suppliers to ensure stability in feedstock prices.

Enterprises realize that investing in customer awareness has positive payback. There is a lack of knowledge about clean energy products and the benefits that can be accrued from them. Mukund Deogaonkar, Co-founder of First Energy highlights that, "the level of customer awareness for cook stoves was generally poor in the household segment. Hence, in order to create awareness and increase sales of our energy efficient cook stoves, we invested heavily in training women entrepreneurs who went door to door and demonstrated the use and benefits of the product. We also used video vans to demonstrate the use of the product."

VANA VIDYUT

Vana Vidyut is a renewable energy based company that installs biomass based power plants. It is one of the first enterprises to generate its own fuel that feeds into their power plant.

Vana Vidyut, through extensive R&D, has developed energy plantations by utilizing waste lands, which provides the cheapest source of fuel to the power plants. Power generation costs are about 30-40% cheaper once the capital costs of the plants are recovered.

On an average, the power plant along with cultivating energy plantations provides local employment for about 50-70 people. Two power stations of 2 MW each have been set up in Tamil Nadu and Maharashtra.

PHOTO BY SIMPA NETWORKS

Similarly, Greenway Grameen used a well-defined process to asses market need before it launched its cook stoves. As a first step, it made a set of proto-types of the cook stoves and tested them out through small pilot sales. "For the Greenway Smart Stove we did about nine testing designs and tested them in five states before we arrived at the final product. This made our stoves more acceptable to the women that ultimately use them", reveals Juneja.

Enterprises train local people to run the power plants. Most power plants, especially those that operate in remote rural locations lack access to trained manpower for operations and management. Aklavya Sharan, Executive Director of DESI Power says, "In order to overcome the lack of trained manpower in villages, DESI Power's 100 Village EmPower Partnership Program trains local people, including women, in operations and management of the power plants through our center, DESI MANTRA. This has resulted in creation of local employment, especially for women." In addition, DESI MANTRA has trained some partner operators on O&M of the plant.

CHALLENGES

Even as the Clean Energy sector expands, enterprises face challenges in reaching low-income and energy-deprived communities in India. In addition to the key challenges of facilitating consumer financing, building distribution networks and creating consumer awareness, interviewees discussed a few other challenges – such as poor implementation of policy, availability of cheap substitutes and finding the right talent as hurdles for enterprise growth.

Reliable and scalable sources of consumer financing for clean energy products will help enterprises serve more customers. Barring a few companies with a B2B model, almost all enterprises offer solar lighting products to individual households. Given the high initial cost of the product, consumers require finance support. MFIs and banks are two possible sources for this financing, but both have their limitations. MFIs look for established products with marketing and service networks, and are hesitant in general to finance loans where the borrower gets 100% possession of the product with no control over usage. Banks find the ticket sizes of loans too small, and consider these as consumption loans, and hence lend at high interest rates.

Enterprises have to create awareness among banks for financing clean energy projects. Micro and mini grids are highly technology driven and require relatively large capital investments. Most social enterprises depend on bank loans and subsidies for setting up these projects. However, most banks have no system of sensitizing their loan officers towards the needs of these enterprises. Entrepreneurs therefore, have to educate banks about the new technologies and their potential for impact. DFIs such as IFC and GIZ are also supporting enterprises in this effort. While this will improve awareness levels in the long run, currently, banks sanction fewer loans, and there are delays in the release of capital subsidies.

The growth of these social enterprises is often constrained by the lack of trained manpower in rural areas. As they expand, enterprises face difficulties in finding people who are motivated to work in difficult geographies. Moreover, local manpower resources often do not have the specific training and skills required to work with renewable energy technologies and products. Enterprises are presently investing in systems for capacity enhancement of local people, but will need support in terms of provision of targeted technical training in these geographies.

Uptake of clean energy products in remote, rural regions is low as social enterprises are unable to identify the right VLEs. Many social enterprises shared that identifying VLEs in remote rural regions is difficult due to poor understanding of the product. VLEs are often unwilling to promote and sell clean energy products as they are expensive and margins are lower when compared to other consumer goods. Moreover, once VLEs are identified, enterprises have to invest considerable amount of time and money in training them about the technology and use of the products. This process is repeated and expensive as enterprises expand into newer geographies. Social enterprises are seeking newer ways to identify and train VLEs to reach a large number of people in remote, rural regions.

Consumer awareness about clean energy products and the benefits that can be accrued from them is low. Social enterprises that serve energy-deprived markets have to compete with traditional fuels such as kerosene and biomass. Because of poor awareness about clean energy products, customers tend to rely on traditional fuels even though they have adverse health and environmental impact. In addition, many enterprises are unable to match the price points of cheap substitutes available in the market even though they offer limited or no maintenance and after sales service.

CONCLUSION

Social enterprises in the clean energy sector are taking up challenges head-on, and are acting as catalysts for development of a supportive ecosystem in this space.

At present, the business models of clean energy social enterprises are evolving, and many of them are highly dependent on either government subsidies, or soft funding from donors to gain a foothold in the energy deprived markets. Of late, funding has been focused on the low income and North Eastern states, and hence more social enterprise activity is likely to move towards these energy-deficient geographies.

Given the government push towards tapping solar energy, there seem to be a larger number of social enterprises using solar energy to serve the unserved. "Solar energy enterprises have pitched their products well. In addition, lighting has a certain emotional appeal in relation to children's education" says Svati Bhogle, co-founder of Sustaintech.

Currently, business models such as B2B are considered to be promising and scalable as they contribute to increase in productivity and livelihoods. Typically, these are enterprises that provide power to anchor loads such as telecom towers and other small enterprise clusters. In these models, the high cost of energy is justified as they increase consumers' income and productivity, and are often less expensive than fossil fuel based alternative power supply. Other B2B models that provide metering solutions to social enterprises in order to help them collect revenues and manage access are also likely to play an important role in scaling outreach.

Integrating decentralized entrepreneurship into the operational and growth model also boosts scale. Training local entrepreneurs to run small and viable units of a social enterprise ensures that local knowledge and resources are used optimally to grow the business. SELCO's Incubation Center, for instance, identifies and trains non-English speaking entrepreneurs from small towns. "We have thus far incubated two batches of about 20 entrepreneurs, primarily from Bihar and North East. Out of this, we are helping four enterprises develop their business models and two enterprises are ready for US$ 500,000 to 1 million investments," reveals Harish Hande, founder of SELCO.

Social enterprises taking up an integrated business model approach that includes services and maintenance, training, product design, and research and development show promise. This will not only ensure better products and significant market share, but also better monitoring and measurement of goods and service provided, as well as access to debt and other external funding.

Social enterprises are taking challenges head-on, and are acting as catalysts for development of a supportive ecosystem that would help them in their quest for financial returns and more widespread impact.

THE EDUCATION SECTOR

Nearly 50% of India's total population of 1.2 billion is less than 25 years old.[31] Being the second most populated country in the world means that India can reap this demographic dividend, provided its vast and young population has the requisite skills and education. This pursuit provides substantial opportunity for the education sector in bridging education and skill gaps. The size of the Indian education market is about US$ 63 billion and is expected to grow at 20% CAGR to cross US$ 100 billion by 2015.[32]

The education industry in India can be broadly classified into regulated and unregulated domains.[33] Within the regulated domain, the core segment is controlled by the government.

The government has taken various policy level measures to strengthen its functions and stakeholders, the most recent being the Right to Education Act.

The parallel segment within the unregulated domain includes institutions that may impart direct education, but do not confer a state or central government recognized degree.[32] The ancillary segment comprises entities providing products and services that support the core and parallel segments. While there are strict norms for organizations functioning in the regulated segment, there is a lack of any systematic vigilance in the parallel and ancillary segments.

KEY SEGMENTS OF THE EDUCATION SECTOR

REGULATED	UNREGULATED	
CORE	**PARALLEL**	**ANCILLARY**

» K-12
    » Primary Education
    » Secondary Education
    » Higher Secondary Education
» Higher Education
» Post Graduation
	» Pre-school
	» Coaching
	» Test Preparation
	» Vocational Training
	» Corporate Training
		» ICT/Media and Online
		      COntent
		» Teacher Training
		» Books and Stationery
		» Management and Enterprise
		      Resource Planning

REVENUE SHARE OF SEGMENTS

CORE

K-12 Education market size set to increase to US$43 billion by 2016 from the present US$24 billion

PARALLEL

Market size for coaching classes is estimated to be around US$ 5600 million and is expected to grow by 12-15% per annum to reach about US$ 9300 million by 2015. Vocational training market is estimated to reach US$ 12 billion from the current size of US$ 4.3 billion at a CAGR of 23%

ANCILLARY

India's online educational market size is set to grow to US$40 billion by 2017 from the present US$20 billion

The core segment predominantly comprises government funded and managed institutions. The K-12 segment consists of 1.3 million schools of which 20% are private schools.[34] The Indian higher education system is one of the largest in the world with more than 17 million enrolled students in over 690 universities and 35,539 colleges in 2012. In the parallel and the ancillary segment, factors such as the large supply and demand gap, need for quality education and absence of regulatory control stimulated growth of institutions established by individuals and corporate groups. Continued industrial growth and the resulting spurt in demand for a qualified workforce served as a catalyst for the growth of the sector, especially the higher education segment and vocational training institutes.

The government has increased expenditure on education in the last five years. The budgetary spend is now around US$ 61 billion, which is 3.31% of the GDP in 2012-13, up from 2.59% in 2007-08.[35] All three segments of the sector have seen their markets multiplying with increased government expenditure and entry of the private sector. An estimated investment of US$ 100 billion is required to meet the needs of 230 million students enrolled each year.[36] This number is increasing at the rate of 8 million each year. The K-12 segment represents significant investment potential with its ability to absorb capital and scale. However, foreign direct investment is prohibited in non-venture capital fund society, trust, or not-for-profit companies, which are the only legal entities permitted to run schools in India.[37]

Interest of private equity and corporate funds is directed towards for-profit ventures, especially in the parallel and ancillary segments. Of the US$ 183 million of private equity investment in this sector, approximately 70% has been raised by businesses in the non-regulated space such as pre-schools, and tutorials. Omnia Investments, the venture fund set up by the promoters of Spice Mobility, invested INR 7 crore (~US$ 1.3 million) in Single Stop,[38] a candidate assessment solutions provider and Sunstone,[39] a private MBA institute. In 2011, publishing giant Pearson bought 59% of an online coaching class provider, TutorVista. Private enterprises in the core segment have also multiplied over time as there is a clear preference for private schools over government schools, further fuelled by rising incomes and willingness to pay for better quality of education.

PPP models have been successful in delivering many services to the core segment, ranging from technology and management to capacity building. Edureach, a divison of Educomp, has partnered with 16 state governments and more than 30 education departments and boards in the country, covering over 36,000 government schools and reaching out to more than 10.6 million students.

There is consistent growth in the parallel segment particularly in the tutorials and pre-school markets. Coaching classes have traditionally been an informal part of the Indian education system. Increasing enrolment in schools and the resulting drop of teaching quality due to high student-teacher ratio have further boosted the tutoring market. Likewise, there is a growing demonstration effect with the advent of pre-schools such as Kidzee, Eurokids, and Bachpan, and parents seek to start early education of their children.

REGULATORY ENVIRONMENT

The central and state governments have taken steps to strengthen the core segment and increase private sector participation. The Right to Education (RTE) Act and the Sarva Shiksha Abhiyan have increased the enrollment level in schools. As of September 2012, 3.34 lakh new primary schools have been opened and 12.46 lakh teachers were appointed. Over 96% of all children in the age group 6 to 14 years are enrolled in school.[39] The RTE Act mandates partially-aided and unaided schools to reserve 25% of its seats for poor students. It prohibits schools from screening students during the admissions process as well as detaining underperforming students during an academic cycle until the eighth grade. Yet, there is lack of clarity on its guidelines affecting admission and quality norms in private schools. Last year, the Maharashtra education department had termed admission process that did not follow the official government timetable as illegal.[41] However, as per a circular issued by the department on March 15, 2013 unaided minority schools are exempt from reserving 25% of total seats under this Act.[42]

PHOTO BY TARA HAAT

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POLICY INTERVENTIONS

SUB-SEGMENTS	ENABLING SCHEMES
Primary	Mid- day Meal Scheme
	Sarva Shiksha Abhiyan (SSA)
	Cycle Scheme for Girls in Bihar
Secondary & Higher Secondary Education	Rastriya Madhyamik Shiksha Abhiyan
	Vocationalization of Secondary Education
Infrastructure Development	Quality Improvement of Schools
	Private Public Partnerships (PPP)
Technology Improvement	Technical Education Quality Improvement Program
	National Program for Technology Enhanced Learning
Higher Education	National Commission for Higher Education and Research
Skill Development	Modular Employable Skills (MES)
	Prime Minister's National Council on Skill Development
	Skill Development Initiative Scheme (SDIS)
	National Skill Development Corporation (NSDC)
	National Council for Vocational Training (NCVT)

The government has entered into PPPs to incorporate best practices and ensure efficient delivery of services. The state governments have been partnering with NGOs such as Akshaya Patra to implement the Mid-Day Meal scheme in government schools. The Ministry of Human Resource Development has planned to set up 2,500 Model Schools under PPPs with high quality infrastructure and facilities.

The National Skill Development Policy formulated in 2009 laid the framework for vocational education. This effort was directed towards working with the private sector in making India's youth job ready. The initiative has encouraged capacity expansion, and innovations in delivery mechanism through PPPs. The government has identified 20 high-growth sectors that have the ability to provide employment. These include manufacturing, textile, construction, automotive, and health care.

Additional policy changes that will influence the entry and functioning of private entities in the sector are under consideration. At present, foreign universities cannot offer degree courses in India unless they partner with Indian universities. The proposed Foreign Education Providers Bill has already been cleared by a Cabinet committee, but is still to be introduced in Parliament. If passed, it will allow entry of foreign educational institutions in the Indian market. The government may also introduce an early childhood care and education policy with quality standards for service providers in the pre-school sector. The proposed National Early Childhood Care and Education (ECCE) policy[43] by the Ministry of Women & Child Development will set out physical and emotional safety parameters, requirement of trained staff and a uniform curriculum framework.

[43] National Skill Development Corporation. http://www.nsdcindia.org/

EDUCATION ENTERPRISES – RESEARCH SAMPLE

PARALLEL

Naandi Education Support and Training
Hippocampus Learning Centres
CAP Workforce Development Institute
Sudhiksha Knowledge Solutions
Institute for Quality Skill Training
Gram Tarang Employability Training Services
Basix Academy for Building Lifelong Employability
Rose Computer Academy
Gras Academy
Quest Alliance
Tara Haat
Elements Akademia
Pipal Tree Ventures
IL&FS Education and Training Services

ANCILLARY

Rumi Education
Hole in the Wall Education Limited
Cogknit Semantics
Empathy Learning Systems
IL&FS Education and Training Services

CORE

Organization for Awareness of Integrated Social Security
Gyanshala

The private sector, especially enterprises that deliver services to the BoP, plays an important role in improving access to education. Our database listed 27 social enterprises in the education sector working across three segments - core, parallel, and ancillary.

These enterprises offer a range of services from early childhood to adulthood. Enterprises are present in formats such as Affordable Private Schools (APS),[44] Vocational and Skill Development Institutes (VSDI), pre-schools, after school classes, computer education, and IT-enabled curriculum enhancement solutions. We conducted in-depth interviews with 20 social enterprises across the three segments.

A majority of the social enterprises are concentrated in New Delhi and Andhra Pradesh. Sector enablers like Rumi Education, Gray Matters Capital and Intellecap also have their hubs in these locations. In our sample, except for Chhattisgarh, we found social enterprises active in all the LIS. Social enterprises involved in skill development are active in both, rural and urban geographies.

[44] APS serve a large population of the working poor and lower income families. Independently owned and operated, these schools are typically run by local entrepreneurs.

SOCIAL ENTERPRISE ACTIVITY IN THE EDUCATION SECTOR

CORE

The core segment primarily comprises APS operating in urban and rural areas. They have devised innovative, low cost service delivery models to provide K-12 education to the BoP. For example, Organization for Awareness of Integrated Social Security (OASIS) provides school education at city museums using its infrastructure as well as teaching aids like exhibits and working models. Gyanshala runs a network of single room schools in Ahmadabad, Surat, Muzaffarpur, Patna, Biharsharif, and Kolkata. Its centers operate at 25% of the cost of municipal schools and are equipped with multimedia computers with 3D academic content.

Most teachers in APS are not formally trained. APS hire teachers from the local community or neighbourhood. These teachers are often not formally or fully trained. OASIS, for instance, recruits B.Ed. college students seeking practical teaching experience.

PIPAL TREE VENTURES

Pipal Tree Ventures provides vocational training for rural youth to impart skills suited for the construction industry. It delivers training at its training centers located across India including Andhra Pradesh, Uttar Pradesh, Bihar, and Rajasthan. IDFC Foundation, the nonprofit division of Infrastructure Development Finance Company Ltd. is a major investor in the company.

To make the training program affordable, the enterprise does not charge fees upfront. Once the students are placed, they contribute a small portion of their monthly salary towards fees for training. It measures its social impact by the number of youth trained and placed.

Enterprises in this segment offer multiple services. Apart from running schools, Gyanshala also offers teacher training and curriculum enhancement services to municipal schools. In addition to museum schools, OASIS also runs other projects such as a two-year residential school program in rural India for students who have attained higher secondary education. The project aims to provide them with skills and knowledge to handle rural development projects. Empathy Learning Systems offers curriculum enhancement services to APS. It emerged from the Beautiful Tree Trust, which manages chain of low-cost schools.

PHOTO BY HIPPOCAMPUS LEARNING CENTRE

PHOTO BY PIPAL TREE VENTURES

PARALLEL

This segment includes pre-schools, after-school classes, computer academies and VSDIs. All these enterprises provide direct and non-certified education to the BoP. Due to the heterogeneity of enterprises in this segment, however, their target age group is varied.

Most of the VSDIs have been set up in the last decade, possibly due to policy initiatives such as the National Skill Development Commission (NSDC).[45] Apart from offering various certificate courses on skill development and vocational training to students, VSDIs also place them in relevant jobs. Many VSDIs have benefited from the ecosystem provided by the NSDC such as Basix Academy for Building Lifelong Employability (B-ABLE), which was one of NSDC's first partners and Gram Tarang. As Arindam Lahiri, Executive Director, Gras Academy puts it, "NSDC helps us in taking up government programs and provides us with credibility." In addition to NSDC support, most VSDI enterprises are trying to move towards the fee-based model to reduce dependence on external fund infusions.

[45] National Skill Development Corporation. http://www.nsdcindia.org/.

ANCILLARY

Their services range from infrastructure to syllabus development support for the core segment. Ancillary enterprises provide services such as IT-enabled teaching solutions, teacher training, curriculum enhancement and classroom solutions.

Enterprises providing IT-enabled curriculum enhancement to APS have mostly come up in the last five years. They are still working to gain a firm foothold in this market due to the low paying capacity of the APS and resulting unviable price points for their products. Enterprises like Rumi Education are targeting schools in tier-II, tier-III cities and towns as the curriculum enhancement products and services they offer are new to schools and students in these geographies.

INNOVATIVE BUSINESS MODELS AND STRATEGIES

In the core segment, enterprises blend revenues models to combine fees and grants. There are primarily two revenue streams for enterprises in the K-12 space. At Gyanshala, students' fees contribute to about 15% of revenue, while grants from the government and private organizations like Michael & Susan Dell Foundation (MSDF) form the remainder. For earning additional revenues, these enterprises also focus on offering consultancy services to others seeking to replicate their model. For example, Gyanshala also works with municipal schools to train teachers in their pedagogy. It has partnered with the Ahmedabad Municipal Corporation to enhance pedagogy, learning aids, and teacher training. While schools at the city museums are free for underprivileged kids, OASIS charges for consultancy offered to entities that wish to replicate the model. This model has been replicated in Bangalore with a partner NGO called Child Empowerment Foundation India.

IL&FS EDUCATION & TECHNOLOGY SERVICES

IETS provides technology-enabled learning solutions for a wide range of audiences. It customizes its products and services as per client needs. Language for instance is the most important factor in serving the BoP segment as the medium of instruction is often vernacular.

Before entering a new market, IETS conducts rigorous market research. As Neena Paul, Location Head of IL&FS ETS puts it, "We always do a baseline survey before a program and custom-fit our offerings. There is a lot preparation and ground work we do before entering a new market and invest a lot in building local capacity."

VSDI enterprises adopt innovative client financing methods in an effort to move towards a more sustainable fee-based model. While VSDIs generate revenues from government funded programs and industrial partnerships, they are trying to get more buy-in from the students who are their direct clients. Many enterprises are exploring ways to bring in formal financial institutions to fund their students, who come from economically poorer sections. Pipal Tree Ventures has introduced an innovative fee-based model where students contribute towards fees in installments once they are employed.

Enterprises make optimal use of the available infrastructure. APS try to work around capacity constraints using various strategies to optimally utilize available resources. Gyanshala, for instance, uses the rotational shift approach to hold multiple classes during the day to accommodate more students. OASIS ensures community participation to ease resource constraints such as hiring teachers and volunteers from the community it works with. APS' also adopt innovative teaching methods that can be implemented by untrained teachers with low skills. Rose Academy, which runs computer coaching classes in rural Haryana, recruits educated youth from the village to teach at its center. It also makes them custodians of the center and incentivizes them to enroll more students.

Strategic partnerships help enterprises enhance credibility and increase enrolments. Rose Academy, for instance, has partnered with NIIT Foundation to improve its teaching methodology. Joint certification by Rose and NIIT has helped in increasing Rose's brand value and therefore, its enrolments. After school classes like Naandi Education Support and Training (NEST) are building partnerships with corporate social responsibility programs. MacMillan for instance provided free books to its center and TATA SWACH gifted free water filters in all its centers. VSDIs like Elements Akademia and Gram Tarang also partner with colleges to strengthen their student enrolment and infrastructure for training purposes. For students, a vocational training certificate has lesser aspirational value even if it promises to fetch them a job when compared to a degree course. Gram Tarang has its main center in Centurion University and leverages its infrastructure for conducting training sessions. VSDI enterprises are also partnering with corporate entities to ensure high quality training and placements for the students. Pipal Tree Ventures has partnered with various equipment companies such as Volvo India and Doosan International India Private Ltd. to help them with training. On Gram Tarang's partnerships with Ashok Leyland and Café Coffee Day, Orlanda Ruthven, Head, Quality & Standards Division at Gram Tarang says, "Projects with industry houses are shorter but ensure better quality impact, placement, and retention."

INSTITUTE FOR QUALITY SKILL TRAINING (IQST)

IQST offers innovative corporate training solutions as well as short duration courses to people in the age group of 16-25 in sales, retail, and customer care to companies engaged in these fields.

IQST partnered with Michael & Susan Dell Foundation (MSDF) to pilot the affordable livelihood-linked training project. MSDF provides a portion of the fees for students whose average family income is INR 5000-6000 (US$ 90 – 110) per month. The on-going project aims to develop a financial model and examine whether mainstream banking or MFIs can be roped for funding education.

Scale strategies range from geographical expansion through franchisees to capacity enhancement of present infrastructure. Enterprises have begun tapping the pre-school market in rural and urban areas. Pre-schools and after-school classes differ in their approach to scaling up. In order to expand to different geographies, pre-schools such as Sudiksha prefer the company owned company operated (COCO) model instead of franchisees. Pre-schools are wary of their model being duplicated by franchisee owners under different brand names, even as they help themselves to the infrastructure, students, curriculum and standard operating procedures.

Naveen Kumar P, Founder Director, Sudiksha shares that, "All schools are company-owned and we do not believe in franchise model as there is a risk of schools becoming independent after few years." In rural areas, while pre-schools do not have much private competition, they do face some competition from the government-run anganwadis and household crèches. Unlike pre-schools, after-school classes and computer academies prefer the franchisee route. As an example, NEST Private Ltd., which runs after-school classes in the slums of Delhi and Mumbai, seeks to take the franchise route to expand to other smaller cities such as Pune, Nashik and Meerut.

In order to facilitate uptake, social enterprises have made their service offerings modular in addition to exploring alternative solutions and markets.

Enterprises undertake extensive marketing and branding efforts to create markets in underserved areas. Rose Academy carries out door-to-door marketing for its courses in the villages it operates in while rural pre-schools like Hippocampus involve the entire village in its annual day celebrations. Enterprises also counter competition by enhancing their marketing and branding efforts. After school classes face competition, especially from NGOs that provide similar services for free. Vivek Gupta, Chief Executive Officer, Naandi Education Support and Training (NEST) states, "Our biggest competitors are affordable schools as a lot of them offer after-school classes for home work completion especially in cities like Hyderabad. We also face competition from tuition centers that charge a lower fee and help in homework completion, as well as from NGOs who offer these services for free." He further informs that parents also prefer individual tuition teachers who are affordable as they charge around INR 100 per month. He adds that the only NEST center in Delhi which is not doing well has an NGO providing the same services for free in the locality. NEST has also invested in its branding efforts - besides a standardized curriculum, all its 80 centers spread over Delhi and Mumbai have a standardized look and use the same marketing material. "Branding and marketing efforts helped us enter new markets and attract new clients", says Gupta.

GYANSHALA

Gyanshala runs a network of single room schools for primary and secondary education at 25% the cost of the government school system. It caters to the urban slums of Ahmedbad, Surat, Patna, Biharsharif, Kolkata, and Muzaffarpur.

Gyanshala has developed standardized, low-cost and scalable teaching methodology and curriculum such as phonics and 3D modeling. Social impact is measured by number of children enrolled and the learning outcomes of their programs.

HIPPOCAMPUS LEARNING CENTER

Hippocampus runs pre-schools and after-school programs for English and Maths in rural Karnataka. Both programs are run in the same rented premises.

It measures its social impact by the number of children enrolled, and charges an affordable monthly fee. Hippocampus recruits, trains, and manages a network of teachers from the villages.

Enterprises diversify services and markets to remain sustainable and cater to the needs of the evolving market. Initially, services of enterprises such as Rumi Education and Empathy Learning Solutions included infrastructure upgrading, construction support and franchisee building. When this became increasingly difficult to sustain, they diversified to curriculum enhancement tools. According to Jonathon Mazumdar, Education Portfolio Associate, Acumen Fund, "APS either do not see value in investing in services which do not have tangible results or they do not have the ability to pay, which has led to poor market response in this subsegment." Therefore, social enterprises have begun exploring alternative solutions and markets. In order to facilitate uptake, they have made their service offerings modular. Rumi, for instance, has large teaching tools that run throughout the year. APS can alternatively opt for their smaller packages and specific need-based tools such as English speaking solutions to improve their learning outcomes given that they cannot afford investing in full year academic support tools in a single installment. Empathy Learning Solutions engages with the school at the parents' level to make their product more effective. Additionally, enterprises are tapping pre-schools and middle-income segment private schools. Asha Jayaraman, Project Manager, Rumi Education shares, "Besides private schools, pre-schools are increasing becoming our key target segments due to their profit-orientation and ability to pay." It is easier for enterprises to approach private schools than government schools because of single window clearances in the former.

CHALLENGES

Education service providers catering to the BoP segment face challenges such as low government expenditure on education, poor infrastructure facilities, high student teacher ratio, outdated curriculum and poor quality standards. Social enterprises have been successful in addressing this gap to an extent. They have also been able to meet a number of operational challenges by adopting innovative strategies in their day-to-day functioning and business models. While there are various factors driving the growth of the education sector, it is still ridden with complex contradictions and constraints which remain to be addressed either partially or wholly by enterprises.

APS faces multiple challenges to scale. Schools have to be located close to where the children live. APS also need a minimum number of children enrolled to sustain their operations. Therefore, APS find it difficult to expand in rural areas. Ensuring standardized curriculum delivery, trained management and staff, and defined processes at multiple locations are other challenges that APS face in scaling up. Moreover, not all the school owners have the acumen to translate their lessons from running one school to larger systems and standardized processes. As most school chains struggle to replicate their success beyond a few schools, investors find it difficult to find investible models in the core sector.

APS are constrained by low revenue models and inadequate human resources. Owing to its non-profit model, complex regulation, and customers' low ability to pay, APS can only charge a minimum, sustainable fee. Their financial constraints keep them from hiring formally trained teachers which are already in short supply. This makes it difficult for them to take up expensive technology enabled learning solutions. This has also led to making APS an unviable customer segment for the ancillary enterprises that provide IT solutions for curriculum enhancements.

SUDIKSHA KNOWLEDGE SOLUTIONS

Sudiksha owns and manages 18 schools in Andhra Pradesh, 12 in Hyderabad and 6 in rural Andhra Pradesh. Twelve of their schools in Hyderabad are run by women entrepreneurs.

It has adopted an innovative revenue sharing mechanism wherein 10% of the profit earned by the center goes to women entrepreneurs. The purpose of this arrangement is to achieve scale along with fostering entrepreneurship at every level.

Core enterprises find it difficult to be RTE compliant. Innovative schooling models such as museum schools by OASIS will cease to exist if these norms are to be complied with. According to its Founding CEO, Pradeep Ghosh, "The present RTE Act has stalled various plans for scale up." APS are finding it increasingly difficult to obtain grants and investments due to non-RTE compliance. Moreover, according to Mohammad Anwar, who co-heads Empathy Learning Solutions and also runs a network of APS in Hyderabad, meeting state government norms such as no objection certificate from traffic police, minimum playground area in Andhra Pradesh further slows down operations. However, incubators are of the opinion that introducing standardization, accountability, and certifications will drive investment in the K-12 segment.

High school dropout rates mean that one-third of the enrolled students do not complete their school education.[46] Students drop out due to a lack of availability of schools in remote areas, lack of awareness, and pervasiveness of child labor among the lower income strata. Moreover, capacity constraints also negatively influence uptake of school education. Land availability and cost is very high in urban centers, preventing expansion. Poor sanitation often results in girl students' dropout post puberty, especially in the age group of 11 to 14 years. Social enterprises are working around these challenges through advocacy and capacity enhancing solutions. VSDIs are working with such dropouts to provide them skills and make them job-ready.

VSDIs need to create a market for their courses as students do not find these courses attractive, especially in industries such as manufacturing and construction. The demand for skilled labor is on the rise but the workforce shaped by the current higher education system suffers from low employability. VSDIs have emerged to fill this gap. However, these institutions face problems in creating a market for their services, often because of lack of aspirational value in the services they offer. Students often prefer to pay for a degree course from a college even if it does not guarantee them jobs over VSDIs certificate courses that assure employment. Santosh Parulekar, Co-Founder & CEO, Pipal Tree Ventures shares, "It is difficult to attract to students to courses that place them in construction sector even if it assures them higher salary as compared to IT services/computer repair."

CONCLUSION

With proactive steps from the government to foster private sector participation and increased spending on education, private school enrollment has improved in most states. It has increased from 18.7% in 2006 to 28.3% in 2012 for the 6-14 years age group in rural areas.[47] Management of government schools in many states is being handed over to private education providers. However, APS run the risk of investments drying up due to challenges around mandatory RTE compliance. Funding and interventions for gender empowerment related initiatives will, however, continue to grow since government interventions clearly point towards promoting girl child education. APS have also started leveraging their existing infrastructure to offer after-school classes, hobby classes, and pre-schools to generate additional revenue.

In the parallel segment, most VSDIs are still young, and yet to become profitable. Most of them have recently received private equity funding for expanding their operations. Apart from capital expenditure involved, resource utilization, brand building, quality of trainers and delivery are important differentiations that investors look for before investing in a VSDI. VSDIs will increasingly target the LIS, as these states report

high dropout rates in schools and colleges. Also, with the increased emphasis on employability, higher education institutes are expected to see value in incorporating skill development in their curriculum.

Another prospective area for growth and investments is the pre-school segment. With the increasing demonstration effect on the demand for their services, pre-schools are moving to villages as well. The growing emphasis on sports and physical education in schools and colleges may open up avenues for more sports academies and health consultancy providers to enter the market.[48] Private equity and venture capital is expected to increase in the vocational education segment as well as IT-enabled learning solutions due to favorable government policies and scalability of their business models.

Education has traditionally been not-for-profit with the objective of making it universally available. Nevertheless, social enterprise models demonstrate that attaining financial viability along with imparting education is plausible. Although the sector is young and evolving, and is yet to scale the impact it is already creating at a micro level, the heightened focus on education as a critical needs sector coupled with innovative models by social enterprises should ensure that India meets the target of Education for All.

[46] Annual Status of Education Report. 2012. http://img.asercentre.org/docs/Publications/ASER%20Reports/ASER_2012/fullaser-2012report.pdf

[47] Annual Status of Education Report. 2012. http://img.asercentre.org/docs/Publications/ASER%20Reports/ASER_2012/fullaser-2012report.pdf

[48] The Times of India. March 16, 2013. http://articles.timesofindia.indiatimes.com/2013-03-16/news/37766233_1_sports-merit-marks-goa-sports-policy-sports-authority.
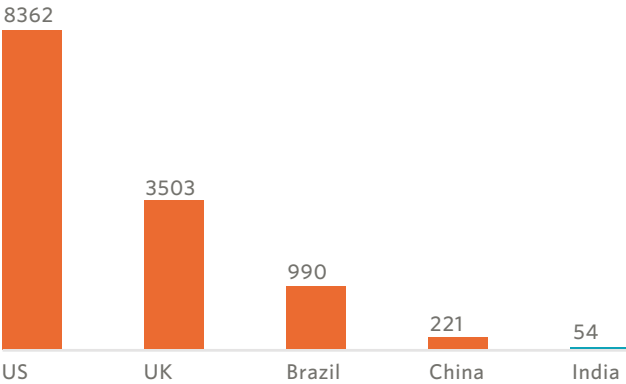
+ The Healthcare Sector

PHOTO BY OXFAM INTERNATIONAL

THE HEALTHCARE SECTOR

Healthcare is another important development component to help India maximize the potential of its large population and reap the benefits of the demographic advantage. Given that nearly 70% of the country's population lives in rural areas and more than 25% is below poverty level, the challenge lies in making healthcare affordable and accessible for everyone. Per capita healthcare expenditure in India is US$ 54, a fraction of the expenditure in developing economies such as China and Brazil. Overall healthcare expenditure in India is amongst the lowest globally at 4% of the GDP, less than half of the global average of 9.7%.[49] This low penetration of healthcare in India signifies huge opportunity for public and private investment.

A combination of demographic and economic factors is expected to boost healthcare coverage and drive sector growth in the coming years. With a population of about 1.2 billion in 2011, India houses nearly 17.5% of the global population, signifying vast healthcare opportunity.[50] While 60% of our population currently falls in the younger age group, geriatric population is expected to increase from current 96 million to around 168 million by 2026.[51] This represents a big market for preventive, curative and geriatric care opportunities. The middle-class population is expected to grow rapidly from 153 million people in 2010 (about 15% of population in India), to around a third of the population in India in the next 10 years.[52] With increasing affluence and lifestyle changes, there is likely to be a marked increase in the incidence of lifestyle-related diseases, such as cardiovascular, oncology and diabetes, compared to the communicable and infectious
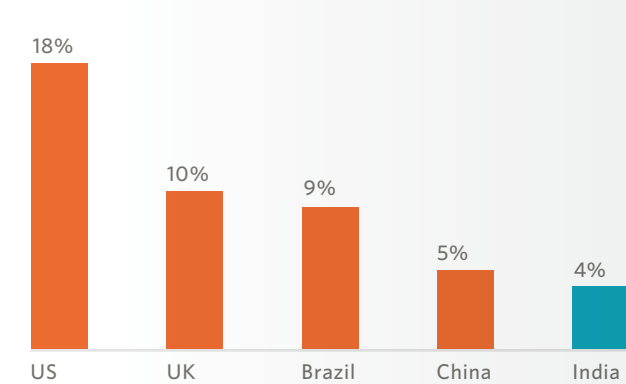
diseases. Various community based health financing schemes currently provide healthcare assistance to low-income communities. The private sector is capitalizing on the big untapped opportunity by introducing several new and innovative models of healthcare delivery. From leveraging technology to frugal improvements in medical equipments, private enterprises are experimenting to make healthcare affordable and inclusive. Driven by these growth factors, the Indian Healthcare sector is expected to grow to US$ 280 billion by 2020, from the current US$ 79 billion.[53]

The Government too has taken several initiatives to improve the overall health ecosystem in India. The central government launched the National Rural Health Mission (NRHM) in 2005 to strengthen public healthcare financing infrastructure, promote PPPs for public health goals, train female health activists, promote healthy lifestyles, hygiene and nutrition, and improve healthcare financing. State governments are partnering with private organizations to improve availability of healthcare services in rural areas. Insurance schemes such as Rashtriya Swasthya Bima Yojana have been introduced. To provide access to healthcare at the BoP. In order to incentivize private companies to set up healthcare infrastructure in rural areas, the government provided a tax holiday to hospitals (with minimum of 100 beds) that became operational between April 2008 and March 2013, in tier II and tier III towns.

The Healthcare industry can broadly be divided into four key segments, dominated by the healthcare delivery segment. The healthcare delivery segment accounts for more than 70% of the total sector value. It comprises infrastructure involved in diagnosis and treatment of patients such as hospitals, clinics, nursing homes and tele-medicine centers, as well as the manpower involved in healthcare delivery such as doctors, nurses and para-medics. The other key segments include Pharmaceutical (R&D, manufacturing and distribution), Equipments (diagnostic equipments, medical implants and disposables), and Insurance (healthcare financing).

Healthcare delivery penetration in India is low and inadequate compared to the global standards. India has an average of 0.6 doctors per 1000 population, against the global average of 1.23. Similarly, it has an average of 1.2 beds per 1000 population, against the world average of 2.6 [54]

PROJECTED INDIAN HEALTHCARE INDUSTRY (US$ BILLION)

CAGR 21%

40	79	280
2010	2012	2020

SOURCE: HEALTH CARE SECTOR REPORT, IBEF
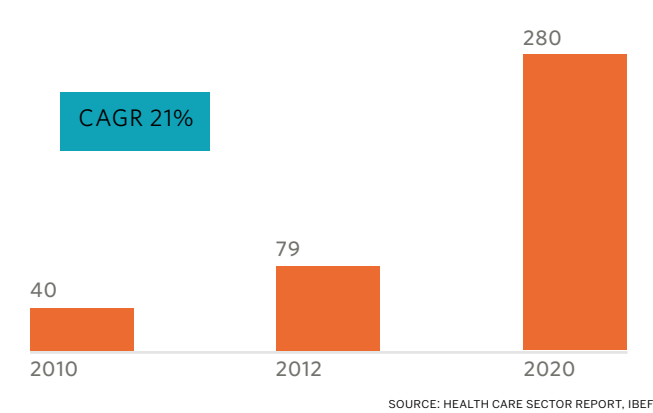
This limited healthcare infrastructure is also heavily urban-biased, as more than 80% of doctors and about 70% of the hospitals are situated in urban areas.[55] Growing population, higher spending capacity, lifestyle diseases and availability of trained medical staff in urban areas have attracted the attention of large private organizations such as Apollo Hospitals, Fortis Healthcare, Max Healthcare, CARE Hospitals and Manipal Hospitals.

[49] Emerging Trends in Healthcare. ASSOCHAM and KPMG. February 17, 2011. http://www.kpmg.com/IN/en/IssuesAndInsights/ThoughtLeadership/Emrging_trends_in_healthcare.pdf.

[50] Population Crunch in India: Is it urban or still rural. July 10, 2012. http://eprints.iisc.ernet.in/44814/1/cur_sci_103-1_2012.pdf.

[51] Emerging Trends in Healthcare. ASSOCHAM and KPMG. Februaru 17, 2011. http://www.kpmg.com/IN/en/IssuesAndInsights/ThoughtLeadership/Emrging_trends_in_healthcare.pdf.

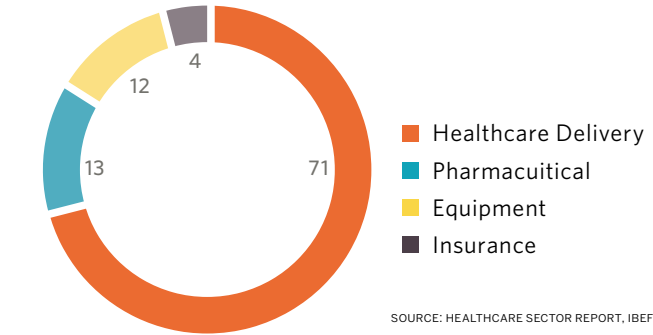[52] India Pharma Inc.: Capitalising on India's Growth Potential. CII and PWC. November 2010. http://www.vibrantgujarat.com/images/pdf/pharmaseminar-outcomes.pdf.

[53] Healthcare Sector Report. IBEF. November 2011. http://www.ibef.org/download/Healthcare50112.pdf.

[54] Emerging Trends in Healthcare. ASSOCHAM and KPMG. February 17, 2011. http://www.kpmg.com/IN/en/IssuesAndInsights/ThoughtLeadership/Emrging_trends_in_healthcare.pdf.

[55] Medical technology industry in India. Confederation of Indian Industry and Deloitte. July 2010. http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/Medical_technology_Industry_in_India.pdf.

PER CAPITA HEALTH EXPENDITURE (US$)

US	UK	Brazil	China	India
8362	3503	990	221	54

SOURCE: WHO WORLD HEALTH STATISTICS 2010

HEALTH EXPENDITURE (% OF GDP)

US	UK	Brazil	China	India
18%	10%	9%	5%	4%

SOURCE: WHO WORLD HEALTH STATISTICS 2010

HEALTHCARE INDUSTRY SEGMENTS 2012 (%)

- Healthcare Delivery
- Pharmacuitical
- Equipment
- Insurance

SOURCE: HEALTHCARE SECTOR REPORT, IBEF

	RURAL PENETRATION (%)	URBAN PENETRATION (%)
Hospitals	31	69
Beds in Hospitals	20	80
Doctors	08	92

SOURCE: CII AND PWC RESEARCH 2010

RURAL HEALTH INFRASTRUCTURE	NUMBER (2011)
Sub-centre	148,124
Primary Health Centre	23,887
Community Health Center	4,809

Rural healthcare infrastructure is inadequate despite many private practitioners in rural areas and the public healthcare system. While the private practitioners are small and fragmented, the public healthcare infrastructure is structured around a three tier system, comprising Sub-Centres (SC), Primary Health Centres (PHC) and Community Health Centres (CHC). The SCs are the first point of contact for the village community. These centres provide basic services in relation to maternal and child health, family welfare, nutrition, immunization and hygiene practices, using interpersonal modes of communication. PHCs comprise the second tier in rural healthcare structure, and provide curative and preventive healthcare to the rural population with an emphasis on preventive aspects. Each CHC is established and maintained by the State Government, and acts as a referral centre for four PHCs within its jurisdiction. Although a well-structured public health care system exists, availability of regular and quality healthcare in rural areas is impacted by shortfall in infrastructure, inadequate working facilities (supplies and equipment) and non-availability of trained staff. Various research studies reveal that 30% of rural population travels more than 30 km to seek health services. The expenditure on travel to access healthcare alone amounts to 30% of the total health care expenses.[56]

Pharmaceutical segment is also concentrated in urban areas. The Indian pharma market is dominated by branded generics, which constitute 90% of the total domestic pharma sales.[57] The top 10 firms including Ranbaxy, Cipla, Dr Reddy's Laboratories, and Sun Pharmaceuticals account for 30% of the domestic market. The rest of the market is fragmented with a large number of private players meeting domestic demand for medicines through indigenous manufacturing. The reach of these firms however, is poor in rural areas, with rural markets contributing only 17% of the overall medicine sales.[58] This gap in access to medicines represents a significant opportunity for the private sector. Big pharma companies are undertaking several initiatives to improve availability of their medicines such as entering into partnerships with local organizations, organizing health camps and using mobile vans.

Less than 10% of India's population has any form of health insurance cover.

The medical equipment segment is evolving to meet the needs of rural markets. Diagnostic and therapy equipments form the largest segment with more than 50% share of the total equipments market.[59] Imports have dominated the domestic market as more than 75% of the equipments used in India are imported.[60] Over the last decade, however, domestic manufacturing has gained significance due to availability of qualified talent, improved regulatory environment and a sizable cost arbitrage. Several international companies like Phillips Medical System, Abbott Vascular and GE Healthcare are using India as a manufacturing base by either setting up facilities of their own or by acquiring domestic manufacturers. The increasing number of smaller hospitals, particularly in Tier II and III cities, has given rise to demand for affordable equipments that help them optimize their costs and utilization. Thus frugal innovations are becoming critical to make modern care accessible, available and affordable to all. Domestic and international manufacturers are working towards introducing innovations with a primary focus on the rural healthcare market in India.

PHARMA-CEUTICAL COMPANY	RURAL PENETRATION INITIATIVE
Novartis	Rural initiative Arogya Parivar to market drugs for common ailments. Women and children's nutrition is sold in smaller packs, in line with rural affordability.
Pfizer	Project Sanjeevani to reach out to Tier II and III cities and rural areas.
Novo Nordisk	Mobile Clinics all over Goa to diagnose people with diabetes
Eli Lilly	Tie up with Self Employed Women's Association (SEWA) in Ahmedabad to educate, diagnose and treat people for tuberculosis
Sanofi Aventis	Prayas, a structured education program for rural doctors across India

SOURCE: CII AND PWC RESEARCH 2010

Insurance penetration in India is poor and most healthcare expenditure is out-of-pocket. Less than 10% of India's population has any form of health insurance cover.[61] The small set of Indians covered by insurance is primarily through the Employees State Insurance (ESI) Scheme and the Central Government Health Scheme. Tier III cities and rural areas are marked by negligible insurance coverage except for a few government administered schemes. The Rashtriya Swasthya Bima Yojana launched in 2008, provides access to free healthcare to population living below poverty line. The scheme has already covered about 120 million people so far, with an average claim of INR 700-1000 per person (US$ 13-18).[62] State governments have also introduced health insurance schemes such as Rajiv Aarogyashri (Andhra Pradesh), Yeshaswini (Karnataka) and Kalaingar (Tamil Nadu) that provide healthcare to the poor in their states. Community-based health financing schemes such as Jeevandai Aarogya Yojana (in Maharashtra) and Vimo SEWA (in Gujarat) have also gained popularity in rural areas. Such schemes, run by NGOs, are based on risk-pooling and minimal contributions by the members of the scheme. More than 25 such schemes have been introduced in different parts of the country, covering over 10 million lives for health all over India.[63] However, rural India is home to millions of people without any health coverage, with a majority of them falling in the low-income category.

EQUIPMENT COMPANY	RURAL PENETRATION INITIATIVE
G.E Healthcare	Low cost ECG and Ultrasound machine for the Indian market, which reduces cost of delivering these tests at a fraction of earlier rates.
Johnson & Johnson	Knee implants and reusable stapler for surgeries at price points which are acquiescent to the Indian market
Roche Diagnostics	Screening device for cardio vascular diseases, which is suitable for use in rural settings
Medived	Pacemakers costing about INR 20,000 lower than the comparable pacemakers available in Indian markets.

SOURCE: CII AND PWC RESEARCH 2010

[56] International Journal of Business and Management Cases. April 2012. http://www.ijbmc.com/issue/251.pdf.

[57] India Pharma Inc.: Capitalising on India's Growth Potential. CII and PWC. November 2010. http://www.vibrantgujarat.com/images/pdf/pharmaseminar-outcomes.pdf.

[58] The Indian Pharmaceutical Industry. KPMG. 2006. http://www.in.kpmg.com/pdf/indian%20pharma%20outlook.pdf.

[59] Enhancing access to healthcare through innovation. FICCI and PWC. June 2011. http://www.pwc.in/assets/pdfs/pharma/PwC-FICCI-Medical_Technology_in_India.pdf.

[60] Medical technology industry in India. Confederation of Indian Industry and Deloitte. July 2010. http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/Medical_technology_Industry_in_India.pdf.

[61] Healthcare Infrastructure and Services Financing in India. ICC and PWC. September 2012. http://www.pwc.com/en_GX/gx/healthcare/pdf/emerging-market-report-hc-in-india.pdf.

[62] Not in the pink of health, Forbes India, March 22 2013

[63] Healthcare Infrastructure and Services Financing in India. ICC and PWC. September 2012. http://www.pwc.com/en_GX/gx/healthcare/pdf/emerging-market-report-hc-in-india.pdf.

HEALTHCARE – RESEARCH SAMPLE

HEALTHCARE DELIVERY

Hospitals:
LifeSpring Healthcare
Glocal Healthcare
Swas Healthcare
KIDS (Kanungo Institute of Diabetes Specialities)
GV Meditech
Vaatsalya

Tele-medicine:
Ujjeewan Healthcare
iKure
Mdhil Health Info Services
mHealth Ventures

Mobile Medical Unit:
Samvab
Ziqitza Healthcare

Clinics:
Viva Sehat
Swasth Healthcare

MEDICAL EQUIPMENT

Equipment/Solution Manufacturer:
AYZH
Bigtec Labs
Biosense Technologies
Embrace Innovation
Forus Health
Neurosynaptic Communications

Given the size of the underserved population in India and the enormity of their healthcare needs, a huge market potential rests at the BoP. Recognizing this, a new breed of social entrepreneurs emerged in the last decade to establish healthcare ventures to cater to the under-served. These enterprises are largely present in the healthcare delivery and equipments segments. To reach the last mile with an economically feasible model, social enterprises have adapted their operations to reduce capital costs and trim the frills to provide low-cost solutions. They have collaborated with village health workers, NGOs and medical institutions present on the ground to improve awareness and accessibility in rural areas. The enterprises leverage technology to provide healthcare and document critical health information in remote areas. Medical devices are adapted to facilitate easy operation by local health workers in rural areas and provide diagnostic reading at low-cost.

The social enterprises covered in our research are for-profit companies that that are scalable enterprises or chains, as opposed to single and stand-alone hospitals or clinics. We gathered 34 social enterprises and mapped them across industry segments to identify areas of social enterprise activity and the primary formats/channels or business models they adopt. We conducted qualitative interviews with 13 social enterprises from the healthcare delivery and equipments segments. The primary research helped us understand key initiatives undertaken by these enterprises to become more relevant and feasible for low-income communities. It also gave us a view of the key challenges they face to grow and scale up profitably in difficult markets.

SOCIAL ENTERPRISE ACTIVITY IN HEALTHCARE

More than 70% of the social enterprises are concentrated in the healthcare delivery segment. Responding to the significant untapped opportunity beyond the metros and tier I cities, several social enterprises have entered the healthcare delivery market in under-served geographies with different formats and models. The equipments segment has also witnessed entry of social enterprises in the last few years. These enterprises are introducing low-cost diagnostic equipments to make healthcare affordable for rural markets, or developing technology solutions and platforms to collect and organize patient information and facilitate healthcare delivery. The pharmaceutical segment, in contrast, has attracted less attention from social enterprises, as pharma manufacturing is a relatively more capital intensive and regulated segment. Pharma retail, however, has potential, given the low access to medicines in rural areas. Currently, however, there are no such retail chains as the healthcare delivery ecosystem in rural areas is not yet developed. The insurance segment has been an area of focus for the government, NGOs and microfinance institutions. Healthcare enterprises are not yet a part of the insurance dissemination chain.

Healthcare delivery enterprises are bridging the gap by developing healthcare infrastructure beyond metros and tier I cities. Enterprises have adapted prevalent models of healthcare delivery such as hospitals and clinics to become asset-light and scalable. For example, Vaatsalya, LifeSpring and Glocal Healthcare are chains of branded hospitals in tier II cities that provide secondary care by focusing on no-frills and low-cost service, and high volumes of operations. Viva Sehat and Swasth India are standardized day-care chains which cater to the primary healthcare needs of the urban poor. Some enterprises have also tested new models such as tele-medicine and mobile medical units to become accessible to rural patients. Firms such as iKure and mHealth Ventures India leverage information and communication technology to provide primary and secondary healthcare advice to villagers. Ziqitza and Samvab are examples of firms that provide emergency services through mobile medical units.

iKURE

Established in 2009, iKure developed a tele-medicine platform called WHIMS (Wireless Health Incident Monitoring System) which enables health workers/doctors in rural areas to seek medical advice from specialist doctors working in urban areas. iKure collaborates with healthcare partners, corporates, and NGOs to set-up kiosks using their platform and provide tele-medicine services in rural areas.

To increase the reach of their technology, iKure establishes tele-medicine kiosks by training Rural Medical Practitioners (RMP) to treat patients using its IT solution. The RMPs diagnose and log the readings, analysis and prescriptions into the system. If they encounter a complicated case, the patient is referred to a hospital attached to the kiosk.

More than 70% of the social enterprises are concentrated in the Healthcare Delivery segment, bridging the healthcare gap by developing infrastructure beyond metros and tier I cities.

In the medical equipments segment, enterprises have introduced portable and low-cost medical technologies to make healthcare affordable. These devices complement current diagnostic tools or tests conducted in labs, by scanning and identifying problems in the early stages, in order to avoid expensive treatments for the economically vulnerable later. Additionally, they are designed to be used by semi-skilled technicians and health workers, the predominant healthcare delivery agents in remote areas. For example, Forus Healthcare has developed 3Nethra, an ophthalmology device which can detect all eye problems ranging from glaucoma to diabetic retina and cataract. 3Nethra costs one-third the cost of traditional screening technology, needs semi-skilled operators, and is portable, making it ideal for eye-screening camps in rural areas.[64] It also connects primary care centers to secondary or tertiary care centers through telemedicine, whereby doctors can offer remote diagnosis for a rural patient. Similarly Biosense Technologies has developed a hand-held, battery-operated device to detect anemia, which costs INR 10 per test (US$ 0.18), as against tests in a lab at INR 300-800 (US$ 5-15). Bangalore based Bigtec Labs has devised a handheld testing device that can diagnose Hepatitis B in 10 minutes at less than INR 100 per test (US$ 1.8). Compared to a conventional testing machine that costs around INR 12,000,000 (US$ 22,000) and requires skilled technicians to operate, Bigtec's handheld device will cost INR 20,000 (US$ 368) and can be handled by staff at a primary health center.[65]

The pharma retail segment represents an opportunity for enterprises as the health ecosystem develops. Pharma retail in smaller towns is conducted by unorganized and local outlets. Social enterprises in health delivery could consider the pharma retail chain format in smaller towns to supply branded generics at low costs. A not-for-profit trust, LOCOST has been actively involved in making and selling low-cost essential medicines for the urban and rural poor in India.

Conforming to the quality standards prescribed by the World Health Organization (WHO), LOCOST makes more than 60 essential medicines at its own factory and sells it at less than a quarter of the market price of drugs. Ujjeewan Healthcare, a for-profit social enterprise that is primarily into health delivery, also supports access to medicines for basic health problems. Ujjeewan does this through collaboration with a local pharma manufacturer to source generic medicines from them at affordable prices for its patients. This not only ensures authenticity, availability and cost-effectiveness of the medicines for patients, but also provides an additional revenue stream for the enterprise.

Commercial insurance companies are yet to cover the health insurance needs of rural farmers and workers in the informal sector. This has been the domain of local NGOs and charitable institutions such as SEWA, Karuna Trust, and Uplift India Association that provide community health insurance to the poor by pooling resources. Microfinance institutions are also leveraging their connection with rural customers to offer health insurance products as part of their portfolio. Narayana Hrudayalaya, an enterprise delivering affordable cardiac care in the country, has played a role in expanding micro-insurance coverage for farmers in India. Narayana Hrudayalaya proposed an insurance scheme to the Karnataka Government to provide more than 1700 surgical and medical procedures to the farmers free of cost. Their advocacy resulted in a scheme called Yeshaswani, which covers more than 3 million farmers and ensures cashless treatment in around 350 public and private hospitals in the country.[66]

[64] The Times of India. May 24, 2012. http://epaper.timesofindia.com/Repository/ml.asp?Ref=VE9JQkcvMjAxMi8wNS8yNCNBcjAxNTAw.

[65] Business Today, May 18, 2008. http://businesstoday.intoday.in/story/indias-hottest-startups/1/2034.html.

[66] Narayana Hrudayalaya. www.narayanahospitals.com.

INNOVATIVE BUSINESS MODELS AND STRATEGIES

Within healthcare delivery, enterprises have predominantly adopted the hospital format. Considerable unmet demand and favorable economics due to lower capital expenditure act as significant drivers for setting up hospitals in tier II and III cities. Hospitals in Tier II cities require less than half of the capital investment necessary in metros due to lower real estate costs.[67] This results in a shorter payback period for hospitals in tier II and III cities as they are able to break-even within two years compared to four to five years for a similar hospital in a metro. Within hospitals, single-specialty hospitals and low-cost secondary hospitals are the two emerging models of healthcare delivery adopted by social enterprises.

Enterprises have set up single specialty hospitals in low-risk segments in tier II and III cities. Specialty hospitals range from low-risk specialty such as eye-care, dental-care, maternal-care, to high-end specialty including cardiology, cancer and transplant medicine. Low-risk specialty hospitals have been set up as the demand for basic specialties such as eye-care and maternal-care itself has not been met in these areas. Besides, they require lower capital expenditure and operating costs; as in-patient stay is rarely required for treating these health conditions. Enterprises like Centre for Sight and Eye-Q specialize in the ophthalmology market, Narayana Hrudayalaya offers low-cost cardiac care, LifeSpring Hospitals caters to the maternity segments while Kanungo Institute of Diabetes Specialties (KIDS) offers specialized services for diabetes patients. Focus on a single specialty results in high level of standardization, better utilization of assets/doctors and higher economies of scale. For example, LifeSpring Hospitals has a much higher throughput rate in operation theatres, accommodating 22-26 procedures a week, compared to 4-6 procedures in private clinics. Similarly, doctors at LifeSpring carry out about 17-26 surgeries per month, which is four times the number of surgeries performed by doctors in private clinics.[68]

Low-cost hospitals have been set up by enterprises to offer secondary healthcare services in tier II and III cities. Focus on primary and secondary healthcare services results in high volumes of operations for the hospitals as these segments constitute 80-90% of the patient cases. Besides, unlike tertiary healthcare, these segments do not require highly specialized equipments and skills, and can be operated with lower investments and costs. On the operations side, asset-light infrastructure and the no-frills approach help in keeping costs low. For example, Vaatsalya and Jeevanti minimize capital expenditure by leasing its hospitals rather than buying real estate, thus taking advantage of lower prevailing rents in semi-urban locations. Moreover,

LIFESPRING HOSPITAL

LifeSpring is a chain of small hospitals (20-25 beds) in Andhra Pradesh, aimed at providing high quality maternal and child care. It targets bottom 60% of the Indian population who have a household income of INR 3000 – INR 7000 per month (US$ 55 – US$ 129).

To target such customers, the general ward at Life Spring costs 30-50% lesser than other hospitals. Low cost infrastructure, service specialization and high asset utilization are some of the methods adopted by LifeSpring to keep their costs low. More than 16,000 babies have been delivered across all LifeSpring Hospitals by June 2012.

PHOTO BY LIFESPRING

GLOCAL HEALTHCARE

Established in 2010, Glocal Health-care has a chain of five low-cost hospitals (50-100 beds) in West Bengal, offering secondary health-care services. Glocal has designed its healthcare delivery around 42 diseases that address 95% of the patients in the country.

Glocal has also streamlined the healthcare delivery process by adopting a protocol-driven approach that uses technology extensively, standardizes the process and makes the operations lean. Glocal has attracted investment of INR 4 billion (US$ 76 million) from multiple investors, to fund its future plan of setting up an additional 50 hospitals across six states.

the no-frills approach adopted by these hospitals implies that the hospitals do not invest in ancillary services such as ambulances, diagnostics, cafeteria and phar-macy.[69] These services are outsourced to independent service providers, which also acts as a source of revenue for the hospitals.

Tele-medicine is an emerging format to reach remote customers and bridge the talent availability gap. Telemedicine can be broadly defined as the use of informa-tion and telecommunications technologies (ICTs) to make healthcare information and services available at a distance. This model attempts to bridge the gap of talent availability in rural areas by linking patients in villages to doctors in cities through technology. Video consultation and cellular consultation are the two formats of tele-medicine practiced in India.

[67] Indian Healthcare Sector: A Galore of Scope and Opportunity. May 2012. http://www. google.co.in/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CC8QFjAA&url=htt p%3A%2F%2Fwww.megstrat.com%2FIndian-Healthcare-Sector-Report-2012-download. php&ei=5UdZUYPbAYKJrAfi8IGwDA&usg=AFQjCNE2On7VSaCMAfHxEW4mag9rbqycPg

[68] Case Study on LifeSpring Hospitals. March 28, 2011. http://globalens.com/DocFiles/PDF/cases/Preview/GL1429038P.pdf.

[69] Vaatsalya Hospitals: Inclusiveness Through Proximity. 2010. http://www.growinginclusivemarkets.org/media/cases/India_Vaatsalya_2011.pdf.

Social enterprises such as iKure and Drishtee offer video consultation by setting up health centers or kiosks at the village level. These are equipped with video-conferencing facilities and managed by health workers from local areas for linguistic familiarity. The local health worker is trained to monitor patients and provide basic medical consultation. The health workers are also trained to identify cases that may require further diagnosis and connect them to the doctors in the urban areas through video-chat for further treatment.

Social enterprises such as mHealth and mDhil are leveraging the cellular penetration in India, by connecting patients at the village level with doctors through mobile phones. mDhil provides basic healthcare information to consumers across the country via text messaging, mobile web browser and interactive digital content. mHealth on the other hand, has a centralized call center facility in Mumbai staffed with expe-rienced doctors, where patients from rural and urban areas can call and seek medical consultation and advice over the telephone.

The cellular consultation model benefits from the exist-ing cellphone penetration and does not require investment in building rural infrastructure to provide healthcare. The video consultation model requires setting up rural health centers, IT facilities and training local talent to manage the infrastructure. However, rural patients can physically visit the center and interact with local health workers in this

SAMVAB

Operating in Odisha, Samvab has about eight medical vans equipped with basic medical facilities to provide its custom-ers healthcare services like primary diagnosis, blood tests and basic medication. Customers are registered with a one-time fee of around INR 3000 (US$ 55), after which they can avail of Samvab's helpline services for minimal fees.

Samvab plans to tie-up with hospitals and medical institutes to provide medical assistance and emergency services to their customers.

PHOTO BY KIDS

format. This makes them feel more at ease with the technol-ogy, as opposed to cellular consultation model, where they cannot see the person they are interacting with. The tele-medicine enterprises are currently learning and adapting these models to make them scalable, and the degree of their success will be visible with time.

Clinics are an important delivery channel providing primary healthcare services, but few enterprises currently adopt this model. The clinic based model has not been viable in rural areas as consistent availability of trained and reli-able medical staff is a big constraint. Social enterprises such as Swasth India and Viva Sehat are two examples of clinic based models, offering affordable primary healthcare services. These enterprises are setting up branded clinics in urban areas, and targeting the urban poor living in slums. Swasth India has primary health clinics in Mumbai provid-ing affordable consultation and medicines to slum dwellers. Similarly Viva-Sehat has established more than 50 centers to offer low-cost primary healthcare services in Hyderabad. These centers are 30-40% more affordable than other private clinics. Clinics in rural areas, on the other hand, are still unorganized, fragmented and operated by independent practitioners.

Few mobile medical units provide primary healthcare and emergency medical services at the door step of patients. Ziqitza Health Care provides round the clock emergency care in rural and urban areas of Maharashtra, Punjab, Bihar and Kerala. The state governments of Bihar, Punjab and Rajasthan have entered into partnerships with Ziqitza to offer ambulance and health services at low costs to emergency victims. Samvab offers primary healthcare services to the rural districts around Berhampur in Odisha through its mobile vans. The enterprise collaborates with local doctors and leases their services, depending on the location and need of the customer. The scalability of this model hinges on availability of medical talent in rural areas.

The Hub and Spoke model integrates multiple formats of delivery such as hospitals, clinics, mobile vans and health camps to deliver healthcare to patients at different geographic levels. GV Meditech has three secondary hospitals in Varanasi which act as hubs. It is setting up microclinics, telemedicine centers at the district level, and health camps at the village level. The centers at the village and district levels help the enterprise connect with the customer and offer low-cost diagnostic and primary health services. The hospital in the city serves as a hub that caters to the aggregated demand for secondary and tertiary care. This not only makes the business model more robust, but also ensures that expert medical service is available to patients in villages too. The hub and spoke model has not been adopted extensively by enterprises yet, as most enterprises are currently focusing on building more hospitals in tier II cities. Going forward, they could use the hub-and-spoke model to expand in rural areas by setting up health centers and camps to reach the last mile.

While each model has a different channel and format to become accessible to the customers, there are some trends which are common across the formats. More than 70% of the enterprises across formats provide general healthcare, as it caters to a wider audience and has a higher volume of operations. Similarly, most enterprises cater to the low-income population (US$ 3 to US$ 10 per day) and middle income

Enterprises use direct marketing to connect with customers and increase awareness. Collaboration with local doctors, health-workers, pharmacies, and NGOs is an important marketing tool for enterprises.

population (above US$ 10 per day) as their primary target segment. Social enterprises currently do not particularly target customers below poverty line, as it is economically unviable for them.

Enterprises adopt different strategies to ensure availability of medical talent in smaller towns. Some enterprises pay a premium and provide incentives to attract doctors to smaller towns and cities. For example, to attract doctors to tier II cities, Vaatsalya offers compensations that are 20-25% higher than that prevailing in urban hospitals. Vaatsalya also offers higher designations, faster growth and significant autonomy in decision making to its doctors, compared to urban hospitals.[70] Arun Diaz, Founder of Jeevanti Healthcare says, "Jeevanti provides higher compensation as well as accommodation support to facilitate relocation of doctors to tier II towns." Some enterprises encourage multi-tasking by doctors and nurses to improve their utilization. For example, nurses at LifeSpring Hospitals are trained in clinical, marketing as well as administrative roles, which results in 2.5 times higher nurse utilization as compared to private clinics. Says Vijaybhasker Srinivas, the Head of Process Control at LifeSpring, "Nurses at LifeSpring are involved in multiple tasks such as managing operation theatres, billing and patient registration to improve their utilization." Some enterprises are leasing services of doctors on need basis, instead of hiring them. For example, Samvab is co-operating with various medical specialists in rural areas, instead of hiring them. Depending on the location of the customer, the nature of the problem and the availability of the doctor, they dispatch the doctor closest to the patient for the treatment. Similarly urban clinic chains such as Viva Sehat and Swasth India have tie-ups with medical specialists, who visit the clinics on fixed days, instead of hiring them on their payroll.[71]

Enterprises are also experimenting with initiatives to reduce dependence on experienced doctors. Some enterprises provide medical training to local health workers, pharmacists or local physicians to leverage their basic knowledge for healthcare services. For example, tele-medicine operators such as Drishtee and Ujjeewan Healthcare try to identify and train health workers and para-medical staff at the village level, to run their tele-medicine kiosks. NGOs such as Sugha Vazhvu and Janani have attempted to set up chains of health centers in rural areas by partnering with local health practitioners and training them. Enterprises are also adapting their products and services in such a way that they can be operated by local health workers. Rajeev Kumar, the Director at Neurosynaptics Communications elaborates that "since doctors are not available in rural areas, we have designed the telemedicine solution in a way that locally trained person can provide medical device, without depending on doctors in urban areas." Similarly Glocal Healthcare has computerized healthcare delivery process at its hospitals to make it protocol-driven. The computerized system will automate diagnosis of more than 40 diseases, which affect 95% of the patients.[72] This automated protocol standardizes the diagnosis process to be delivered by a doctor, reducing dependence on specialized or experienced doctors.

Enterprises have adopted various strategies to make healthcare affordable for their customers. Some enterprises subsidize healthcare costs for the BoP segment, by charging higher fees from customers who can afford to pay. For example, LifeSpring utilizes a cross-subsidy model by dividing their wards into general, semi-private and private categories, and charging each ward differentially. Similarly Narayana Hrudayalaya offers semiprivate and private rooms for those who can afford better personal amenities, while offering subsidized and free treatment to the BoP segment. Several enterprises also focus on reducing the total cost of operations, rather than adopting price reduction techniques such as discounts or subsidies. They intend to reduce the cost of treatment and make healthcare affordable for all the patients. Ajay Nair of mHealth Ventures supports this, and says, "We do not have a cross-subsidy program for customers, as we feel

every customer is important and an independent profitable unit." Jeevanti and Glocal Healthcare also focus on reducing the total fixed and operational costs of their hospitals, rather than cross-subsidizing a particular segment. They look at multiple ways to reduce costs such as leasing properties, purchasing basic equipments, focusing on high volumes of operations and standardizing health delivery processes.

Enterprises use direct marketing to connect with customers and increase awareness. Most enterprises regularly conduct health camps in villages to build a last mile connect with rural customers, as well as make them aware of the healthcare services provided by the enterprise. KIDS plans to conduct about 100 health camps and patient education programs in a year to increase customer awareness about diabetes and their enterprise. Sujoy Santra, Founder and CEO from iKure shares, "We organize health camps, collaborate with local organizations and advertise at market places using banners, video vans etc to increase visibility." LifeSpring's outreach team goes door-to door to educate women and key decision makers about the benefits of institutional delivery and maternal care, raise awareness about LifeSpring and create relationships with the communities. Collaboration with local doctors, health-workers, pharmacies, and NGOs is also an important marketing tool for enterprises. For example, Glocal Healthcare follows the community approach where it reaches out to change makers such as NGOs, local doctors, health workers and pharmacists to inform them about their high quality healthcare treatment at affordable prices.

[70] Vaatsalya Hospitals: Inclusiveness Through Proximity. 2010. http://www.growinginclusivemarkets.org/media/cases/India_Vaatsalya_2011.pdf.

[71] Urban Primary Healthcare and Private Sector in India, Annapurna Chavali, http://accessh.org/article/Urban_Primary_Health_and_Private_Sector_in_India.pdf

[72] The Economic Times. January 25, 2013. http://articles.economictimes.indiatimes.com/2013-01-25/news/36548391_1_vaatsalya-private-hospitals-high-quality-hospitals.

CHALLENGES

While social enterprises have evolved and adapted their business models to operate in smaller markets, they still face several challenges to grow and scale up. There are systemic constraints in rural markets that continue to challenge scalability and sustainability of the social enterprises.

Healthcare enterprises face difficulty in scaling up their businesses. While social enterprises have evolved and adapted their business models to operate in smaller markets, they still face several challenges to grow and scale up. Geographic focus of most social enterprises is currently restricted to a specific state or a region. Constraints such as lack of qualified talent and poor awareness of patients make it difficult and time-consuming for enterprises to expand aggressively. Lack of national presence or limited geographic coverage of the enterprises may fail to attract attention of investors, who look at scalability as an important investment criterion.

Enterprises are constantly challenged to reduce capital expenditure and operational costs. Social enterprises target low income populations and offer basic healthcare services at affordable rates. Since it is difficult for them to rely on customer revenues to recover costs, enterprises have to look at alternate measures such as low-cost operational model for faster break-even. They are constantly striving to innovate their infrastructure and operational model to improve their profitability, without reducing quality and reliability of the services. Reducing costs is not an easy task for most enterprises, especially since they have to invest in technology, talent and marketing to overcome rural constraints.

Attracting talent becomes tougher as enterprises expand to smaller towns and villages. Although enterprises have tried various ways to attract and retain doctors in smaller towns, it is still a difficult and expensive affair. Attracting and incentivizing talent, multi-tasking of staff as well as training local workers requires a lot of effort and resources, making it a difficult and time-consuming process for enterprises. Also, social enterprises have to repeat this process of skill building in every location they expand to, thus making it a continuous and expensive affair. Entrepreneurs, especially in the hospitals and clinics formats, are looking for solutions to build talent paths to reach the interiors of the country.

Lack of customer awareness about health conditions, technologies and service providers impacts uptake of services. Poor customer knowledge was highlighted as a constraint by most of the social enterprises we interviewed. Customers in smaller towns and villages have limited understanding about health conditions, and continue to rely on traditional methods and non-institutional formats for healthcare. They are skeptical of trying newer delivery formats such as tele-medicine and mobile vans because they are used to relying on traditional physical or brick and mortar solutions, even if the practitioner is unqualified. Enterprises have to spend considerable time and resources on basic concept selling to inform the customers about the benefits of modern healthcare delivery formats. They have to conduct regular health camps and direct marketing campaigns to connect with the customers to explain the quality and affordability of services provided by them. Also customers in rural areas need more time and evidence to get convinced of the benefits.

High share of out-of-pocket expenses makes it unaffordable for rural patients to access quality services. According to a survey by the Indian Institute of Population Sciences and WHO in six states, more than 40% of low-income families in India have to borrow money to meet their healthcare costs, pushing many households below the poverty line. Due to poor affordability, customers tend to delay medication unless the illness becomes critical, or rely on local and unorganized health practitioners. Rural patients also perceive private enterprises to be highly expensive. In addition to marketing and communication efforts, enterprises also have to continuously strive to keep the capital and operational costs low to remain affordable for the rural patients.

CONCLUSION

Healthcare has emerged as a high growth sector within the social enterprise space. Entrepreneurs have realized that merely extending current models of healthcare delivery from the metros to smaller towns and villages will not serve the purpose. They have bypassed conventional approaches and innovated to overcome challenges to last mile reach. Hospitals in tier II and III cities have emerged as a promising model with their asset-light and high-volumes focus. The hospital model has also proved scalability, as enterprises have managed to expand units to multiple cities within their geographies. Low capital investment, low gestation period and scalable business models of these hospitals have attracted attention from the financial investors too.

Tele-medicine is another model which has attracted many enterprises as it bridges the talent gap in rural India. According to Manisha Gupta of Startup!, "there seems to be an explosion of telemedicine and other solutions that offer access deep at the block and panchayat levels. We see a lot of interest in east India where there is a severe shortage of healthcare services." Tele-medicine enterprises are modifying their operational models and experimenting with different strategies to sustain and grow. However, adoption and scalability of this model is yet to be determined as enterprises are currently restricted to smaller geographies.

Other models such as clinics and mobile medical units are at a nascent stage too. Their growth is, at present, a function of availability of doctors and competition from local and unorganized players. However, these models have the potential to reach deep into the country and connect with customers at the village level, which hospitals may not be able to do. Although most of these enterprises are at an early stage and have a long distance to travel to become success stories, they have made a good start. Their focus on innovation in business models and treatment processes to create working solutions to reach remote patients as well as the intention and the passion to make quality healthcare accessible is a potent combination for inclusive healthcare.

THE WATER & SANITATION SECTOR

The Water & Sanitation (Watsan) sector fulfils critical needs across socio-economic strata in India. It includes all the activities associated with Supply (provision and infrastructure such as drinking water, toilets and waste collection), Hygiene & Treatment (provision of hygiene services, and treatment and disposal of waste) and Recharge & Replenishment (rainwater harvesting and up-cycling non-biodegradable waste). In India, Watsan is viewed as a public good, with the government as the largest stakeholder in this sector. Other stakeholders with a presence in this sector include the private sector, NGOs and other development sector players.

By 2015, target 7C of the UN Millennium Development Goals (MDGs) aims to halve the number of people without access to drinking water and basic sanitation.[73] By 2010, in India, 92% of the population had access to an improved source of water.[74] Improved water source does not however mean that that the water is safe. While the proportion of population with improved access to sanitation has doubled in the last two decades, a majority of population still lacks access

[73] United Nations.
http://www.un.org/millenniumgoals/environ.shtml.

[74] Global Water Forum. September 12, 2013.
http://www.globalwaterforum.org/2012/09/23/water-supply-and-sanitation-in-india-meeting-targets-and-beyond/

ACCESS TO WATER AND SANITATION

YEAR	URBAN	RURAL	TOTAL
1990	88	63	69
1995	90	70	75
2000	93	77	81
2005	95	83	86
2010	97	90	92

Population (in percent) of India with access to improved sources of water.

SOURCE: WHO/ UNICEF(2012a).

YEAR	IMPROVED			NO SANITATION		
	URBAN	RURAL	TOTAL	URBAN	RURAL	TOTAL
1990	51	7	18	28	91	75
1995	53	10	21	25	86	70
2000	55	14	25	22	79	63
2005	56	19	30	18	73	57
2010	58	23	34	14	67	51

Population (in percent) of India with access to improved sources of sanitation, and no sanitation. The proportions of the population with access to improved sources and no santitation do not add up to 100 percent. The remaining population has access to unimproved sources.

SOURCE: WHO/ UNICEF(2012b).

PHOTO BY MCCONNELL FRANKLIN

The Water & Sanitation Sector

to sanitation infrastructure and resorts to open defecation. Nearly 60% of people in India[75] still defecate in open owing to lack of awareness and belief that defecation acts as manure to the soil. The Census 2011 report suggests that 2/3rd of households in India have access to phones but only half the number have access to basic toilet facilities and over 1/3rd have no access to safe drinking water.[76] As per the Census report, 53.1% (63.6% in 2001) of the households in India do not have a toilet, with the percentage being as high as 69.3% (78.1% in 2001) in rural areas and 18.6% (26.3% in 2001) in urban areas.[77]

Poor sanitation has corollary effects. Its impact is felt in terms of illness, expenditure on healthcare, loss in productivity, reduced school attendance, losses in fisheries production and tourism, welfare impacts, lack of privacy and security of women.[78] While the exact number of public toilets is unknown, in Mumbai, there are 5,993 public toilets for men as compared to 3,536 for women. According to 2009 survey, a greater imbalance was found in New Delhi with 1534 public toilets for men and 132 for women. In rural areas, 17% women have to walk more than 500 m to get water for their families and livestock, and 55% of them are forced to bathe in the open because they do not have private bathing facilities.[79] India still has around 13 million bucket latrines, with scavengers for excreta collection.[80]

Access to water supply and drainage facilities is poor too. Two-thirds of households do not have a treated tap source for drinking water. Closed drainage for discharge of waste water is absent in about four-fifths of households. Only 47% can access water within their premises although 87% of households access sources such as taps, hand pumps, and tubewells for drinking water. Over a third of the households have to fetch water by walking distances upto 500 meters in rural areas. In urban areas, this distance is lower at 100 meters.[81] The Asia Water watch 2015 report suggests that India has made considerable advancement in urban and rural water supply coverage, and is well on its way to provide 100% coverage by 2015.[81]

Garbage generation is growing each day. Households and industries are generating solid waste at an increasing rate. Urban India generates 188,500 tonnes per day (68.8 million tonnes per year) of municipal solid waste (MSW) at a per capita waste generation rate of 500 grams/person/day.[83] Collection of MSW in major cities in India is about 70-90%, while in smaller cities and towns it is much lower at less than 50%. Local bodies are aiming to achieve 100% collection and transportation of waste.

Given the size of unmet need, the sector has huge business potential. According to the Water Sector in India report, 2011 by Ernst and Young, the business potential for

the water sector market by 2030 revolves around four key themes, which are equipment supply (~US$32 billion), Public Private Partnerships (PPPs) for water supply and distribution (~US$1750 billion), water treatment plants (~US$1303 billion), and water EPC (Engineering, Procurement and Construction) business and integrated water resource management for utilities (~US$45 billion).[84]

The estimated potential of the annual national toilet and sewage treatment market is estimated at over US$ 6.6 billion annually, with cumulative market during 2007-20 at over US$ 152 billion. Of the cumulative market, US$ 97 billion, or 64%, can potentially be in infrastructure and US$ 54 billion, or 36%, in operations and maintenance services.[85]

DEMAND AND SUPPLY FOR WATSAN SERVICES

Demand clearly outstrips supply in the Watsan sector. Apart from provision of services, there is a high need for education and awareness building around hygiene practices, particularly in BoP communities.
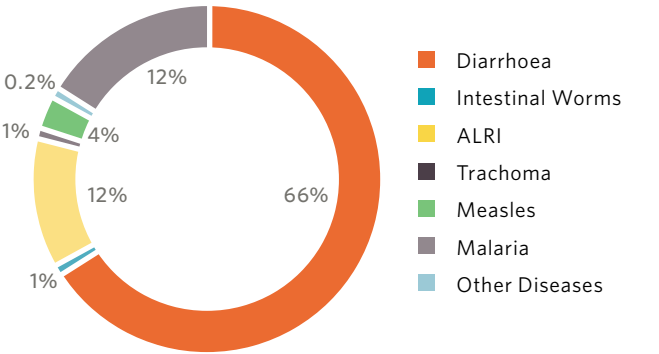
SANITATION:
The lack of adequate sanitation in India has resulted in an annual loss of US$ 53.8 billion or US$ 48 per capita, which is equivalent to 6.4% of GDP in 2006.[86] Most of these losses were related to health (71.7%; US$ 38.5 billion), and impacted children below five years. Other economic losses from insufficient sanitation relate to cleaner drinking water access, time losses from not having access to sanitation, and tourism-related losses. Research shows that, even locally implemented toilet and hygiene interventions had the potential to save US$ 32.6 billion.[87]

THE COST OF INDIA'S MISSING TOILETS (BY DISEASE 2006)

- Diarrhoea — 66%
- Intestinal Worms — 12%
- ALRI — 12%
- Trachoma — 1%
- Measles — 4%
- Malaria — 1%
- Other Diseases — 0.2%

SOURCE: "GOVERNMENT FUNDS FOR SANITATION INADEQUATE, PRIVATE SECTOR SHOULD POOL IN." ECONOMIC TIMES, FEB 9,2012.

The government is the largest supplier of Watsan services, with active involvement of the private sector and NGOs. These entities have focused largely on construction and maintenance of toilets, although there is a significant presence of private enterprises in waste management too. In an attempt to quickly and effectively bridge the demand supply gap, community-based initiatives like Community Led Total Sanitation (CLTS) have emerged. CLTS is a methodology for mobilizing communities to completely eliminate open defecation. Communities are encouraged and supported to conduct their own appraisal and analysis of open defecation and take action to address it. In India, 28 states and 7 union territories are using the CLTS approach.[88] Launched in 1999, the Total Sanitation Campaign (TSC) focuses on promoting behavior change in rural areas. It also includes incentive schemes like Nirmal Gram Puraskar that promote the role of Gram Panchayats and local communities in achieving total sanitation.[89]

[75] The Hindu. June 14, 2012.
http://www.thehindu.com/sci-tech/health/policy-and-issues/india-is-drowning-in-its-own-excreta/article3524150.ece.

[76] Indian Sanitation Portal.
http://www.indiasanitationportal.org/1830.

[77] Scoop Independent News. March 26, 2012.
http://www.scoop.co.nz/stories/HL1203/S00268/water-and-sanitation-in-indias-census-2012.htm.

[78] New York Times. June 15, 2012.
http://www.nytimes.com/2012/06/15/world/asia/in-mumbai-a-campaign-against-restroom-injustice.html?pagewanted=all.

[79] India Water Portal. April 18, 2012.
http://www.indiawaterportal.org/post/25816.

[80] Asian Development Bank. 2009.
http://gramvikas.org/uploads/file/Publications/WebPublications/Foundations/11_Indias%20sanitation%20for%20all.pdf.

[81] India Water Portal, April 18, 2012.
http://www.indiawaterportal.org/post/25816.

[82] World Health Organization.
http://www.who.int/water_sanitation_health/publications/asiawaterwatch.pdf.

[83] Sustainable Solid Waste Management in India. August 29, 2011.
http://swmindia.blogspot.in/2011/08/blog-post.html.

[84] Ernst and Young. September 2011.
http://www.ey.com/Publication/vwLUAssets/Water_sector_in_India/$FILE/Water_Sector_in_India.pdf.

[85] The Economic Times. February 9, 2012.
http://articles.economictimes.indiatimes.com/2012-02-09/news/31041996_1_total-sanitation-campaign-adequate-sanitation-sewage-treatment.

[86] The Economic Impacts of Inadequate Sanitation in India. http://www.wsp.org/sites/wsp.org/files/publications/wsp-esi-india.pdf

[87] The Economic Times. February 9, 2012. http://articles.economictimes.indiatimes.com/2012-02-09/news/31041996_1_total-sanitation-campaign-adequate-sanitation-sewage-treatment.

[88] Community Led Total Sanitation.
http://www.communityledtotalsanitation.org/country/india.

There have been numerous supply side strategies to solve the sanitation conundrum. Within communities, these include shared toilets where families collectively bear the cost and maintenance of a toilet. Alternately, 2-15 households share a toilet and pay rent to the owner who uses it himself and is responsible for maintenance and repairs. Public and community toilet blocks that use the pay-per-use model have also emerged.[90]

Waste collection and disposal is another critical component of Watsan. Urban India currently generates municipal solid waste at a per capita waste generation rate of 500 grams/person/day.[91] This waste is collected and transported by waste workers, either employed with municipal bodies, contractors or an informal network. These waste workers collect waste at every door step, and transport it to a collection point or the landfill.

The government introduced the Solid Waste Management rules in 1999 for municipal bodies across the country.[92] However, the budget allocation is low, and the landfill approach has resulted in land and water contamination.[93] These challenges have resulted in the emergence of small decentralized models of waste management that are gaining momentum, especially in large cities like Mumbai.

WATER: India is a water scarce country. The per capita availability is ~1,150m³/year and renewable fresh water sources are estimated to be ~1,100-~1,200 bcm.[94] Demand in the water sector can be categorized into three segments — domestic, industry and agriculture. Agriculture has the highest water consumption considering that rice, wheat and sugarcane, which constitute ~90% of the crop production, are all water intensive crops. The consumption of water by industry is expected to reach 18% of the total annual consumption in 2050 up from 6% in 2000. Domestic demand for water has been increasing with the rise in population.[95] Supply and distribution of water are largely dominated by local municipal bodies with limited private sector involvement. The private sector is more visible in domestic water purification and wastewater treatment.

The demand for water has largely been met by exploiting ground water, through tube wells and bore wells. Private and government irrigators have either drilled individual tubewells

or relied on others' tubewells, which has resulted in informal water markets. With over 20 million tubewells installed, ground water now accounts for over 50% of irrigated area, and 80% of domestic water supply.[97] Rapid decline of the ground water table has been a cause for concern, especially in urban India.[97]

The source for water in urban areas is through piped water; however the water is often contaminated. Owing to the scarcity of water, water storage has become extremely important and is generally stored in private or community owned water tanks. The condition of the poor in urban areas is worse when it comes to safe water consumption as they store water in drums or pots.

Waste water is discharged and treated in multiple ways. Industrial waste water is discharged in effluent treatment plants, while domestic waste water flows into sewage canals. Agricultural waste water usually flows back into the fields. Waste water discharge has increased over time, and the current arrangements for treatment and recharge fall short of requirement. Most of the waste water finds its way into local rivers and streams, contaminating water, causing pollution and reducing the availability of fresh water resources.

[89] Total Sanitation Campaign – Progress and Issues. May 2011. http://www.cess.ac.in/cesshome/wp/WP-11-Total%20Sanitation%20Campaign%20-%20Progress%20and%20Issues.pdf.

[90] Sulabh International. http://www.sulabhinternational.org/.

[91] Sustainable Solid Waste Management in India. August 29, 2011. http://swmindia.blogspot.in/2011/08/blog-post.html.

[92] Ministry of Environment and Forests. September 25, 2000. http://www.envfor.nic.in/legis/hsm/mswmhr.html.

[93] The Views Paper. August 8, 2010. http://theviewspaper.net/waste-disposal-in-india/.

[94] Ernst and Young. September 2011. http://www.ey.com/Publication/vwLUAssets/Water_sector_in_India/$FILE/Water_Sector_in_India.pdf.

[95] Ernst and Young. September 2011. http://www.ey.com/Publication/vwLUAssets/Water_sector_in_India/$FILE/Water_Sector_in_India.pdf.

[96] The World Bank. 2006. http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/01/24/000090341_20060124094858/Rendered/PDF/34750.pdf

[97] Ministry of Water Resources. May 2011. http://cgwb.gov.in/documents/GW-Senarioin%20cities-May2011.pdf.

REGULATORY ENVIRONMENT

Water supply and sanitation is a state responsibility, and is in turn bestowed upon the Panchayati Raj institutions in rural areas, and municipalities in urban areas. In addition to programs and policies through its five year plans, the government has also forged pubic private partnerships in the Watsan sector to boost provision and access.

The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) program also applies to the Watsan sector. The program is implemented in 63 cities accounting for 42% of urban Indian population and emphasizes on basic services to the urban poor such as housing, water supply, sanitation, road network and urban transport. Further, the FDI policy in India allows for investment by foreign investors in the sector. This indicates opportunities in sewage and sanitation services, which currently has limited private sector involvement.[98]

The government has entered into PPPs in Watsan, especially for urban water supply. Where only four PPP projects were awarded until 2004, 13 projects have been awarded since 2005. Most PPPs involve operations and maintenance projects. PPPs today have a total reach of approximately five million people in urban areas. [99]

IMPORTANT WATSAN REGULATION

» Ministry of Drinking Water and Sanitation
» Ministry of Housing and Urban Poverty Alleviation
» Ministry of Rural Development
» Ministry of Urban Development

» National Urban Sanitation Policy
» Total Sanitation Campaign
» National Water Policy
» Nirmal Gram Puruskar
» Indira Awas Yojna
» Jawaharlal Nehru Urban Renewal Mission
» MG. National Rural Emplyment Guarantee Act
» The Emplotyment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act
» Municipal Solid Waste (Management and Handling) Rules 2000
» EPA Municipal Solid Waste Landfill Regulations

The Union Budget 2013 allocates INR 152.6 billion (US$2.77 billion) to the Ministry of Drinking Water Supply and Sanitation. Of this, INR 110 billion (US$ 2.4 billion) has been allocated for supporting the states in providing safe and adequate drinking water in rural areas. The allocation for rural sanitation is INR 42.6 billion (US$ 851 million). The Urban Development Ministry received a budgetary hike of 26%, of which INR 16.46 billion (US$ 303 million) is set aside for water supply and sanitation.

GLOBAL EVENTS AND CAMPAIGNS FOR WATER AND SANITATION	
22nd March	World Water Day
7th April	World Health Day
5th May	World Hand Hygiene Day
18th September	World Water Monitoring Day
15th October	Global Hand Washing Day
19th November	World Toilet Day
2005 – 2015	Water for Life Decade
2008	Intl. Year of Sanitation
2013	Intl. Year of Water Cooperation
2013	Intl. Year of Water and Sanitation

[98] Ernst and Young. September 2011. http://www.ey.com/Publication/vwLUAssets/Water_sector_in_India/$FILE/Water_Sector_in_India.pdf.

[99] The World Bank Water and Sanitation Program. September 2011. http://urbanindia.nic.in/programme/uwss/PSP_IWS_Detailed.pdf.

WATSAN ENTERPRISES – RESEARCH SAMPLE

WATER & SANITATION

Diagram

SUPPLY
- Water → Access to Water
  - Pipes
  - Packaged Water
  - Ground Water
  - Storage
- Sanitation → Access to Toilets
  - Community
  - Household
  - Public
- Access to Waste Collection
  - Domestic waste
  - Industrial waste

HYGIENE & TREATMENT
- Water → Clean Water
  - Water Purification Technology
  - Water Disinfectants
- Sanitation → Waste Water Treatment
  - SME/Domestic
  - Industrial
- Disposal of Excreta
  - Human Scavengers
  - Public Sewage Systems
  - Ecosan Toilets
- Disposal of Solid Waste
  - Human Scavengers
  - Public Sewage Systems
  - Ecosan Toilets

RECHARGE & REPLENISH
- Water
  - Rainwater Harvesting
  - Wastewater recycling
- Sanitation
  - Solidwaste recycling
- Awareness & Education
  - Education Programs
  - Customer Engagement Programs

Given the sheer scale and scope of the effort required, there is growing private sector participation within (through taking over O&M or EPC contracts) and outside government programs. Incidents of water borne diseases due to inadequate sanitation have led to an increased awareness for sanitation at the BoP. As a result, the Watsan sector attracts social enterprise activity, with a particular focus on customer segments at the BoP. Our social enterprise mapping in this sector is based on the following frame work.

Our database yielded 19 social enterprises across the three segments in Watsan – Supply, Hygiene & Treatment and Recharge & Replenishment. These enterprises offer services ranging from provision of safe drinking water, portable toilets and waste collection to waste disposal and up-cycling. Supply enterprises formed 50% of

our population, Hygiene & Treatment enterprises constituted about 33% while the Recharge & Replenishment enterprises formed about 17% of the population. We reached out to them for in-depth interviews to understand more about the work they do, and the challenges they face. The following map of social enterprises in Watsan is based on responses from sixteen enterprises respondents supplemented by secondary research.

Sanitation enterprises tend to focus on urban markets, while water enterprises focus on rural markets. Most enterprises engaged in sanitation supply cater to urban and semi-urban markets. Enterprises engaged in Hygiene & Treatment provide services to both, urban and rural customers. Enterprises in the water access space are largely focused on rural customers. This is a result of the degree of unmet need – rural sanitation, for

instance is considered to be in a better condition than is urban sanitation, especially in urban slums. Similarly, access to safe drinking water is a far bigger problem in rural areas in India where untreated ground water is the major source of water.

A significant number of the sample was registered as private limited companies. Some of the enterprises that emerged from not-for-profit backgrounds have adopted the hybrid model in keeping with their mission to provide livelihoods and a better quality of life for waste workers. However, our primary research revealed that even non-hybrid enterprises strongly invest in raising the degree of respectability and security of the waste workers in their network.

SUPPLY
- Basic Water Needs
- Ecoloove
- Piramal Water (Sarvajal)
- Tanclean
- Water Health International
- Water Life India
- Eram Scientific
- Kanak Resource Management
- 3S – Shramik Sanitation Systems

HYGIENE & TREATMENT
- Jayaashree Industries
- Vivam Agrotech
- Waste Ventures
- Ecowise Waste Management
- Eco Recycling
- Sustainable Technologies and Environmental Project

RECHARGE & REPLENISH
- Conserve India
- Thunk In India
- Samagra (San+Co)
- Kedia Rainwater Harvesting (Varshajal)

SOCIAL ENTERPRISE ACTIVITY IN THE WATSAN SECTOR

PHOTO BY CONSERVE INDIA

SUPPLY

Nearly 50% of the sample comprises supply enterprises. They provide access to toilets, waste collection services and access to safe drinking water. The enterprises engaged in toilet access provide them in the shared community and public space. Barring Ecoloove, which is pilot testing its mobile toilet in rural areas, all other enterprises focus on urban areas and semi-urban areas, where toilet access is a huge challenge. Population density is greater in these areas as is the scope for contamination and health impacts. 3S Shramik provides portable toilets in slum communities, as well as at construction sites and labor colonies. Its portable products are also available for non-constant events such as public events and meetings.

Maintenance and upkeep of the toilets is critical to its uptake. Says Annamaja Segtnan, Founder, Ecoloove, "Given a choice between a dirty toilet and outdoors, the poor will choose open defecation. We cannot assume that because they cannot afford more, they will settle for less." 3S' Founder Rajeev Kher concurs, and believes that "setting standards and accountability for toilet provision will really help the sector grow and achieve impact and revenues." In order to address the issue of inconsistent maintenance, Eram Scientific, a research organization, offers an e-toilet, which is touch-free, self-cleaning and is sterilized after every use. Eram focuses on public provision at schools, railway stations, bus stops along tourist routes and highways. Both, 3S and Eram also offer maintenance of toilets and waste disposal services at source where possible as well as connections to public sewage pipes if available.

3S – SHRAMIK SANITATION SYSTEMS

3S is a social enterprise in the field of portable sanitation and waste management. It installs and maintains portable and other public restrooms.

Future plans include exploring different models of pricing and engagement and the potential for bathing facilities clubbed with toilet facilities. In 2013-14, 3S seeks to scale within Pune, enter a second location in Bangalore, and grow to 3-4 locations in Delhi and Hyderabad. It aims to reach out to more than 10 million people a year in the next 3-5 years.

ERAM SCIENTIFIC SOLUTIONS

Eram is a research and development company that develops sanitation solutions. Eram's public e-toilets are currently funded by the government or local bodies and are available along tourist routes, railway and bus stations and government schools. Eram has a presence largely in Kerala, with some units in Delhi, Karnataka, Tamil Nadu and Kashmir.

Future plans include expansion to other states and developing a network of entrepreneurs who will buy the e-toilets, and generate revenues on a pay per use basis, supplemented by sales through an attached retail outlet selling ethnic or health products.

Social enterprises also undertake improvements and maintenance of public toilet blocks. Since land is at a premium and it is not easy to buy and put up toilets, 3S works with existing infrastructure to include retrofits to public toilet blocks and maintaining them. Once the toilet blocks are up and running, they are transferred back to the community in an entrepreneurship model. 3S supports them with cleaning materials, and android applications to record usage data for analysis.

Waste collection services are professional and hygienic through strong systems and processes. Kanak Resources focuses on waste collection and transportation up to collection points, and works exclusively with the government. Leveraging technology, the enterprise maintains high quality of service using MIS systems and GPS tracking. The waste is transported in Kanak-owned automobiles in closed containers. Customers can register complaints regarding Kanak's service, which are addressed quickly. Kanak works with waste workers, and is focused on improving their quality of life and providing dignity to their profession. Although not currently involved in waste treatment, the enterprise is exploring different technologies for treatment.

Enterprises in the water space focus on access to safe drinking water. While there is demand for water in general, enterprise tend to focus on purified, drinking water. Sarvajal provides off-grid, affordable, safe drinking water to remote areas. Says Anuj Sharma, Chief Operating Officer, Sarvajal, "We pick areas where there is either no piped water or where treatment for geogenic contamination[100] has not been attempted." Water Life is another enterprises providing safe drinking water while Water Health International provides sustainable water purification systems.

Social enterprises in the water storage space provide purification solutions and tank cleaning services. With 12 years in the business and over 14 million cleaned tanks, Tanclean is the only pan-India player in the water storage tank cleaning space that has been empanelled by the Government of Maharashtra and strongly recommended by several municipal corporations. Motivated to enter this business

[100]Geogenic contamination is when groundwater goes through a natural process where certain elements like Arsenic, Flouride, Iron, Uranium and Selenium, increase in concentration contaminating the water and have a negative health effect on humans.

when he saw a group of people cleaning an underground tank unscientifically, Sunil Uplap, Founder of Tanclean says, "I realized that day that we compromise health for a few rupees and that we did not have any known options." His enterprise today achieves three aims – scientific cleaning of tanks, creation of entrepreneurs who replicate the service across India and provision of livelihoods to unskilled workers.

Water purification at the household level is largely through ceramic filters. Basic Water Needs (BWN) currently provides Tulip, a ceramic filter. Says Klaas van der Ven of BWN, "We aim to provide top quality at an affordable price. Customers however, are not aware of differences in quality, and often tend to choose low price options." Apart from other low cost substitutes, the water purification space has strong competition in purifying tablets and sachets, with Unilever and P&G retailing their brands. These large organizations use their sales marketing network to reach and sell their products at a low cost.

KANAK RESOURCE MANAGEMENT

Kanak provides door-to-door collection and transportation of municipal solid waste in Nagpur. It is a private limited company formed of a joint venture between Centre for Development Communication (CDC), an NGO and IL & FS Waste Management and Urban Services Ltd.

By 2014, Kanak plans to build a presence in Madhya Pradesh, Gujarat, Maharashtra and Rajasthan. It seeks to examine potential for e-waste and waste treatment, as well as improve education levels among waste workers and households about health and safety issues in Watsan.

SARVAJAL

Sarvajal provides off grid, safe and affordable drinking water to remote areas in India. Its products include a low cost water purification system and solar powered water ATMs that ensure availability and fair pricing of clean drinking water.

Sarvajal works in remote rural areas where piped water and treatment of water is not available. It uses a hub and spoke franchise model where local people are trained and supported with marketing and maintenance. Future plans include scale from 20 ATMs to 300-400 ATMs in 2013-14, and expansion from 150 locations to about 500 locations.

HYGIENE AND TREATMENT

About 33% of the sample is in the Hygiene & Treatment segment. These enterprises innovate and adapt technology to treat segregated and mixed waste in a decentralized manner at the household or SME level. They fill the gap in waste treatment, where existing public provision of landfills and treatment solutions for unsegregated waste fall short of needs. They are especially relevant if seen in the context of why large centralized solid waste management projects have failed in India – they have been built for more waste than is collected, investment in maintenance is low and they have been imported without taking local conditions into consideration.

Vivam Agrotech provides solid and liquid waste management as well as vermicomposting. They sell their treatment boxes (in varying sizes to suit needs) to women in villages and train them in using the boxes to recycle waste and create compost that they can sell to farmers. Vivam also provides waste water treatment and biogas programs at the community level. Says Nirmala Kandalgaonkar, Founder of Vivam, "Waste is created in every situation and should be treated at source. It should not be taken far away and then left without treatment. Disposal is not taken very seriously perhaps because of low awareness that it can create value and benefit society."

VIVAM AGROTECH

Vivam is involved in solid waste processing through composting, vermicomposting, mechanical compost and biogas. It works with over 125 councils and two corporations.

Apart from the government, it also caters to schools, colleges, temples, SHGs, farmers etc. Until now, it has impacted six states - Punjab, Gujarat, Rajasthan, Goa, Delhi, and Maharashtra. Its products are also sent to neighboring countries like Nepal. Future plans include scale to more states in India, and grow the portfolio of technologies for waste management.

TANCLEAN

Tanclean provides solutions for cleaning and disinfecting drinking water storage tanks. They have built a network of entrepreneurs who they train and allow the use of the Tanclean brand. Its largest customer is the government. It has also started manufacturing and selling tanks to facilitate storage of water.

Tanclean is currently present in 23 states in India across 140 towns and cities. It has 340 partners and aims to reach the last tank. In 2 years, it hopes to expand in about 400 towns and cities.

Decentralized disposal efforts support creation of value from waste. These enterprises also extract value from waste in the form of biomass, biogas, crude oil, but this does not form a major component of their revenues. "Waste in India is unsegregated. Given the moisture levels and climatic conditions, it is best treated at source", says T R Rao, Director, STEPS. An engineer with experience in the oil sector, his aim was to create a one shot solution to solid waste management problems. STEPS' Polycrack reactor can process all unsegregated garbage and as Rao says, "the output is all useful - there is no new garbage created."

Waste Ventures set out to seed waste management businesses, but has entered into implementation too. A hybrid enterprise, it operates in tier 3 and 4 cities. The not-for-profit arm focuses on sector building activities such as extracting learning from the broader sector - the NGOs, waste picker groups and infrastructure companies - through learning labs, comparative studies and metrics around waste picker efficiency and training. The for-profit arm offers door-to-door collection services for a fee, and composting near source to communities in small cities where local bodies are unable to meet demand. Says Parag Gupta, Founder of Waste Ventures "We had to have the two arms work in synergy…we have managed to keep our startup costs low, operations nimble and assets light to achieve this."

Hygiene has a smaller number of enterprises, and is dominated by not-for-profit enterprises. The strong connection between good hygiene and sanitation practices to good health is not clear to customer segments, especially at the BoP. Women are particularly vulnerable, and given their marginalized position within low income communities. NGOs have been at the forefront of the hygiene movement in terms of promoting safe practices (handwashing, water purification).

Women's hygiene, particularly during menstruation, remains neglected, although global organizations such as Johnson & Johnson and P&G have introduced affordable sanitary products to address the needs at the BoP. Arunachalam Murugananthan, Founder of Jayaashree Industries was struck by the plight of women who would not buy sanitary napkins to save money and increase the household budget for other essentials used by the entire family. A school dropout, he invested all he owned to innovate with a machine to manufacture affordable sanitary napkins in smaller batch sizes. His enterprise sells these machines (at a fraction of the cost of larger commercial machines) to women entrepreneurs, who manufacture and sell sanitary napkins in their communities. With over 7500 women entrepreneurs and over 2.5 million women now using sanitary napkins, Muruganantham says, "we still have a long way to go."

RECHARGE AND REPLENISHMENT

About 17% of the sample is engaged in **recharge & replenishment activities.** Enterprises in this segment focus on efforts to reduce and recycle waste. Although we interviewed for-profit entities, this space has a large presence of not-for-profit organizations that provide livelihoods to unskilled and semi-skilled workers and waste pickers. Some of them transform into hybrid organizations with for-profit arms that can help the waste workers with forward linkages to a wider market.

The social enterprises we interviewed work mostly with non-biodegradable waste, seeking to up-cycle and increase its life by producing highly creative lifestyle and fashion products that are sold to a global audience. Conserve India is a hybrid organization, with the not-for-profit arm working with rag pickers who are trained to wash, clean and make fabric from solid waste. It sells this fabric to the for-profit entity, which designs and creates products to sell to global bulk buyers at trade shows.

Thunk in India, a design enterprise, works with non-biodegradables such as Tetrapak, polythene and rubber, using creativity as a tool to address waste management problems.

SUSTAINABLE TECHNOLOGIES & ENVIRONMENTAL PROJECTS (STEPS)

STEPS provides management and disposal of unsegregated waste at source through the Polycrack technology. The Polycrack reactor treats unsegregated garbage and converts it into gas, oil and carbon. STEPS has a demo model of the Polycrack reactor at Mumbai, and its technology has been used at the MMRDA site, PCMC Nasik, Bhopal and at the Amarnath Yatra.

Future plans include making the Polycrack technology a viable and independent entity in the next one to two years. By 2014-15, it wants to scale up in water treatment and water harvesting, as well as work on new technologies.

PHOTO BY STEPS

Says Suren Vikash, Founder of Thunk, "We are aiming to make them useful without using too much energy and not creating any more waste." After four years in business, Thunk has a range of products that have functional values and are high in design quotient – for example, they have a solar backpack that can recharge mobile phones for students on the go. Thunk sources waste from waste pickers through NGOs.

Rainwater harvesting presents significant opportunity in India, with several regions facing drought conditions every year. It is mandatory for new buildings to invest in rooftop rainwater harvesting to meet part of the requirements in urban areas across 18 states and four union territories.[101] Most rainwater harvesting solutions collect about 10-18% of the water above ground. Varshajal has patented technology to enhance underground collection of water.[102] The technology retains water in the ground, increasing soil moisture for plants. Excess water flows underground increasing the water table and water in wells down the line. This technology is made available to farmers, village panchayats and communities as well as industries and corporates seeking to be water positive.

WASTE VENTURES

Waste Ventures is Hybrid model in the waste collection and treatment business. Waste Ventures currently operates five projects in Bihar, Andhra Pradesh and Odisha. They plan to scale up to 10 projects, cater to 1 million households and give employment to over 10000 waste pickershouseholds about health and safety issues in Watsan.

CONSERVE INDIA

Conserve India is a hybrid that converts non-biodegradable waste like plastic into high fashion. The non-profit arm works with rag pickers who are trained to wash, clean and make fabric from solid waste. The for-profit arm designs and creates products of those fabrics to sell to global bulk buyers at trade shows. The wet waste goes into compost making.

Conserve's future plans include increasing production base and building its own brand.

PHOTO BY WASTE VENTURES

Customer education and engagement is a critical need and a strong opportunity. Infrastructure and technology to manage waste need to be complemented by education and engagement with user populations – households, industries and communities at the BoP. Samagra (San+Co), an enterprise that began its journey by making toilet solutions, moved to the front end of the value chain in terms of bringing people to the toilets through engagement. The enterprise is currently working with three slum communities in Pune (reaching 3000 users) together with 3S which provides portable toilets there. Samagra is testing ideas to increase uptake and bringing out a toolkit of models. Says Swapnil Chaturvedi, Founder of Samagra, "Our model includes engagement, design retrofits and data analytics. We contribute to improving the toilet design and placement, and are testing different payment options. Our aim is to make toilets aspirational, something they want, and not just something they need."

[101] Circle of Blue. January 4, 2010. http://www.circleofblue.org/waternews/2010/world/india-cities-focus-on-rainwater-harvesting-to-provide-clean-drinking-water/.

[102] Varshajal. http://www.varshajal.com/index.htm.

INNOVATIVE BUSINESS MODELS AND STRATEGIES

Enterprises adopt the franchise and entrepreneur network models to scale. Enterprises in Watsan are cognizant of how widespread the need is, and they are also aware that they will not be able to scale fast enough if they set up their own operations. Further, in terms of impact, they can achieve far more if they create and hand over systems to local individuals or communities. With this strategy in mind, several enterprises have adopted the franchise model.

Tanclean has innovated with an entrepreneur network model, where the entrepreneurs are trained by Tanclean, and can use the Tanclean brand name. They are advised on pricing, and cannot overcharge customers above the ceiling price fixed by Tanclean. They can however, offer discounts to garner business. Tanclean often taps its entrepreneur network to execute some of its larger government projects. Says Uplap, "This not only helps us scale rapidly but also create a generation of entrepreneurs in this sector and provide formal employment for the unskilled."

Sarvajal's franchise model is built with individuals from local communities in areas where safe drinking water is scarce. Sarvajal trains local people to use their machines, and has set up a hub and spoke model for reach. It sells the machines to the franchisee, and supports him with marketing and maintenance. Says Sharma, "This is a low margin, high volume business. Through franchising we remain sustainable and create entrepreneurship in these areas."

Innovations in the revenue model not only enhance uptake but also facilitate behavior change. For 3S' Kher, getting people to pay a reasonable price for the use of portable toilets was a significant challenge. In the past few years, he has experimented with different price points and payment models and met with success too. He is now pursuing higher uptake in the communities. Sarvajal's Sharma too adds that people's attitude to pay has been an issue as they do not see the link between safe drinking water and lower medical bills – while some of this can be mitigated through education,

there is a need he says, to re-calibrate and make the product more appealing. Sarvajal has been providing prepaid cards to households and more recently, water ATMs that dispense water in requisite amounts.

3S too is working together with Samagra – where the latter engages with communities in three of the slums where 3S provides toilets. Samagra is pilot testing different models to engage with the customer – one of them drawn through creative benchmarking with Facebook – where some of the services are free and some are paid for. In the context of slum dwellers and clean toilets, this takes the shape of reward points that are aggregated per use. These points could then be redeemed by the household for purchases of essentials, for instance, from major brands like P&G.

Involving waste workers in the business as partners not only builds a nimble business model but also facilitates inclusive growth.

Eram and Ecoloove are exploring ways to make their toilets a worthwhile investment to buyers by adding on a small retail outlet. Ecoloove's Segtnan is experimenting with the idea of retailing related merchandise such as hygiene products. Eram, which is looking at providing its toilets along tourist routes, is examining the prospects of the retail outlet selling ethnic foods and health products.

Access and user experience enhancements using technology help mitigate some challenges. Some of the operational questions that Watsan enterprises often have to answer include: How to ensure the end user is not overcharged? How to provide uninterrupted services when the village faces acute power shortage? How to ensure that the toilets are cleaned regularly? How to monitor the health of the machines that are supposed to deliver pure water? Enterprises have resorted to technology interventions to resolve these questions. Sarvajal has around 20 solar-powered water ATMs currently dispensing pure drinking water. These ATMs are technology agnostic and can be upgraded as purification technology changes. Sarvajal has also innovated with automated tracking and reporting of the health of their purification machines.

Eram's e-toilets offer touch free cleaning where they are steam-washed and sterilized after each use. Says Bincy Baby, Head Convergence Group at Eram, "We started out with the premise that ICT is not only for the elite sections. We conducted research and trials, experimented with alternate materials to remove prevailing challenges in maintaining toilets - we wanted a solution that was self cleaning, and could use remote management mechanisms to allow the government to track its use." Eram's e-toilets for women also dispense essentials such as sanitary napkins at an affordable price. The toilets, which are modular, are priced from INR 200,000 (US$ 3,684) to INR 600,000 (US$ 11,052) depending on how they are accessorized. This includes a sewage treatment plant (it can also be connected to a sewage line if one is available).

Finally, STEPS has innovated with the Polycrack technology[103] for waste treatment at source given conditions in India – where mixed waste is the norm and there is high moisture content. The Polycrack reactor can process unsegregated waste into gas, oil and carbon, with no new garbage or discharge. Says Rao, "Since no one wants garbage, no one is willing to pay for it – we thought that if there was a way to make it pay for itself, it would work."

Involving waste workers in the business as partners not only builds a nimble business model but also facilitates inclusive growth. Waste workers are a critical component of the waste collection and segregation segment, and often form the reason for being for many of the enterprises. Across segments, in enterprises like Waste Ventures, Tanclean, Conserve India and Kanak Resources, waste pickers are provided respectability made tangible through uniforms and hygienic gear, and given security in the form of provident fund (PF) and Employees' State Insurance (ESI). Conserve offers skills development and training at their factory in Bahadurgarh, outside Delhi and encourages the workers to seek employment in nearby factories. The not-for-profit arm of this hybrid enterprise provides education and healthcare for its workers.

Enterprises invest in educating customers, learning on the job and constantly revisit business model. Watsan enterprises are all focused on growth and scale in the next 2 – 5 years. That said, they are constantly reviewing their business model to see if they can find ways to increase uptake with their key customer segments – households, slum communities, SMEs and the government. Samagra's initiatives with 3S include data analytics to track usage which it plans to feed back into the business model. Similarly, Waste Ventures' Learning Labs garners information and extracts learning from each of its projects.

Enterprises in the Hygiene & Treatment and Recharge & Replenishment segments are especially conscious of the need for education and awareness building for greater uptake of their products and services. Dr. Vivek Agrawal of Kanak Resources and Nirmala Kandalgaonkar of Vivam Agrotech speak at several forums to promote sustainable waste management practices. Enterprises like Thunk in India leverage the internet to build an online presence while Conserve meets its target customers at trade shows and exhibitions. Similarly, Waste Ventures' Learning Labs garners information and extracts learning from each of its projects.

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[103] Polycrack technology subjects wastes to a low temperature catalytic process that converts almost 100% of the material to fuels like gasoline and diesel, synthetic gas (methane),char, metals, and water. This conversion yields zero emission foot prints and can processes 25 Ton/day, and be scaled to 1000 Tons/day on a continuous basis.

CHALLENGES

Social enterprises emerged to mitigate challenges that the sector faced in meeting needs at the BoP. Their strategies and business models therefore reflect solutions that are being refined even as we write about them. Further, there are challenges that they continue to face and attempt to resolve, while others are not immediately actionable.

Watsan enterprises cater to local communities and find it difficult to scale. Provision of toilets, waste collection and even decentralized waste disposal are highly localized activities. Replication of the model is expensive and cannot deliver identical results, as a lot of the success depends on behavior change within these communities. Moreover, the socio-eco demographics differs with each slum community, which also impacts ability and willingness to pay.

Provision of water and sanitation is seen as the duty of the government; taxes are perceived to cover any charges towards these services. Customers' attitude towards payment is a significant challenge in this sector. Price is fairly inelastic for enterprises that earn revenues by charging customers such as Waste Ventures and 3S, simply because sanitation infrastructure is seen as something the government has to provide. Similarly, as Sarvajal or Samagra will share, there is a need to view pure water and clean toilets as a utility one pays for.

The spotlight is on provision or access, while maintenance and quality is neglected. While social enterprises in the supply segment emerged in response to this challenge, and focus on high quality services at affordable prices, they believe that customers would be more willing to pay if there were standards set for quality and an equal focus was given to accountability. Similarly, the focus on standards will ensure that existing public infrastructure is able to meet more of the unmet demand in a better manner than it is currently.

The least cost or lowest bid approach by the government in awarding contracts hinders social enterprises' ability to win contracts and remain sustainable. While opportunities are immense in the Watsan sector, much of the high impact work emanates from the government. Not surprisingly, several enterprises we interviewed worked closely with the government. Most frequently, they bid and win tenders and contracts for waste collection, treatment, tank cleaning and rainwater harvesting. Given their focus on high quality at an affordable cost, enterprises shared that they lost out on some contracts or booked losses.

Awareness of technologies to dispose waste or provide hygiene in shorter time or at a lower cost is low. Social enterprises often innovate and bring to market current and updated technology. Customer awareness of the superiority of these technologies over existing ones is low, and impacts uptake. At the most basic level, for instance, is the perception that all waste treatment is malodorous, and households do not want to segregate or treat waste in their backyards. At a deeper level, entrepreneurs face an uphill task in demonstrating their technology to government departments, thereby losing out on potential opportunities.

An associated challenge is that waste disposal at source has not been taken seriously. The government and other stakeholders in the sector have repeatedly attempted to encourage waste segregation at source. They have also encouraged waste treatment where possible. Waste management by SMEs and industries is specifically addressed by law, but entrepreneurs wish it were adhered in spirit too for waste segregation or treatment is perceived as someone else's problem. The challenge, they say, is in figuring out models that make customers their partners in waste disposal.

As enterprises build the value chain to include high quality, accountability, design and customer focus, they will also join the dotted line from waste to wealth at the BoP.

CONCLUSION

In Watsan, achievement of the social impact mission goes hand in hand with business sustainability. Mission focus, quality and affordability continue to remain watchwords for Watsan enterprises. They see quality of service as the major differentiator since public provision has failed on the quality scale.

Watsan represents huge opportunity for social enterprises – several existing players are reporting plans to scale rapidly to new locations within their states of operation as well as grow into new states in India. Their future plans also include building the knowledge around technology and innovations to improve access.

Of the sub-segments, there is greater visibility and higher traction in the supply space, given the urgent need for provision and access to water and sanitation. As MSW grows to unmanageable proportions, decentralized waste treatment solutions at the household, community and SME levels are going to see significant growth. Overall water scarcity and that of safe drinking water spur the emergence of enterprises in rain water harvesting and water recycling segments. Lastly, up-cycling non-biodegradable waste could see greater growth too, especially in models that integrate or collaborate with waste picking and processing at the back end with marketing at the front end of the value chain.

The government will remain a key stakeholder, but with growing number of PPPs, the private sector will be able to contribute to supply of Watsan services. As enterprises build the value chain to include high quality, accountability, design and customer focus, they will also join the dotted line from waste to wealth at the BoP.

FINAL NOTES

Our interviews with impact investors and incubators underscored the need for deeper sectoral research. Respondents shared that they were sector agnostic, given that early-stage enterprises tended to face similar challenges in capacity building and operational growth to attract investment. They however, added that enterprises began to face sector-specific challenges as they sought to scale impact. Poised as social enterprises are for scale, it becomes critical to understand these challenges.

In entering this market, impact investors and sector enablers view India as home to some of the world's most innovative entrepreneurs, who tackle challenging social problems. Most investors in this space see the Clean Energy and Healthcare sectors as the fastest growing in India. They see tremendous opportunities in Education (vocational and skills training), Watsan (supply and waste treatment) and Agribusiness (post-harvest), but also feel that these sectors are vast and currently in need of more market-building before they can scale effectively. Also, these sectors host some high-impact initiatives that could present opportunities for philanthropists and DFIs to further develop a sustainable ecosystem.

Investors anticipate that the next cohort of enterprises, which has not reached an investible stage, exists behind the well-known and well-funded social enterprise beacons of success. As these enterprises move through the early stages, respondents predict stronger activity among angel investors, patient capital and soft debt providers. They also see vast scope for mentoring and incubation programs before these enterprises can raise venture capital. India, they concluded, is going to see considerable social enterprise activity across the critical needs sectors in the foreseeable future.

As we close this chapter in our research on social enterprise activity in India across five sectors, we are aware of how much there is to analyze and share when we produce our deep dive reports. From exploring the supply chain models and ICT services in Agribusiness, to B2B models in Clean Energy; from VSDI and pre-school models in Education to tele-medicine in Healthcare and engagement models in Watsan, we see a knowledge-filled year ahead. We are also excited about exploring cross-cutting themes that recur across sectors such as Migration and Women's Empowerment. In a social enterprise context, these themes are even more fascinating because although they emerge from the social enterprises' impact mission, they are rooted in sustainability mandates – a potent combination for the generation of ideas, impact and inclusion.

APPENDIX: LIST OF RESPONDENTS

AGRIBUSINESS	
	AgSri
	Akshamaala Solutions
	AquAgri Processing
	Arohana Dairy
	Bhushan Agro
	Chetna Organics
	Ek Titli Farms
	Grassroots India
	Janani Foods
	Kautilya Phytoextracts
	KNIDS Green
	Milk Mantra Dairy
	Sahaj Agro Farms
	Shree Kamdhenu Electronics (SKEPL)
	Ulink Organics
	Under The Mango Tree

CLEAN ENERGY	
	Bottom of Pyramid Energy & Environmental Innovations (BOPEEI)
	Claro Energy
	DESI Power
	First Energy
	Green Light Planet
	Greenway Grameen Infra
	Mera Gao Power
	Nuru Energy
	Punam Energy (ONergy)
	Prakruti Hydro Labs
	SBA Hydro and Renewable Energy (SHREY)
	SELCO Solar
	Servals Automation
	Simpa Networks
	Sustaintech India
	Urja Unlimited
	Vana Vidyut

EDUCATION	Basix Academy for Building Lifelong Employability
	CAP Workforce Development Institute
	Cogknit Semantics
	Elements Akademia
	Empathy Learning Systems
	Gram Tarang Employability Training Services
	Gras Academy
	Gyanshala
	Hippocampus Learning Centres
	Hole in the Wall Education Limited
	IL&FS Education and Training Services
	Institute for Quality Skill Training
	Naandi Education Support and Training
	Organization for Awareness of Integrated Social Security
	Pipal Tree Ventures
	Quest Alliance
	Rose Computer Academy
	Rumi Education
	Sudhiksha Knowledge Solutions
	Tara Haat

HEALTH	Forus Health
	Glocal Healthcare Systems
	G.V. Meditech
	iKure Techsoft
	Jeevanti Healthcare
	Kanungo Institute of Diabetes Specialties (KIDS)
	LifeSpring Hospitals
	Mdhil Health Info Services
	mHealth Ventures India
	Neurosynaptic Communications
	Samvab
	Swas Healthcare
	Ujjeevan Healthcare

WATER & SANITATION	Basic Water Needs
	Conserve India
	Ecoloove
	Eram Scientific
	Jayaashree Industries
	Kanak Resource Management
	Piramal Water (Sarvajal)
	Samagra (San+Co)
	Shramik Sanitation Systems (3S)
	Sustainable Technologies &Environmental Projects (STEPS)
	Tanclean
	Thunk In India
	Kedia Rainwater Harvesting (Varshajal)
	Vivam Agrotech
	Waste Ventures

IMPACT INVESTORS AND SECTOR ENABLERS	Aavishkaar
	Acumen Fund
	Artha Platform
	Bamboo Finance
	Dasra
	Department for International Development (DFID)
	Omidyar Network
	Seed Fund
	StartUp!
	Unltd India

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