# SUSTAINABLE & INCLUSIVE INNOVATION

## STRATEGIES FOR TOMORROW'S WORLD

Confederation of Indian Industry
Since 1895

CII ITC Centre of Excellence
for Sustainable Development

# Sustainable & Inclusive Innovation
## Strategies for Tomorrow's World


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This report is a second in a series on sustainable innovation by CII-ITC CESD. The first report, 'Indian companies with solutions that the world needs', was developed in 2008, with the support of WWF-India. CII-ITC CESD's portfolio of services on sustainable and inclusive innovation includes helping enterprises and other institutions develop their innovation strategy and capability. It engages with the Indian Government at the highest levels on its innovation roadmap and helps create an enabling innovation ecosystem that is both sustainable and inclusive.


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# FOREWORD

I am very happy to have the opportunity to introduce this report on innovations that are both sustainable and inclusive. The Planning Commission has recognised the centrality of 'innovation' to accelerate more inclusion, more sustainable, and even faster growth. We have also recognised that we must innovate the concept of innovation itself, as well as processes for creating innovative solutions. The Western paradigm of innovation, with its emphasis on expensive research and development, scientists and patents, is unlikely to produce the solutions India needs.

Just as this report makes the case, we are convinced that innovations are most critical to meet the development and sustainability challenges that confront us. The Honourable Prime Minister Mr. Manmohan Singh has announced 2010-2020 as the decade of innovations. The national innovation strategy will create an enabling ecosystem to promote sustainable and inclusive innovation. The emphasis is to produce innovative, low-cost, high-quality products and services as well as innovations in institutions required for inclusive growth.

Innovations are required in almost all socio-economic and environmental spheres for countries to grow in an inclusive and sustainable manner. Innovation ecosystems for countries also need to be locally developed to best address typical stumbling blocks in each country's environment, albeit with insights from other countries' experiences too. This report is timely and provides practical steps on how to produce innovations, rather than just make a compelling case for them. It is as useful to companies and entrepreneurs, as much it is to those advising governments on creating an innovation ecosystem.

The report packages the experience of some breakthrough innovators to present an easy to use framework of strategies. It uses terms that any businessman would know, driving the message that much of the innovation is required in the process without which any breakthrough solution may have limited success.

My association with CII has spanned several decades. CII has always been at the forefront in preparing industries and governments in India to adopt best practices and strategies that would make them competitive. CII pioneered the quality movement in India and introduced environment management systems to Indian companies, to name just a couple of 'systems' improvements CII has catalysed and facilitated.

I have had the privilege to be associated with the CII-ITC Centre of Excellence for Sustainable Development. Continuing with CII's tradition, the Centre too has maintained its leadership by introducing sustainable business strategies to India. This report is an example of its thought- and action-leadership on issues that matter most for a sustainable and inclusive India.

Arun Maira
Member
Planning Commission
Government of India

# CONTENTS

# FIRST WORD

This report is addressed to everyone concerned with making a real and enduring improvement to the lives of the poor. Our attempt has been to give you an insight into how innovations in products, services and processes are creating new businesses and industry structures. It provides a framework of strategies required to make these innovations work. We hope that you will find these sustainable and inclusive innovations that work in low-income markets useful.

This report is based on our extensive research into many sustainable and inclusive innovations around the world, with a particular focus on India, which is the global hub of approaches and an especially fertile source of lessons about performance.

Innovation isn't new; it is probably as old as the evolved *homo sapiens*. Innovation is mostly about individuals, who have a very different perspective and approach to looking at things. Innovation is not new to organisations either. Our world would not have been what it is today without innovation. Interestingly, innovation itself is being continuously innovated.

But as we write this report in 2010, we see that there is suddenly something different about innovation. It is the scale, speed, and democracy of innovation that is radically changing industry landscapes. This report illustrates these innovations and brings out elements of strategies that will shape tomorrow's world.

For entrepreneurs, intrapreneurs, executives, academia and even public officials, it is time to comprehend this extraordinary undercurrent. Those that do not identify this undercurrent will cease to remain relevant in tomorrow's world. Now is the time to develop capacities and to systematically innovate solutions that are both sustainable and inclusive.

Sustainable and inclusive innovation or SI2 is about innovations that add value to business, to customers, to the environment and to society. It is about getting out to the real people, much before you start innovating solutions for them. It is about bringing in the real people to your strategy room and laboratories to co-create solutions. It is about working together to get new solutions delivered in a manner that creates value beyond just getting a job done.

But how does one really get there? What are the strategies required to make innovation work? How does one ensure that innovation as an end as well as a process is both sustainable and inclusive? This report provides the answers through illustrations of what some innovators have already done. The report is not an off-the-shelf tool-book. Instead, it offers strategic learnings from success stories that have redefined industry structures and created new areas for business growth.

A hepatitis B vaccine that is 1/40th the cost of traditional vaccines but meets UNICEF's quality requirements; cataract surgeries, performed on 300,000 patients annually by a single hospital, at a cost that is just 1/100th of that charged in other countries but still meets global quality standards; a refrigerator that costs less than $70 and runs on battery; farmers operating water pumps in fields even as they use mobile phones to conduct other chores; mobile banking, including financial services, that takes such services into the hitherto cut-off hinterland.

All of the above epitomise the innovations taking place that are not just technological or market breakthroughs. They are changing people's lives. The process of converting an idea into an innovation, which makes tremendous impact, is difficult to realise. Not all attempts succeed. There are four characteristics that set these innovations apart from the ones that do not go very far:

- Such innovations add value to the life of the people much beyond the immediate use of the product or service;
- Such innovations create a product or service of an uncompromising quality at a price that is affordable;
- Such innovations address the challenge of resource use efficiency to manage drastically low cost structures; and
- Finally, such innovations are scalable and replicable to suit requirements of local circumstances and complexities.

Innovations meeting these characteristics have been termed as 'Sustainable and Inclusive Innovations', or SI2, by the CII-ITC Centre of Excellence for Sustainable Development. These innovations, as this report presents, are needed if we have to tackle the twin challenges of the 21st century: poverty and natural resource strain.

Since the time Clayton Christensen and C K Prahalad focused the attention of the world on issues like 'disruptive innovation' and the 'bottom of the pyramid', respectively, as being the next big market opportunity, there have been many attempts by various organisations, particularly companies and financiers, to tap this potential. This opportunity also opened the floodgates to a galore of experiments, ranging from dumping of stripped-down product variants (mainly low-quality and low-cost) to changes that very efficiently responded to the real needs of the market.

At the outset, however, there were very few who were convinced and there were even fewer disrupted technologies to serve the largest market that has ever existed. Those that dared to take the uncharted path, triggered creation of not just more enterprises, but also different types of enterprises (new-age enterprises, social enterprises, community-based enterprises, hybrid organisations and inclusive businesses). More money flowed into such areas, as confidence grew on the basis of increasing success stories. New-age enterprises affected industry structures, challenging established models. Few companies had the vision to innovate completely new business models to become competitive in

saturated urban markets. While some innovated products and services that would create new industries, others brought about innovation in processes.

Again, none of these innovations would have succeeded had they not addressed the issues of sustainability and inclusivity. SI2 is about innovation that improves the lives of everyone; innovation that does not leave out the poor. There are four billion people living on incomes less than $2 a day. To raise their standards of living and quality of life, goods and services will have to be ultra-low-cost, extremely affordable, and at the same time be high on performance and world-class in quality.

The value of SI2 is generally perceived to come true in the low-income markets, but any industry, in any geography, can generate similar breakthroughs by creating a similar context for itself. Not only can these be replicated in low-income countries, but they also have the necessary space in developed countries. Vijay Govindrajan calls such a process reverse innovation.[2] This takes place when an innovation developed in a poor country turns out to have broad utility in the developed world as well. This is validated through GE's Mac 400, a hand-held electrocardiogram (ECG) unit. Here, the multiple buttons on conventional ECGs have been reduced to just four. The bulky printer has been replaced by a tiny gadget normally used in portable ticketing machines. The complete unit is small enough to fit into a small backpack and can run on batteries as well as on general power supply. It sells for $800, instead of the $2,000 that a conventional ECG costs, and it has reduced the cost of an ECG test to just $1 per patient.

SI2 must be scalable and replicable, for only then will such innovations reach the poor and the very poor. Integrating the creativity of poor people and the entrepreneurs, who serve them, is the most efficient way to find some of these solutions. SI2 are essential if businesses are going to offer high-quality, affordable products and services to the poor. To deliver social goods, such as healthcare, energy and clean water, even as one gets the economics right is no less important than it is in any other kind of investment.

SI2 that work are those that are responsive to the limitations imposed by small, irregular customer cash flows and credibly address distribution questions. When engaging low-income segments, as suppliers or producers, a successful SI2 will attend to the costs that a low-income supplier may face in switching livelihoods and to the cost of aggregating and managing large numbers of small suppliers.

1 Clayton Christensen and Joseph L Bower, "Disruptive Technologies: Catching the Wave", Harvard Business Review, January-February 1995, pp. 43-53; C K Prahalad, The Fortune at the Bottom of the Pyramid, Wharton School Publishing, 2004.

2 The term was introduced by Dartmouth professors Vijay Govindarajan and Chris Trimble and GE's Jeffrey R. Immelt, in "How GE is Disrupting Itself", Harvard Business Review, October 2009.

SI2 have recently attracted strong interest in the action against global poverty, in part due to the remarkable success of micro-finance and unending possibilities of ICT (including the Internet and mobile platforms).

SI2 means adding value to potential customers, who are currently left out of a market because existing offerings are too expensive or complicated or they lack access. Such consumers fall all along the socio-economic spectrum, although opportunities to democratise products in emerging markets and reach the so-called bottom-of-the pyramid are particularly ripe. The global economy creates new opportunities for innovative companies to bring goods and services to those previously unable to access them. As the global economy fuels upward mobility for even the poorest in developing nations, many companies are finding growth by breaking down barriers for the millions of poor they previously thought to be unreachable, unprofitable, or both.

Nokia's cheapest mobile handsets come equipped with flashlights (because of frequent power cuts), multiple phone books (because they often have several different users), rubberised key pads and menus in several different languages. Tata Swach uses rice husks to purify water. It is not only robust and portable but also relatively cheap, giving a large family an abundant supply of bacteria-free water for an initial investment of about $24 and a recurring expense of about $4 for a new filter every few months. Tata Chemicals, which is making the devices, is planning to produce one million over the next year and hopes for an eventual market of 100 million. Anurag Gupta, a telecom entrepreneur, has reduced a bank branch to a smart-phone and a fingerprint scanner that allows ATM machines to be taken to rural customers. Godrej & Boyce Manufacturing, one of India's oldest industrial groups, has developed a $70 refrigerator that runs on batteries. First Energy, a start-up, has invented a wood-burning stove that consumes less energy and produces less smoke than regular stoves.

What these companies and entrepreneurs are doing is very different from product or service stripping to make them affordable for the poor. They are taking the needs of the poor as the starting point and then working backwards. There is more to this than simply cutting costs to the bone. SI2 solutions need to be high quality at affordable prices. SI2 also means being sparing in the use of raw materials and being considerate about their impact on the environment. SI2 is not just about redesigning products and services; it involves rethinking entire production processes and business models.

Our findings about the sources of success and failure of SI2 yield important lessons and conclusions:

1. Market-based approaches in developing countries have generated remarkable benefits to low-income people and offer enormous value to do even more in the future.

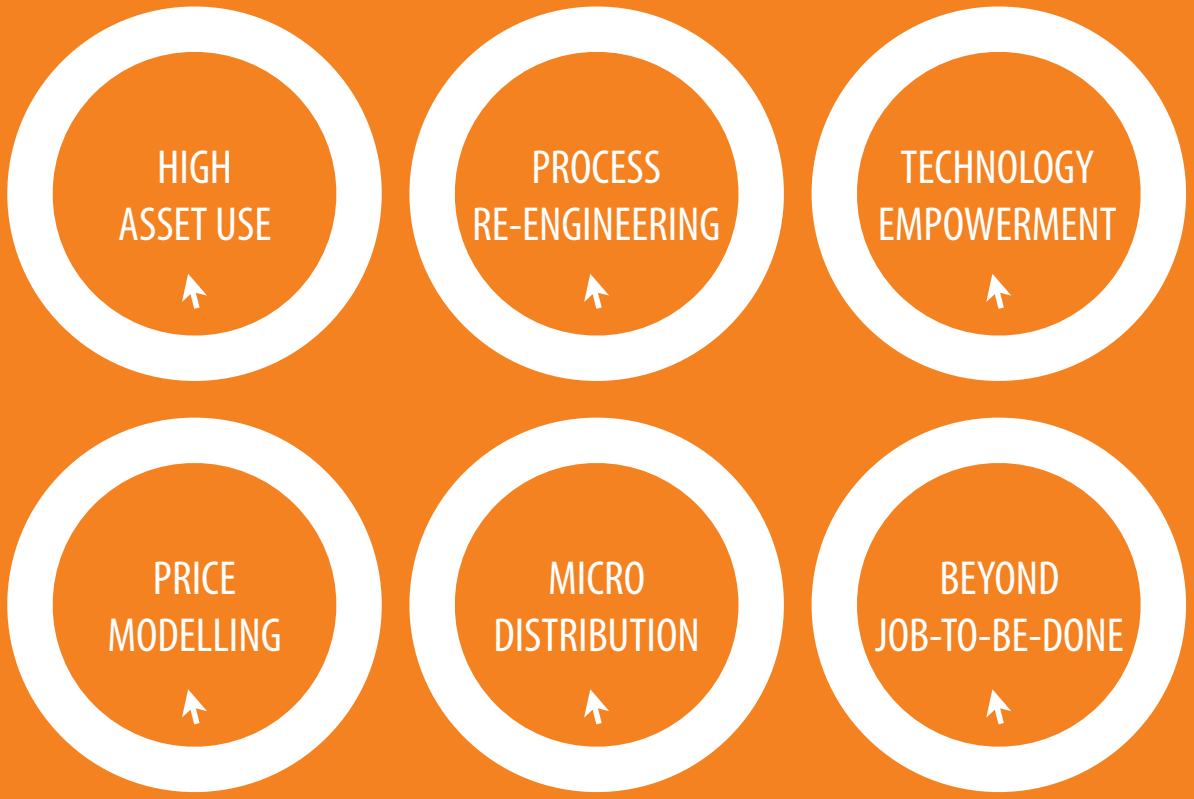
2. Central to this are innovations that are both sustainable and inclusive. This will result in solutions tailored to the particular socio-economic conditions of the poor and ecological structure of the geography.

3. As has happened in microfinance and decentralised energy, new-age enterprises are more likely than conventional businesses to lead sustainable and inclusive innovations in low-income markets. Current cost structures and organisational settings of conventional businesses, particularly large companies, are self-prohibiting. Unless they restructure and reorganise, a huge market opportunity is off their limits. Exceptions, though, will be those companies that engage poor people as suppliers.

4. Innovation in seed funding SI2 plays an important role in getting to low-income markets, even though beyond a certain point, conventional financial markets can still be leveraged. But innovation has always required parts of public and 'soft' funding, even in the developed markets.

5. It is untrue that innovations for low-income cannot be scaled by small enterprises. Those restricting their understanding to scaling up as the only method risk losing out on opportunities beyond. The other methods to scale innovations are scaling-out and diffusion.

6. Customer value proposition in low-income segments is more than adding to product or service use. Companies tend to focus on innovations that deliver 'job-to-be-done' by their offering. While this is required and is sustainable, innovations that go beyond 'job-to-be-done' are best suited to make an impact on society and be inclusive.

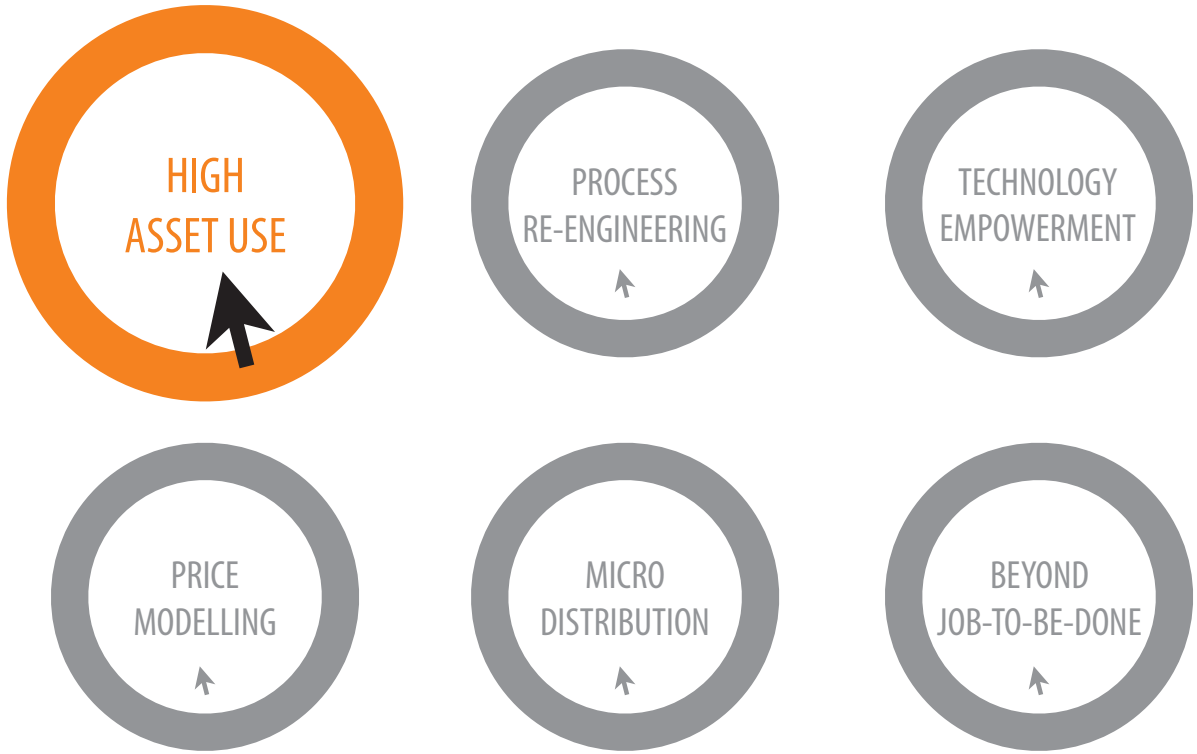



So, what is the best strategy to go about doing SI2. There are six areas of strategic intervention

1. High asset use
2. Process re-engineering
3. Technology empowerment
4. Price modelling
5. Micro distribution
6. Beyond job-to-be-done

The next section illustrates each of these areas of strategic interventions through examples of companies and entrepreneurs who walked the less-trodden path.

# SIX STRATEGIES




High asset use or high throughput is achieved through standardisation in processes, enabling huge cost reduction, uniform quality output and sufficiency to scale and replic.

The healthcare sector in any developing country is a fitting case for demonstration of the opportunities for SI2. Though many countries have made rapid progress, unhealthy statistics suggest the volume of work still left to be done even as it indicates the opportunities.

For instance, India alone has more than six million blind people and more than 50 million malnourished children. India has one of the world's highest rates of maternal death in childbirth. Around the world, some 400,000 women and girls die each year from pregnancy and childbirth, and India accounts for almost a quarter of these maternal deaths, the vast majority preventable. According to a UN report, of the 358,000 maternal deaths in 2008, majority were from 11 developing countries.[3]

The healthcare sector is marred with its problems. Doctors and nurses are in short supply, healthcare centres are under-equipped and under-staffed, at times making them useless facilities, healthcare finance is inaccessible, drugs and treatment are expensive, and the physical distance between a patient and the hospital is huge.

Yet, amid all these constraints, a few healthcare providers in India are establishing new global standards for cost, quality and delivery. They do it by sidestepping conventional approaches to medical practice.

Through its process-driven model, LifeSpring Hospital has developed an easily replicable model ensuring scalability and supporting rapid expansion. LifeSpring Hospitals is a network of maternity and child healthcare hospitals that provides high-quality, low-cost maternal services to low-income women with clear and transparent pricing. It is a joint venture between the public-sector company, Hindustan Latex Ltd, and the US-based philanthropic funding agency, Acumen Fund. LifeSpring aims to serve as a model for providing high-quality maternal and child health services to the poor in India and worldwide.

Through its model of small hospitals (20-25 beds) and prices significantly below market rates, LifeSpring has achieved financial sustainability and social impact. The first LifeSpring Hospital opened in 2005 on the outskirts of Hyderabad in Moula Ali; it broke even and became profitable in less than two years of operation.[4] The hospital network has already served more than 25,000 low-income patients, mostly from families working in the informal sector.

3 Trends in Maternal Mortality, United Nations Population Fund (UNFPA), World Health Organization (WHO), United Nations Children's Fund (UNICEF), and the World Bank, 2010.

4 http://www.lifespring.in/about-us.html (accessed on 24 October, 2010).

LifeSpring cut costs by standardising its procedures, trimming expenses, increasing volume, reducing staff attrition rates and using a cross-subsidy model for three types of wards (general, semi-private, and private). Additionally, it substantially increased the typical hospital use rates of key assets, ranging from diagnostic machines to the obstetricians themselves.

Most LifeSpring hospitals are taken on long leases (15-20 years) from players who could not run them. The lease model saves hugely on land costs.

LifeSpring's focus on a particular niche – maternal and child care – cuts down on the need for many specialist doctors and also on the range of equipment needed. It refers the more difficult cases to other hospitals, even if it means turning away customers. The equipment as well as the service is on a no-frills basis.

Standardisation in clinical procedures and kits brings down costs too. It allows the network's facilities to average eight times more procedures than other private clinics. Thus, its operating theatres accommodate 22-27 procedures each week compared to between four and six in a private clinic.

Specialising in in-patient gynaecology and obstetrics leads to easy standardisation. It has over 90 standard procedures, including standardised surgery kits and clinical protocols. LifeSpring uses a narrow range of drugs and equipment for large numbers of repeat procedures and thus purchases standard equipment and generic medicines in bulk.

LifeSpring is aggressive in marketing, has low OPD fees and is located very close to urban slums. All these generate high footfalls. This increase in traffic allows LifeSpring to use doctors more efficiently; consultancy firm Monitor estimates that its doctors, on an average, perform 17-26 surgeries per month, which is four times as many operations as their peers outside.[5] So the network's medical cost per patient is just a quarter of what a private hospital spends.

LifeSpring doctors earn fixed salaries rather than the variable consulting fees of their private clinic peers. Doctors nevertheless have strong non-monetary incentives to stay, for example, less administrative duties, more clinical practice.

LifeSpring hires less qualified auxiliary nurse midwives (ANMs) rather than graduate nurse midwives (GNMs). The former are trained as birth attendants. But because the ANMs are less qualified, they are less costly to employ than GNMs, whose degrees are more advanced and

5 http://www.lifespring.in/about-us.html (accessed on 24 October, 2010).

expensive to attain. Moreover, their attrition rate too is low.

Further, a tiered pricing model helps its commercial viability. Women, for instance, can choose to give birth in a general ward, semi-private room or private room. Rates, accordingly, will rise. LifeSpring's general ward, which makes up 70 per cent of each hospital, is 30-50 per cent cheaper than comparable market rates; its private room is at par with the rest of the market. Normal deliveries cost only around Rs 2,000 ($40). That includes the cost of a two-day stay in the hospital and the medicines. Caesarean operations cost Rs 7,000 ($140) at LifeSpring - just a fifth of what is charged outside. While that is more than the official rate at public hospitals, which are supposed to be free though they often require undisclosed payments, these are still only about a sixth of the price at a private clinic.

LifeSpring plans to launch 22 more such hospitals in the next 20 months at a cost of $4 million. It is also evaluating a franchise model in hopes of scaling up rapidly to 150 hospitals over the next two years.

LifeSpring's marketing approach is multi-faceted, consisting of its outreach teams, voucher programmes, health camps and word of mouth. To generate high patient volume, it targets key decision-makers in maternity matters – husbands and mother-in-laws – and has a dedicated community outreach team that customises its message, depending on whether the woman has had an institutional delivery before, and if so, where. It also focuses heavily on customer retention and referrals – even operating a 'pull' programme that gives every inpatient a voucher, good for one out-patient visit, to distribute to friends and family. The low-cost outpatient department plays a vital role in attracting mothers by providing a showcase for services, including women's health and paediatrics. A visit costs Rs 50 ($1) in contrast to a private clinic's Rs 100-300. Moreover, it posts a price list outside the hospital, creating consumer awareness and confidence of transactional transparency.

LifeSpring's innovation was figuring out how to deliver world-class care – it is ISO 9001 certified – at a price that many of the poor could afford and that also made economic sense. Its high throughput/high asset use business model is vastly more productive than that of its counterparts.

The LifeSpring model is scalable for obvious reasons: it targets densely-populated urban and peri-urban areas, offers a value proposition superior to competitors and, although more expensive than government hospitals,

provides superior service, has a demonstrably no frills cost and profit structure, and is verifiably replicable.

Gyan Shala (Hindi for 'a school of knowledge/wisdom') is an NGO provider of primary education to the poor based in Ahmedabad, Gujarat, in the western part of India. Its 330 one-room schools, located primarily in the slum districts, teach 8,000 children in grades 1-3 at a monthly cost of $3, roughly a quarter of the cost of a government school and about a sixth of the cost of a recognised private school. School budgets are often subsidised by third-party funds to ensure affordability. Most parents pay Rs 30 ($0.60) per month per student; their monthly earning being between Rs 2,000 and Rs 6,000 ($40-120) per month.

The performance of Gyan Shala schools is remarkable at the uncommonly low cost. Test results show Gyan Shala students outperforming students from the best government schools in Gujarat in every category, even when the government-school children tested were a grade above.[6]

Gyan Shala is implementing a radically-engineered teaching methodology that focuses on learning processes. It has created a teaching model that includes standardised curriculum and lesson plans. These are supplemented by learning aids and continuous monitoring of classroom processes for regular staff feedback. Junior teachers deliver a total learning package straight out of highly structured workbooks. Gyan Shala has significantly higher course material costs – Rs 30 per child as against Rs 3 – than the typical private school.[7] This is central to the Gyan Shala model, as extensive proprietary course materials reinforce the lesson and make it possible for junior teachers to succeed.

The design and management teams are highly skilled and compensated with high wages. But their cost is spread over 300 classrooms. Standardisation facilitates teaching by junior teachers, which together keep costs low. Most of the savings on wages are made on account of the junior teachers' salaries, who are paid Rs 1,000 ($20) a month for working three hours a day. Conversely, the amount spent on teachers' wages is less than a third of that in a private school - Rs 56 (just over $1) compared to Rs 105 (just over $2) per day.[8]

Gyan Shala keeps cost competitively low mainly by keeping the share of teacher cost only at around 35 per cent of total cost while in other competitive alternatives, the teacher cost is in excess of 85 per cent. The unit cost of a teacher in Gyan Shala is around 20 per cent of the salary paid in the main competitive alternative. Lastly, Gyan Shala has been designed in a manner that it obtains more

6 Leigh L. Linden, "Complement or Substitute? The Effect of Technology on Student Achievement in India," 2008, unpublished working paper. at http://www.columbia.edu/~ll2240/Gyan_Shala_CAL_2008-06-03.pdf

7 www.gyanshala.org (accessed 25 August, 2010).

8 Ibid.

effective performance from every functionary, including the teachers.

By retaining staff, Gyan Shala minimises training costs and keeps overall costs down. Formal teacher qualifications are low and the resource pool is wide, increasing the likelihood of recruiting the right people. And as junior teachers grow in skill, knowledge and experience, some become senior teachers. Staff turnover is thus correspondingly low.

Junior teachers are recruited from the community in which the school is located. They typically have a high school education and grade five skills in mathematics and language, but lack the formal pedagogical qualifications required of government teachers. Critical to junior teachers is their local 'touch' and the much-needed attitude and commitment towards teaching elementary school students.

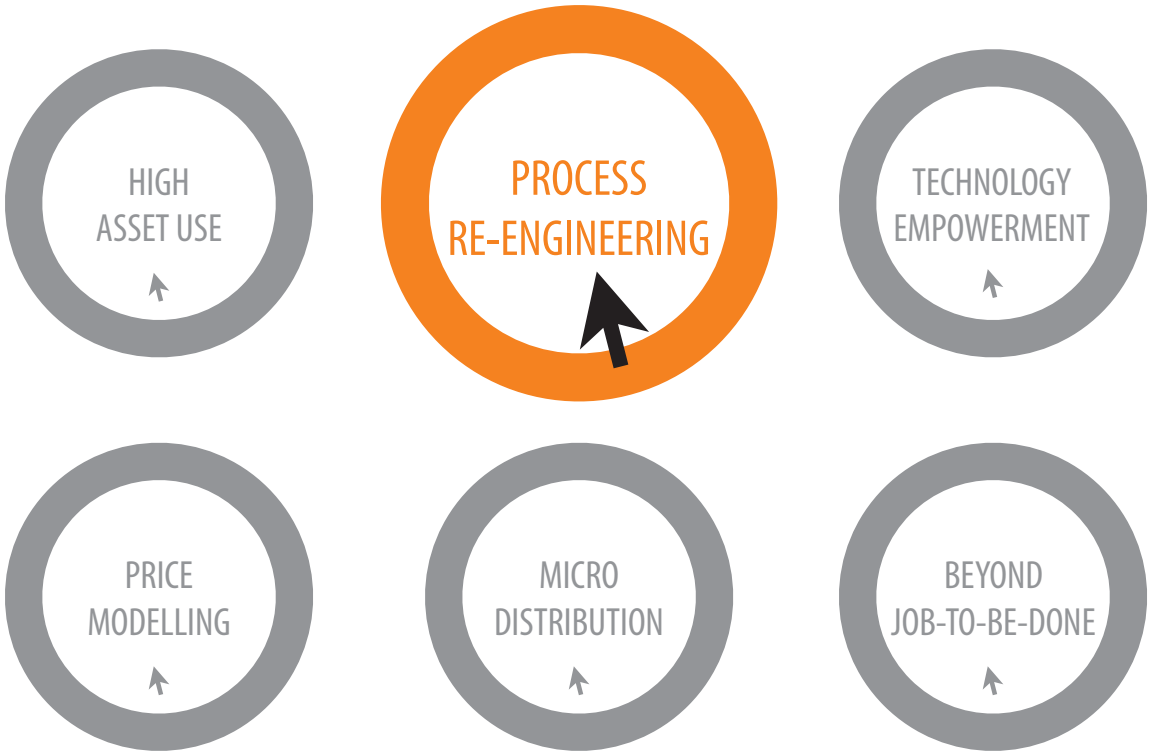
Recruits undertake a two-week crash course before they enter the classroom and are required thereafter to attend a day of formal training every month, with additional training in the summer and mid-year breaks. Junior teachers are supported by a senior teacher, with whom they have weekly meetings where the curricula and teaching process is outlined. Once a week, the senior teacher sits in on the classes to give active support in teaching and impart hands-on training. Feedback from classroom observations and students' performance is critical: if supervisors believe practical or curricular improvements will help students learn better or more quickly, they will mandate changes to lesson plans or the curricula.

The use of local women is advantageous: local teachers tend to relate better to their young charges and increase children's willingness to learn. Renting single classrooms rooms in local slums improves accessibility and increases female enrolment rates, and creates a 'smaller size' offering. Moreover, providing junior teachers with formal employment improves their status within the community and increases both their earnings and their future earnings potential – a far cry from their usual alternatives of working as domestic servants or garment pieceworkers.[9]

Demand is high for Gyan Shala schools. The standardised nature of the model also makes larger-scale rollouts easier once the course materials, teaching manuals and curricula have been created. Indeed, the commercial success of the business benefits from economies of scale. Although Gyan Shala chooses not to operate on a breakeven basis, interviews with parents earning Rs 3000 a month and above suggest a strong willingness to pay school fees at a level that will sustain the business model commercially.[10]

*9* Karamchandani A., Kubzansky M., Frandano P., Emerging Markets, Emerging Models, Monitor Group, March 2009.

*10* Ibid.




Process re-engineering breaks a process into highly efficient sub-parts and creates specialists for each sub-part, thus opening up areas for cost reduction.

The Narayana Hrudayalaya (NH) Cardiac Care Centre, located in Bangalore, is one of the world's largest providers of heart surgery and other forms of cardiac care, including care for children. A private corporation, it was founded in 2001. Since then, it has grown to a 1,000-bed facility.

Founded by cardiologist, Dr. Devi Shetty, NH has re-invented the way cardiac healthcare is perceived around the globe. Dr Shetty believes his success can lead to a new healthcare model not only for India but perhaps also for the world. "The first heart surgery was done over a hundred years ago but even today, only 8 per cent of the world's population can afford heart operations," Shetty notes. "In India, around 2.5 million people require heart surgeries every year but all of (the country's doctors) put together perform only 80,000 to 90,000 surgeries a year.... We clearly need to relook and change the way things are being done."[11]

In NH, patients are charged a flat $1,500 (about Rs 75,000) for heart surgeries compared to $4,500 (about Rs 225,000) that other heart hospitals charge on an average. These numbers get all the more interesting when it is compared with the US where an average heart surgery costs $45,000 (about Rs 2,250,000).

The core idea of 'affordable' healthcare is made available to remote villages as a result of innovation in internal process. Despite helping so many poor patients, NH is known for being so efficient that it has a higher profit margin (7.7 per cent after tax) than most US private hospitals (6.9 per cent).[12] NH's model is based on staffing doctors, who are extremely well-trained and dedicated, yet are willing to take a 50 per cent pay cut compared to what they can earn in the West.

11 http://knowledge.wharton.upenn.edu/india/article.cfm?articleid=4493 (accessed on 31 July, 2010)

12 Martha Lagace. "Entrepreneurial Hospital Pioneers New Model". Online webpage of Harvard Business school, at http://hbswk.hbs.edu/item/4585.html (accessed on 24 October, 2010).

The first element of process innovation comes from what is known as a 'vertical' approach towards specialisation. Doctors here are highly specialised in cardiology, which means they can perform a specific aspect in a much better and faster way than other doctors with generic skills. This specialty helps NH attract patients, motivated healthcare professionals and donors. This super-specialisation is way different from services offered by what are popularly known as 'multi specialty hospitals', which treat a variety of diseases.

If super-specialisation was the first element at NH, the second is about deskilling a few elements in the cardiac healthcare in such a way that it results in dramatic time savings. NH recruits women with high school education and trains them in taking echocardiograms of patients, a task generally performed by trained doctors. This enables doctors at the centre to perform more immediate and complex activities.

With these innovations around internal processes, NH performs 30 surgeries per day compared with four to five performed by other major hospitals. This 'high volume' helps NH to reduce the cost of its services, thus attracting more patients and enabling the business to grow.

In addition, NH staff has the capability to do a large number of different cardiac procedures. The hospital's mortality rate of around 2 per cent and hospital-acquired infection rate of 2.8 per 1,000 ICU days are comparable to the best hospitals across the world. In an article in Forbes India, C K Prahalad said the mortality rate in NH is "much lower than in New York state for similar kinds of heart diseases".[13]

In order to have a wider reach with its patients, NH has partnered with ISRO to run Tele-Cardiology programmes. Such programmes have been implemented in the remote areas of the north-eastern states of Tripura and Nagaland, and in the south Indian state of Karnataka, using the INSAT satellite. While ISRO provides the software, hardware and communication equipment as well as satellite bandwidth for the programme, the specialty hospital provides the infrastructure and manpower, and maintains the system. The telemedicine network has since grown into 165 hospitals and has treated over 70,000 heart patients.[14]

Such innovations of blending technology with medicine has changed the delivery model of healthcare, making it more accessible to general practitioners (GPs) by TTECG (Trans Telephonic ECG

11 http://knowledge.wharton.upenn.edu/india/article.cfm?articleid=4493 (accessed on 31 July, 2010)

12 Martha Lagace. "Entrepreneurial Hospital Pioneers New Model". Online webpage of Harvard Business school, at http://hbswk.hbs.edu/item/4585.html (accessed on 24 October, 2010).

13 http://business.in.com/interview/magazine-extra/ck-pralahad-a-unique-combination-of-strategic-vision-and-financial-acumen/1912/1 (accessed on 25 October, 2010).

14 www.narayanahospitals.com (accessed on 12 October 2010)

Machines) making it the world's largest ECG network.

Similarly, NH, in association with the Indian Post Services, has launched the 'Hrudaya post-a-scheme' to reach out to masses through the post offices. With its service in the telemedicine sector, NH provides healthcare assistance to the Pan Africa E-Network that was launched by India's Ministry of External Affairs. NH today has more than 500 telemedicine centres spread across the globe.

In yet another partnership to leverage technology, NH has partnered with SANA (a research group at Harvard/MIT) to launch a mobile healthcare project that promises to become cost effective and easily accessible.[15] This alliance was formed at a time when India is experiencing a double burden of disease, with persistent infectious disease coupled with increasing incidence of chronic diseases like cancer and cardiovascular diseases. Unfortunately, due to the lack of specialists care in rural areas, most chronic diseases are diagnosed at an advanced stage, when treatment becomes complicated and expensive.

SANA has developed an open-source telemedicine platform that allows structured medical assessments to be encoded onto smart-phones and interfaces, with diagnostics such as ECG, ultrasound and X-ray/CT-scanners that enables two-way sharing of medical data between a central medical record database and the phone.

Most patients show up with stage-4 tumours that cost millions to treat and the survival rate is about 30 per cent. Incidentally, if detected early, the survival rates go up to 90 per cent and treatment cost comes down to Rs 15,000-30,000. With the proliferation of mobile networks, smart phones and open source software, three fundamental issues in telemedicine – power, cost and connectivity – can be overcome.[16]

The NH group has recently built three other hospitals next to its heart clinic – a trauma centre, a 1,400-bed cancer hospital and a 300-bed eye hospital. They all share central facilities, such as laboratories and the blood bank. Dr Shetty wants to make quality healthcare accessible and affordable using economies of scale, or the cost advantages businesses obtain due to expansion. The hospital in Bangalore focuses on cardiac medicine but he wants to extend the model to other specialties,

15 http://economictimes.indiatimes.com/news/news-by-industry/healthcare/biotech/healthcare/SANA-Narayana-Hrudayalaya-to-launch-m-Health-project/articleshow/6464488.cms (accessed on 24 October, 2010).

16 Ibid.

apart from opening up in other locations. Expansion plans include 5,000-bed 'health cities' across India. Over the next five years, NH plans to increase the number of beds to 30,000, making it the largest private hospital group in India and giving it more bargaining power when it negotiates with suppliers, thus driving down costs further.

Similar to NH is Aravind Eye Care, Madurai, the world's largest provider of cataract surgery. Founded in 1976, Aravind provides end-to-end eye-care services, screens more than 2.7 million people annually, and now performs some 285,000 surgeries a year.[17] It has adopted the assembly-line principle in its operation theatres. At Aravind, four operating tables are laid side by side and two doctors operate on adjacent tables. Thus, even as the first operation is being completed, the second patient is already in place.

Aravind's founder, D G Venkataswamy, says that his goal is to "wipe out needless blindness."[18] Today, Aravind treats more than 60 per cent of its patients for free, even as it remains a profitable venture.

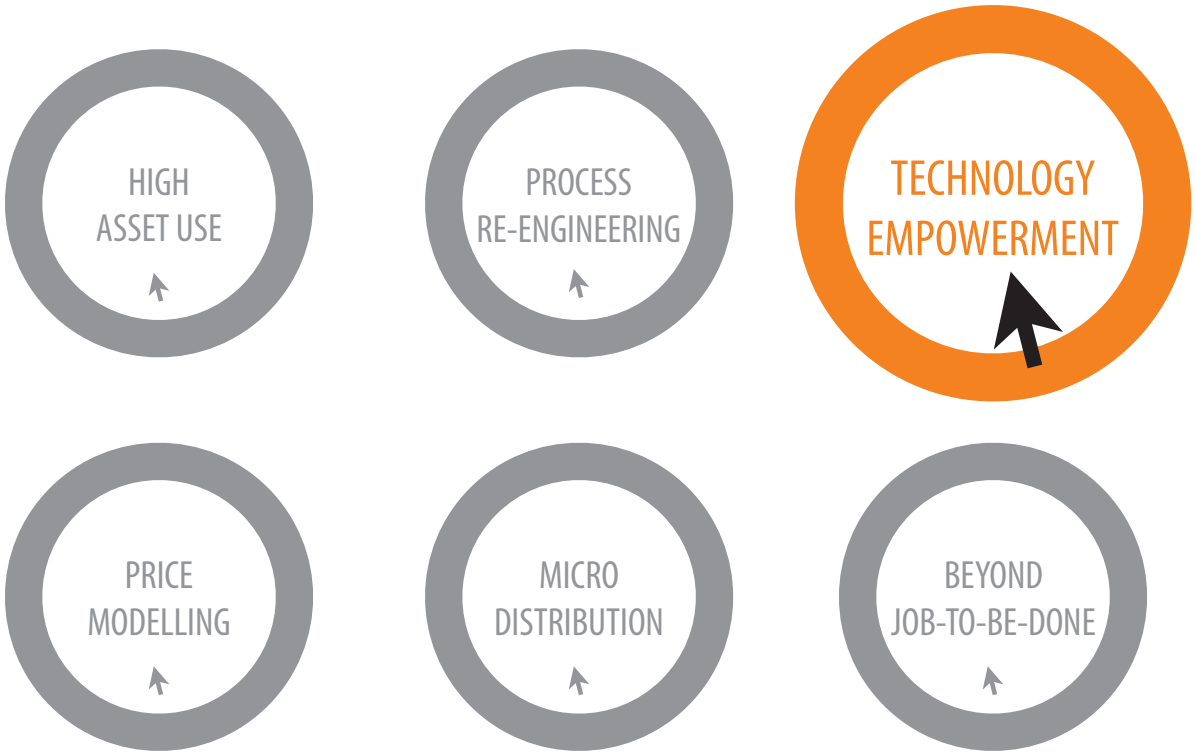
The Aravind business model is built around process reengineering that disaggregates the entire course of care but is best illustrated by the surgical eye-care process. In redesigning the process, Aravind minimises the demands on its doctors' time. Instead of a medical professional seeing the patient at each step, the doctor performs only the preliminary examination, the final diagnosis, and surgery. The rest is done by paraskilled paramedics, who are trained to do a range of clinical tasks: ward management, counselling, out-patient care and serving as operating-room nurse assistants. Paraskilled workers are also used in the administrative side of the business, in record-keeping, catering, optical implant sales, and so on.

17 www.aravind.org (accessed on 15 September 2010)

18 Prahalad C.K., "The Innovation Sandbox", Strategy+Business, Issue 44, Autumn 2006, Booz & Co

As a result of such process reengineering, doctors at Aravind are highly productive and patient throughput is high. Aravind does 2,400 surgeries per doctor per year compared to 300 in standard Indian clinics. Like in any no-frills business model, training and retention are critical issues for Aravind. Considerable investment goes into training, and to get a sufficient return, Aravind needs candidates to succeed as long-term employees. It looks for educable young women from poor families in rural areas, with average grades, 'low' aspirations and an appropriate attitude

Those who fit this bill – particularly those with 'low aspirations' – are unlikely to look for other jobs and prefer to remain in their local communities; they stay with Aravind for an average of 10 years once past the first year. When a new facility opens, more than 30 per cent of the staff comprises experienced paramedics from existing facilities. Aravind focuses intensely on retention and is mindful of its importance given the costs of required training. Aravind has so far benefited from a strong culture that builds loyalty. Its hospitals are also placed in smaller cities, where competition for staff may be less than that in India's larger cities.




One of the best ways of adding value to customer proposition and reducing costs while identifying suitable revenue streams is putting technology into the hands of the user.

Low-cost treatment at hospitals is one part of the solution to providing healthcare to the poor. The other problem is that of accessibility. Most populations in developing countries live in rural and semi-urban areas. They are difficult to reach, especially when doctors are scarce (for instance, in India, the ratio of physicians to the total population is less than 1 per 100,000 people, compared with about 1 per 160 people in the US).

People in the rural areas have to walk many kilometres to reach a doctor for basic healthcare. As a result, not many people attend to their medical needs in the early stage of the disease cycle. Consequently, they reach the doctor only when their condition becomes serious. This results in increased expenditure, pulling people back into poverty. About 20 million families get pushed below the poverty line every year because of healthcare expenditures alone.

There are three critical problems here. One, there is no electricity or the supply is erratic. Then, there is the non-availability of a skilled health workforce - the rural health workforce mostly entails some sort of nurses, who cater to the health care needs, or some traditional health workers, who have been practicing out of experience, with doctors only visiting periodically. The third problem is of technology. Unless there is bandwidth or connectivity available, unless there is affordable equipment available, it will not be possible to provide health services at an affordable price point.

Technology can indeed bridge the healthcare gap between the urban and rural areas. Installing medical equipment in villages has its share of challenges. The alternate is to establish the right kind of reach into the village. This is what ReMeDi (remote medical diagnostics) does by setting up kiosks in villages. A kiosk is a place where the necessary equipment exists and there is a knowledgeable person to operate it.

Developed by Neurosynaptic Communications, ReMeDi comprises of a device integrated with an audio-video conferencing software. The device runs on two watts of power and the audio-video conferencing runs at 32 kilobits per second. It also runs over reliable telephone lines or normal modems. An integrated patient-record centre helps doctors in recording all health-related issues of a patient.[19]

The device came out of the need for doctors to have more information about patients before making a decision. The basic set of parameters includes stethoscope, thermometer, blood pressure meter, webcam, and ECG, as specialty care. ReMeDi measures four vital signs: temperature, blood pressure, heart beat and blood oxygenation. Trained operators at its internet-enabled kiosks transmit the patients' readings to doctors, who make preliminary diagnoses and can issue prescriptions.

In case there is no connectivity, a 'store and forward' option allows capturing of all parameters, which are transferred when connectivity is established. When real time bandwidth is more than 32 kilobits per second, stethoscope sound is heard in real time when a chest piece is put on a patient. Suitably instructed by a doctor at the other end of the line, the operator can place a stethoscope on patient's chest. Such placements are visible on a chart to a doctor and this procedure can be easily implemented if the operator is given suitable basic training.

Now, ReMeDi is getting into much larger-scale experimentations from these understandings. It is partnering with various agencies that have expertise in the healthcare delivery part and working with them to set up large networks. ReMeDi's acceptability rate or return patient rate is about 40 per cent. More importantly, about 75 per cent of its patients did not have to travel to another

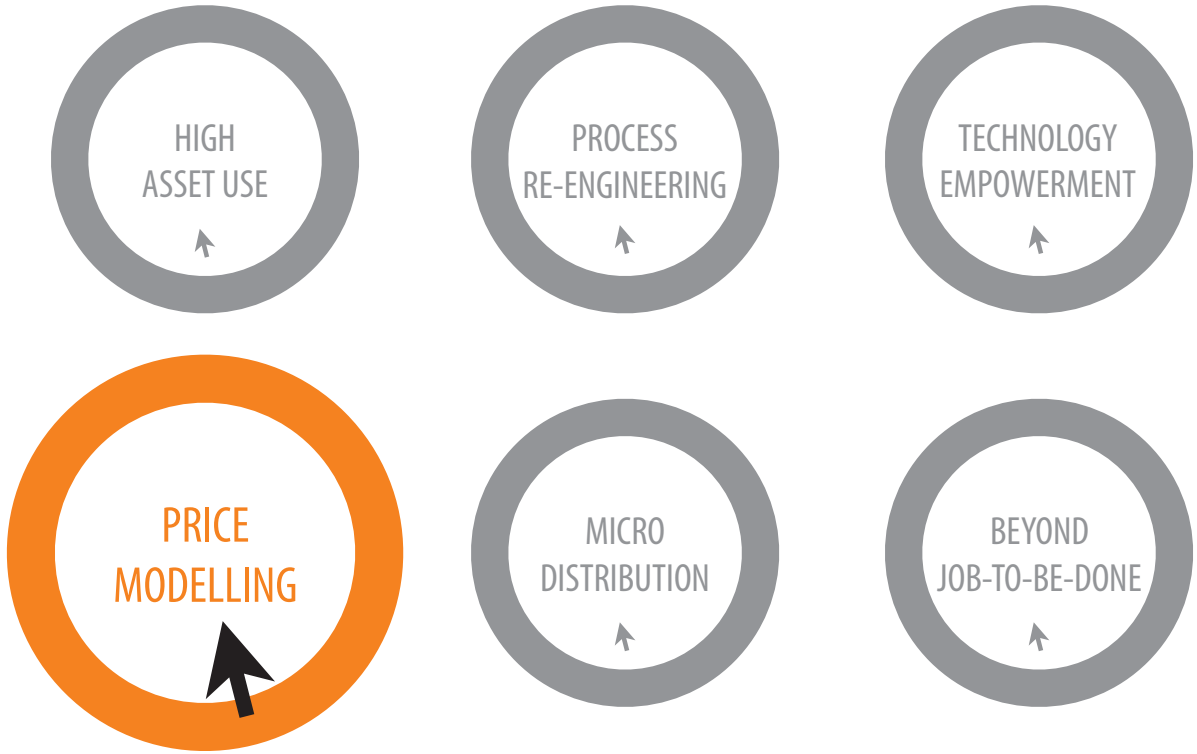
19 http://www.neurosynaptic.com/index.html

next town to meet their healthcare needs. There is a great amount of affordability, because this model allows patients to get access to healthcare for less than a dollar.

Technology is going to be a game changer. If people are provided with high innovation at low cost, they will become more productive and efficient, and their earning potential will increase. Lives not only in the developing world, but also in the developed world, can be improved just by making this technology affordable and accessible.

For the millions of people along India's coastline who depend on fishing for their livelihood, the system of satellite-based potential fishing zone (PFZ) forecasting has raised productivity levels and thus their incomes. Before this technology was accessible, fishermen often returned home in the evening without any catch. Today, scientists can see the chlorophyll – the green colouration of water created by the activity of fish – and measure the sea surface temperature, which changes due to the activity of fish to help guide fishermen to the right areas. The PFZ information is disseminated to fishermen in two ways: first, through electronic message boards, where the information is posted. Second, some service providers are supplied with the information, which they then send by SMS text messages to the fishermen's mobile phones. Thus, when a fisherman goes to the regions identified under the PFZ, areas where the fish density is higher, his catch improves and his income rises. More significantly, the system help the fisherman know where he can sell his catch rather than let it rot for lack of buyers. Using the mobile phone, a fisherman is able to determine his point of sale, the availability of buyers, and even the prices at which he can sell. Thus, technology is now being used to enhance prosperity, both for the provider of the low-cost product (the telecom service provider in this case) and also for the end-user (the fisherman).[20]

*20* Malhotra A., Kleiner A., Geller Laura W., "A Gandhian Approach to R&D", Strategy+Business, Issue 60, Autumn 2010, Booz&Co.




Rethinking price points and breaking these into affordable units can radically increase affordability of a product or service.

The Karnataka State government, in association with Narayana Hrudayalaya and others, launched a quasi-government Micro Health Insurance Programme called Yeshaswini. [21] The programme covers nearly three million farmers for a monthly premium of Rs 10. Similar programmes inspired from Yeshaswini have been launched in other states of India. Today, Yeshaswini is the world's largest self-funded health care insurance scheme, on that has been widely studied by the International Labour Organisation and the World Bank, who want to implement similar schemes worldwide.

For 2009-2010, the annual premium under the scheme was Rs 140 ($3), with an additional Rs 10 ($0.22) service charge that the cooperative societies may choose to levy. Benefits include up to Rs 200,000 ($4,321) a year for defined surgical procedures, medical emergencies, maternity and neonatal care. Additionally, the plan provides free outpatient care in all participating hospitals.

On a voluntary basis, the plan is open to all members of a cooperative society in the state of Karnataka for at least six months. Members may choose to enrol their spouse and children. There is no minimum age requirement for coverage; however, the maximum age requirement is 75 years.

*21* http://www.narayanahospitals.com/brief.html (accessed on 24 October, 2010).

Yeshaswini uses co-operatives to reach more than a million rural co-op members. For Yeshaswini, the co-operatives are a platform for access, distribution, customer education and collection of premiums, with over 200 hospitals in Karnataka providing cashless treatment to Yeshaswini members.

The scheme also aggregates co-operative members into a group risk pool that now has access to good insurance coverage at a reasonable price. More than 33,000 people have made claims and over 200,000 people receive cashless outpatient care each year under the scheme. The co-operative network helped it reach its first millionth customer after just two years.

The scheme is unique in that it has overcome many of the problems associated with health insurance schemes for the poor (such as low levels of coverage and benefits). These features raise the potential of the scheme to be a model for developing countries in providing a modicum of health security for their citizens.

What makes Yeshaswini viable is the extraordinarily large numbers of people from villages that it is able to pull. Over a period of time, it is expected that there will be a deep understanding of what the disease entities are, how they function and what are the vulnerabilities to the scheme.

Aakash Ganga (AG), or River from Sky, is a rainwater harvesting system currently installed in six drought-prone villages in Rajasthan, the driest state in India. Founded by B P Agrawal, the AG system rents rooftops from homeowners and channels the rooftop rainwater through gutters and pipes to a network of underground storage reservoirs. This network of reservoirs is designed to provide 10-12 litres of water daily to every person in an entire village for a year. It has helped over 10,000 villagers gain access to clean water. Agrawal is now working with local, state and national governments for widespread adoption of AG.

Agrawal's rainwater harvesting system has indeed been a tremendous success, almost doubling the number of houses included in the original plan. Building on this initial accomplishment, the India's Ministry of Rural Development has expressed interest in implementing AG in 40 villages, for 100,000 people, and the Department of Science and Technology is evaluating Sustainable Innovations' proposal to execute AG in 40 Rajasthan villages.[22]

22 http://www.sustainableinnovations.us/

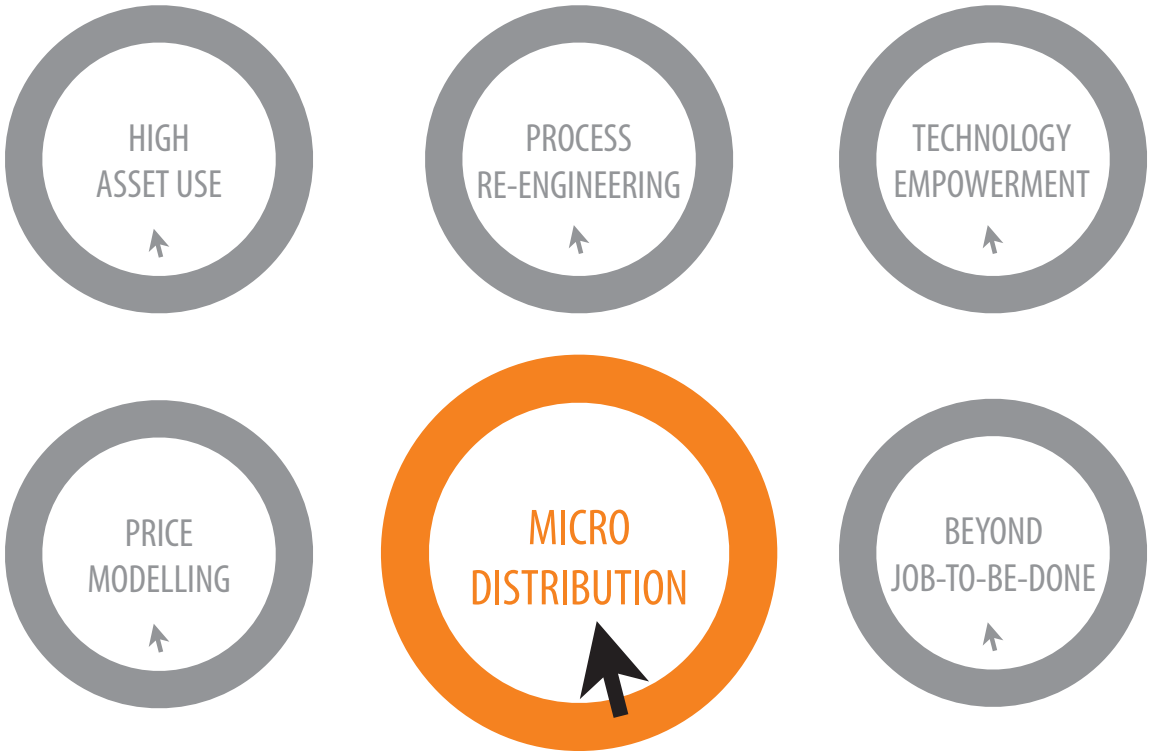
AG's holistic functionality is as vital to achieving large-scale success as is its transformative technology. Agrawal created a simple, self-sustaining execution plan – villagers rent their rooftops to others, enabling them to sell water and collect what they view as 'free money'. Almost 70 per cent of the harvested water is sold or used for individual families; the rest goes to horticulture. This dramatically improves sanitation, creates revenue to compensate each entrepreneur and covers operating costs. Additionally, the access to drinking water frees time for girls to attend school and for women to be more economically productive.

Agrawal realised the importance of cultural acceptance early on, incorporating Jalwa Puja – an Indian tradition for mothers to worship at water wells – into AG's execution. Thus, mothers were invited to worship at the shared reservoirs; in turn, they became goodwill ambassadors and shielded the tanks from potential sanitation issues. AG further economised familial bonds to ensure low-cost maintenance by engraving local mason's names onto the reservoirs. The recognition obligated villagers to take care of the reservoirs.

"AG demonstrates an alternative model that provisions water in lieu of the typical inefficient, poorly performing public works projects. Agrawal's system functions as a hybrid of a social enterprise and a public-private-community partnership, and takes great care to be attentive to social issues surrounding caste, class and gender.

The Asian Development Bank (ADB) is supporting an experiment aimed at exploring whether the Aakash Ganga approach can work in China's Guiyang Municipality. In March, the ADB approved a $50,000 pilot project and demonstration activities to 'demonstrate the full potential of Aakash Ganga self-sustaining rainwater harvesting'.

*23* "Aakash Ganga: Saving Water for a Rainy Day", India Knowledge@Wharton, http://knowledge.wharton.upenn.edu/india/article.cfm?articleid=4397 (accessed 20 July, 2010).




Engaging community people in the distribution channel increases credibility, accessibility and offers a captive consumer base.

Many companies sell products within their community, mainly through sales events or through door-to-door campaigns. VisionSpring, a popular affordable reading spectacles provider, puts this in action through vision entrepreneurs, who conduct basic screenings and sell spectacles. The process involves community members, who sell affordable health products door-to-door to low income households. Armed with the proper training and equipment, community members are empowered to become the owners of their own micro-businesses.

Building and managing a microfranchise network can be labour intensive, but distribution may be easier because it takes advantage of established micro-enterprises with established customer bases.

VisionSpring aims to provide eye care and eyeglasses to people in developing countries that might not otherwise have access. According to the VisionSpring website, 773 million people around the world suffer from vision loss and 563 million of those people can have restored vision with the help of eyeglasses.[24]

According to a study by AMD Alliance International,[25] the cost of vision loss on the global economy in 2010 is $3 trillion. The costs range from lost productivity to caregiver costs. VisionSpring states that each pair of eyeglasses (around $4 each) increases a person's productivity by 35 per cent. Individuals earn an extra $381 on average over two years.

24 www.visionspring.org (accessed on 15 September, 2010).

25 The Global Economic Cost of Visual Impairment, AMD Alliance International, March 2010.

VisionSpring helps address the widespread problem of presbyopia, a medical condition most people face as they age, which results in blurry up-close vision. It sells eyeglasses in order to empower the poor as well as create an income for the entrepreneurs that it supports through a programme called Vision Entrepreneur. Vision Entrepreneurs are able to sell their own eyeglasses to their communities, with the help of a 'Business in a Bag', a micro-franchise sales kit that ensures success on the sales market.

The company recruits 'vision entrepreneurs' and gives each a 'business in a bag' kit, that contains an initial inventory of 40 pairs of reading glasses of different magnifications and styles, eye-screening materials, marketing resources, and accounting and sales forms. VisionSpring also offers the entrepreneurs several days of training in how to conduct vision screenings, determine the proper power of the glasses needed, make referrals to hospitals if additional eye care is necessary and manage their inventory. Each entrepreneur is then assigned a cluster of local communities within which to market glasses.

HUL (Hindustan Unilever) has for years been a market leader in personal care products, riding on India's rising middle class and then introducing a wide range of brands appealing to low-income market segments. But by the end of the 1990s, margins were shrinking and competition had increased; HUL needed to find new markets and new growth. Rural India was approaching an inflection point; the challenge was to turn it into an opportunity.

HUL recognised in this changing social dynamic a new customer opportunity and was determined to be one of the first companies to capitalise on it. The company set up a taskforce with a clear mission: devise a model that could break the affordability and accessibility barriers of hundreds of millions, mainly in the rural areas, in a manner that would add value to their lives much beyond becoming consumers of its FMCG products.

The taskforce members found inspiration in the microfinance model of Grameen Bank and began to envision a business model centred on partnerships with the government-supported and micro-credit-financed village self-help groups.[26] This venture, called the Shakti Initiative, was to reach out to micro-entrepreneurs, identifying and training a sales force termed the 'Shakti Ammas'. These women

26 Post-liberalisation, the Indian government had begun a wide-scale effort to improve the quality of life in rural India. About 72 per cent of India's 1.2 billion people live in rural areas. Most of the 600,000-plus villages are remote, and their roads can't handle large shipments of goods or much commerce above a subsistence economy. Rather than invest in expensive infrastructure, India's government chose to support the creation of self-help groups composed predominantly of women. The idea was to assist rural entrepreneurs to start businesses and so improve living conditions in their regions.

– who had little or no business skills – were to act as direct representatives for HUL in their villages.

This was for the first time that HUL ventured into managing business at a micro scale. For the company, it was a radical idea on many levels. It had to break the mindset that it was not viable to go directly to a village with just 2,000 residents. The team knew it needed to build an appropriate platform, so it worked to clearly define the target customer. The other was a realisation that it could give something back to society on a large scale in a mutually beneficial manner.[27] Ultimately, members arrived at a surprising customer value proposition: Shakti was not really about delivering products to the end user; it was about delivering a business opportunity.

To build a partner network, HUL needed to re-conceive its approach to distribution. It had to think about direct-to-consumer approach, something it had never done. To work closely with rural self-help groups, micro-credit lenders, non-governmental organisations and the Indian government, HUL needed to acquire new skills and to innovate new processes.

The Shakti Ammas were the new business partners. HUL focused on the channel, delivering adequate training and support to ensure their profitability. Success of HUL was dependent on success of every member of the channel. By defining the direct representative as the customer and focusing the value proposition on giving her a viable business opportunity, HUL built a model designed for long-term growth that was difficult for competitors to replicate. Though rival, Nirma, an Indian consumer and industrial products company, had beaten HUL to the direct sales approach, HUL hoped its unique focus on a partner network model would give it an infrastructure and expertise that differentiated the company in the rural market.

Early on, Shakti team members realised that the profit formula for this new model would have to tolerate low margins as the offerings gained a foothold in communities unaccustomed to purchasing branded products. They expected these margins to be balanced by increased volume, and they also included the social benefit of the enterprise in their metrics for success, a position supported by HUL's corporate leadership. To test the assumptions underlying the Shakti model, HUL started

27 Justin Lahart, Partick Barta, and Andrew Batson, "New Limits to Grow Revive Malthusian Fears," Wall Street Journal, March 24, 2008.

in only one region. Just 17 women began selling hand soap, shampoo and a small list of other products in their village market and then increasingly went door-to-door.[28]

Training Shakti Ammas – women with varying levels of education – required HUL to innovate its training programmes. Thus, the Shakti team created training audio cassettes and invited the women to attend classroom programmes in the nearest locations. In some cases, the Shakti team hired troupes of local actors to travel from village to village performing comedic skits – a live commercial, extolling brand messages.[29] These have been traditional methods of awareness raising and rural marketing in deep pockets of rural India.

Many of those messages focused on the benefits of increased hygiene. Teaching a rural population the benefits of washing hands before eating – thus decreasing intestinal infections, a leading cause of childhood mortality – gave the Ammas increased social stature because they provided an important benefit to the village.

But getting their products to remote villages required further innovation in distribution. Many of the target markets lacked paved roads. At first, Shakti leveraged HUL's existing rural distribution network, arranging drop-off points for the Ammas to pick up stocks on carts towed by bicycles. As it incubated the model, however, the team found that it was more efficient to develop entrepreneurs in geographic clusters. By reducing the number of drop-off points, local distributors made higher profits, and Shakti could decrease stock requirements, which in turn increased efficiency and resource velocity.[30]

The Shakti team continued to nurture the profit formula and refined the key resources and processes. To protect growth, the core team stayed focused on its proposition of delivering a powerful business opportunity. The business model strengthened, clearing initial hurdles and despite making losses for the first three years. By 2007, the model had been refined and tested extensively. Shakti expanded to include 45,000 Shakti Ammas, covering more than 100,000 villages across 15 states in the country, and reaching over 3 million homes.[31] For their villages, the Shakti Ammas bought the equivalent of almost $100 million worth of consumer goods from HUL in 2008.

Thus, Shakti became the engine of transformational growth for HUL, dramatically increasing its rural penetration and adding new perspectives, capabilities and expertise to

28 "The Micro Business with Massive Impact," Impact on Global Issues, 24, at http://www.unilever.com/images/ProjectShakti-microBusMassImpact_tcm13-118538.pdf

29 Chris Trimble, "Hindustan Lever," Case 2-0011 (Hanover, NH: Tuck School of Business at Dartmouth, 2002).

30 "Marketing to Rural India: Making the Ends Meet," India Knowledge@Wharton (2007), 2-3; and Rangan and Rajan, "Unilever in India".

31 India: Creating Rural Entrepreneurs," Unilever, at http://www.unilever.com/sustainability/casestudies/economic-development/creating-rural-entrepreneurs.aspx

the parent company. HUL has nearly tripled its sales and profits over the last five years.[32] Shakti's partner network model is now a platform for HUL's next stage of growth. Furthermore, the company believes it can replicate the model in many parts of the developing world, adding value to many more millions of lives.

HUL realised that the Shakti Ammas would be more successful if they were able to deliver something more valuable to village life than branded products. So as the initiative went forward, the company found it could help boost their social standing by reinforcing the illness-prevention aspects of personal hygiene. This made the women more than salespeople; they became purveyors of important social benefits.

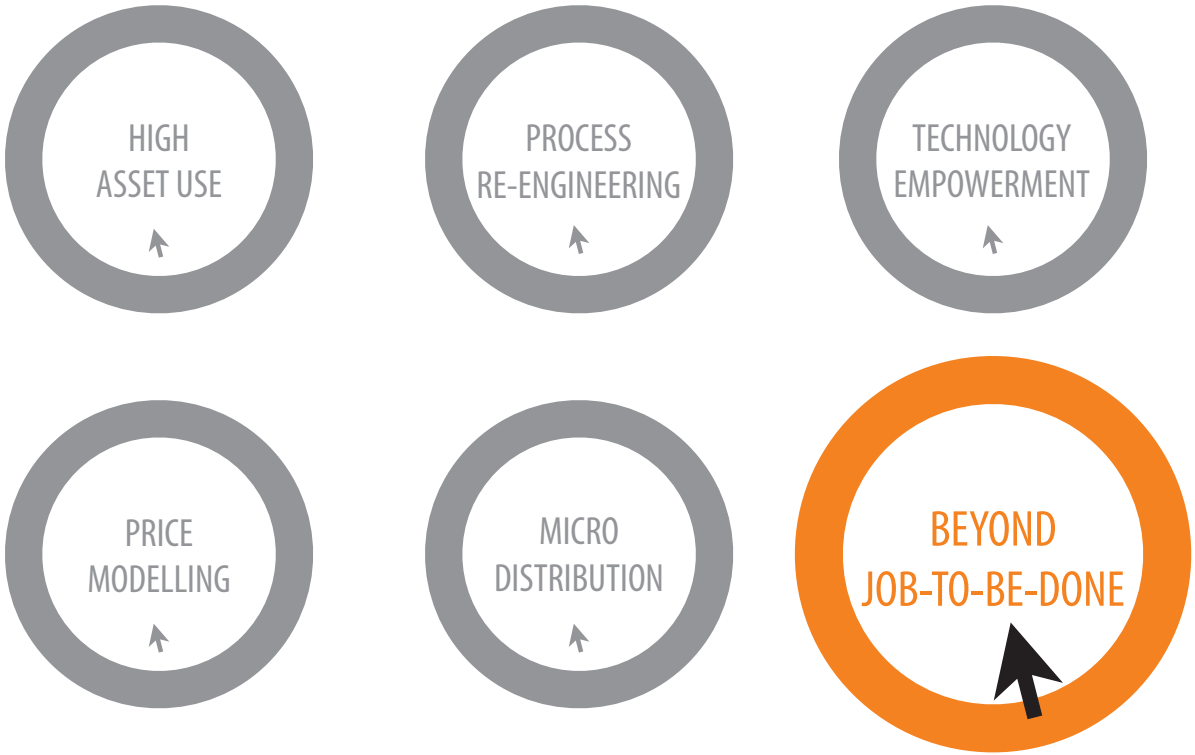
In an effort to make medical knowledge and healthcare accessible to rural populations, Dr B P Agrawal developed Arogya Ghar (Arogya), Clinics for Mass Care, with entrepreneur Atul Jain. Arogya, a system of mobile, kiosk-based clinics, seeks to alleviate the shortage of trained medical staff and improve standardised treatment protocols for common ailments and preventable diseases in India.

Arogya is owned and operated by high-school educated young women, who deliver care door-to-door, after receiving training in healthcare and for-profit ventures from the Birla Institute of Technology and Science in Pilani, Rajasthan (western India). The kiosks allow them to enter basic patient tracking information, such as symptoms and vaccination history, which physicians review to take necessary remedial measures. Villagers treated through Arogya are given unique health identifier numbers so that doctors can maintain longitudinal health records and track progress. Treatment is inexpensive, costing approximately 25 cents per visit.

Local girls are trained to use the cheap Arogya Ghar laptops, which are hooked up to diagnostic devices. They travel door-to-door checking up on residents and are paid 25 cents for each diagnostic task performed. Agrawal says that the programme provides self-esteem to the girls, whose options are usually limited. Arogya plans to use institutional funding (USAID, the World Health Organisation, and UNICEF) and social investors to scale up the kiosks to 50 villages by 2012, delivering care to over 100,000 people.[33]

32 "Hindustan Unilever," 10 June, 2009, Annual Statements.

33 "How One Indian Entrepreneur Is Bringing Clean Water and Health Care to Local Villages on the Cheap", Ariel Schwartz, Tuesday, 15 June, 2010, at http://www.fastcompany.com/1660067/indian-entrepreneur-brings-clean-water-health-care-to-local-villages-on-the-cheap (accessed 20 June, 2010).




This strategy scores the highest in value-add to customer, by providing a product or service acquisition package rather than just the product or service.

Since its beginning in 1995, Selco India has become a global name in demonstrating success in a for-profit enterprise model dedicated to reducing energy poverty. Selco chose to serve the poor, located several kilometres from the nearest power line, who were without access to electricity and were instead dependent on highly-polluting kerosene-burning lamps.

Such neglected, impoverished villages do not figure too prominently in the business plans of most companies seeking to profit from India's economic development. Yet, the residents of such downtrodden, disconnected villages are precisely the market targeted by Selco, a Bangalore-based 'social' enterprise that is determined to make the benefits of solar lighting technology accessible to the poorest in the country.

From a network of 25 rural service centres, Selco has already sold solar lighting to about 100,000 village homes and is hoping to reach 200,000 by March 2013.

Selco designs, services and finances solar systems. It delivers energy solutions to its end-users through provisions of high quality products, installations, technical reliability, equipment maintenance, customer education and linkages to appropriate financial institutions.

Selco, since last year, has begun to transform itself from a solar service company to an energy service company – to provide complete energy solutions for the un-served and the under-served. The mission is to offer the clientele a range of energy services that can uplift the quality of life through better health and/ or increased income.

In the beginning, Selco had to work hard to convince banks that investing in solar energy was worth it. The nature of Selco's target customers – traders who get paid on a daily basis or farmers who earn a yearly wage for example – means that a flexible financing system is needed. Very few of its customers are able to afford the one-off cost of an average PV unit.

Selco began by creating a viable financing solution designed to make solar lighting systems both more available and more affordable to the poor families who would be buying them. Involving a microfinance institution (MFI) increases the purchasing capacity of a family in rural India to around $400 (Rs 20,000) – a quantity nearly ideal for the purchase of a SHS (solar home system) for a family.

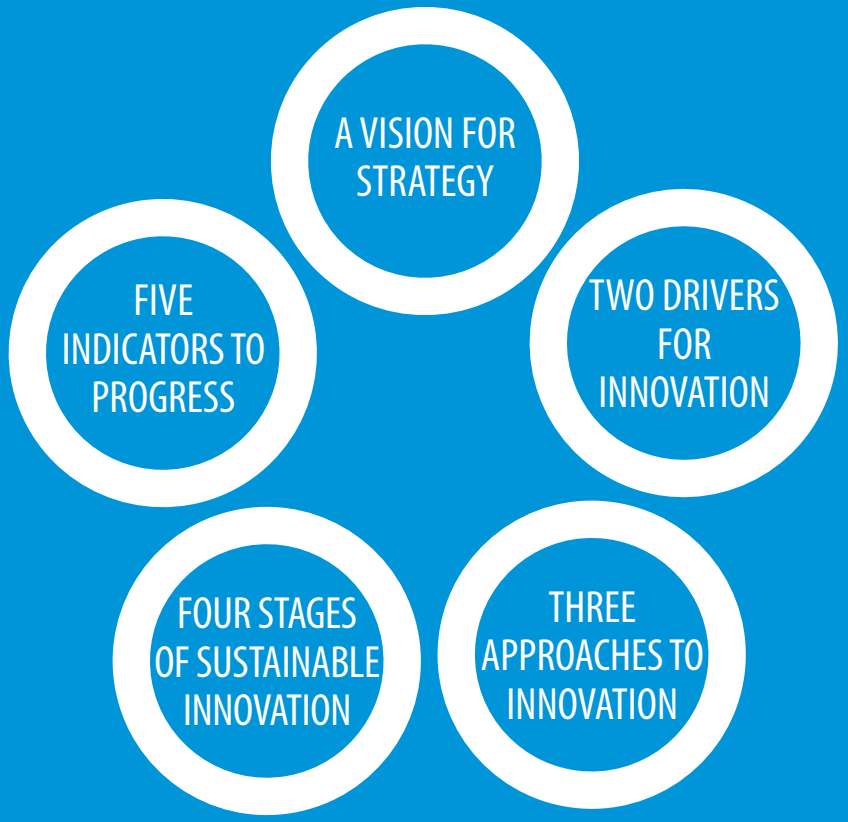
Over the years, Selco has also forged partnerships with regional rural banks, commercial banks, NGOs and rural farmer cooperatives to develop financial solutions for its customers. By providing its combination of product, service and finance, Selco is able to offer superior lighting and electricity at a monthly price comparable to using traditional, less effective sources.

Applying this unique business model has enabled Selco India to scale and expand. In 2009, it made a turnover of Rs 120 million ($2.56 million), 90 per cent from rural India, with profit margins of about 25 per cent.

Selco's business model is built upon various innovative linkages.[34] Selco's role has been to:

- Create established supply chains for various energy services
- Build appropriate channels for financing
- Develop appropriate financing products that meet the specific user's personal cash flow
- Recruit and train rural entrepreneurs (third parties), and link them to appropriate financial programmes
- Offer site-specific income generating activities involving energy services

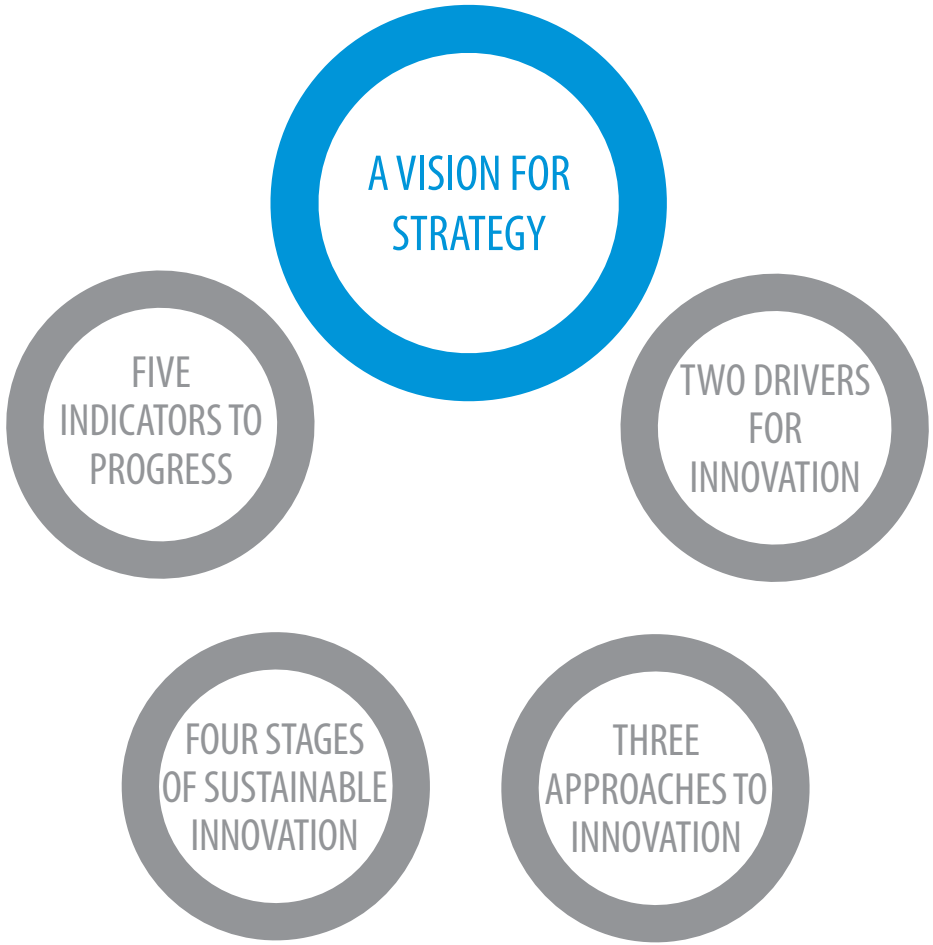
*34* "Selco India: Powering India, Empowering Lives", case study developed by CII-ITC Centre of Excellence for Sustainable Development, 2010.




The five steps to SI2 have been identified as important for a company that wants to explore sustainability and inclusivity as drivers for innovation. The five steps are represented in the shape of circular strategy in order to illustrate that an ongoing process is necessary with the company constantly trying to improve its sustainability performance:[35]

- A vision for strategy
- Two drivers for innovation
- Three approaches to innovation
- Four stages of sustainable innovation
- Five indicators to progress

35 The 5 Steps are adapted from "Indian companies with solutions that the world needs", CII-ITC Centre of Excellence for Sustainable Development and WWF-India, 2008

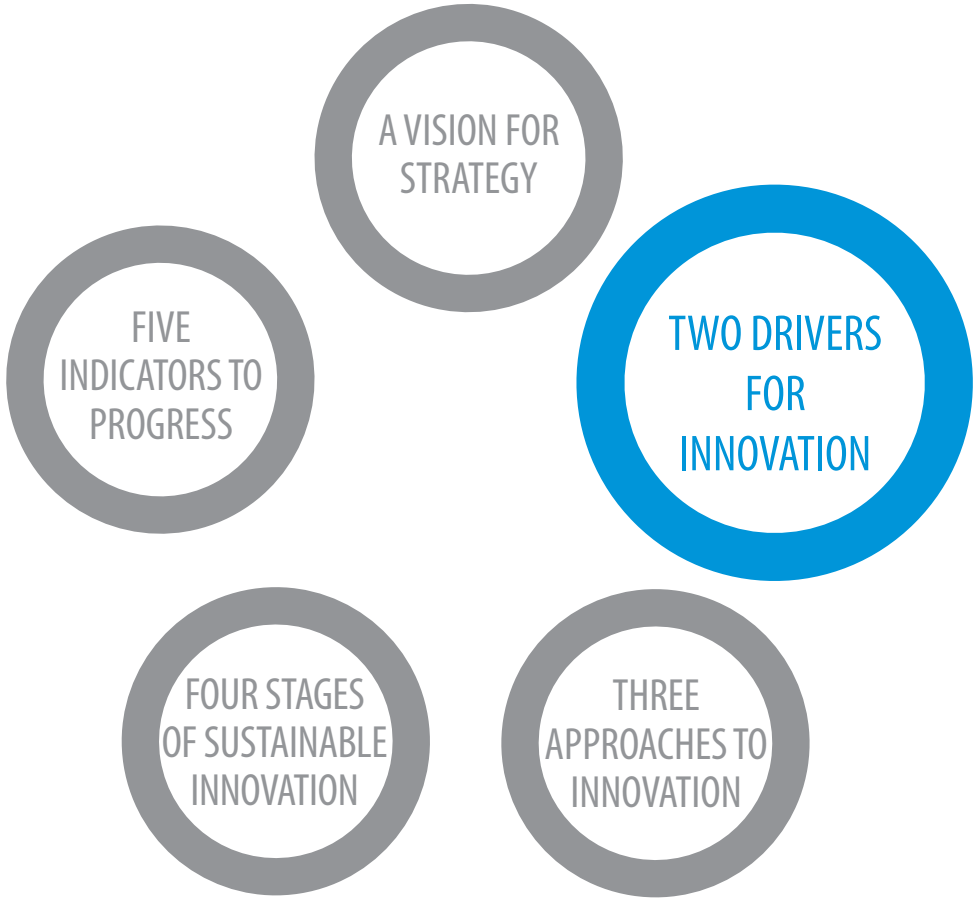

A VISION FOR STRATEGY
FIVE INDICATORS TO PROGRESS
TWO DRIVERS FOR INNOVATION
FOUR STAGES OF SUSTAINABLE INNOVATION
THREE APPROACHES TO INNOVATION

# A VISION FOR STRATEGY

In order for companies to be sustainably innovative and derive profits therefrom, they need to prepare for basic conditions. There are five necessary conditions to integrate a sustainability vision into the business strategy.

- Companies have to recognise sustainability as a driver rather than a barrier for innovation. This will enable them to see opportunities and growth areas where others apprehend risks and increased costs.
- Companies need to acknowledge that sustainability is multi-dimensional and includes economic, social and environmental footprints.
- Companies must be able to engage with relevant stakeholder constituencies within their innovation process. This engagement should be followed by action for their future operations.
- Measurable targets must be set to ensure that sustainability efforts of the company add value in economic, social and environmental terms.
- Company's efforts towards sustainable innovation need to be driven by leadership and supported by the rest of the organisation force.

Having conditioned the organisation, companies should also look at the level of innovation capability that results in business and sustainable value. Innovation is as much necessary for internal low-hanging fruits as it is for offering new products and solutions.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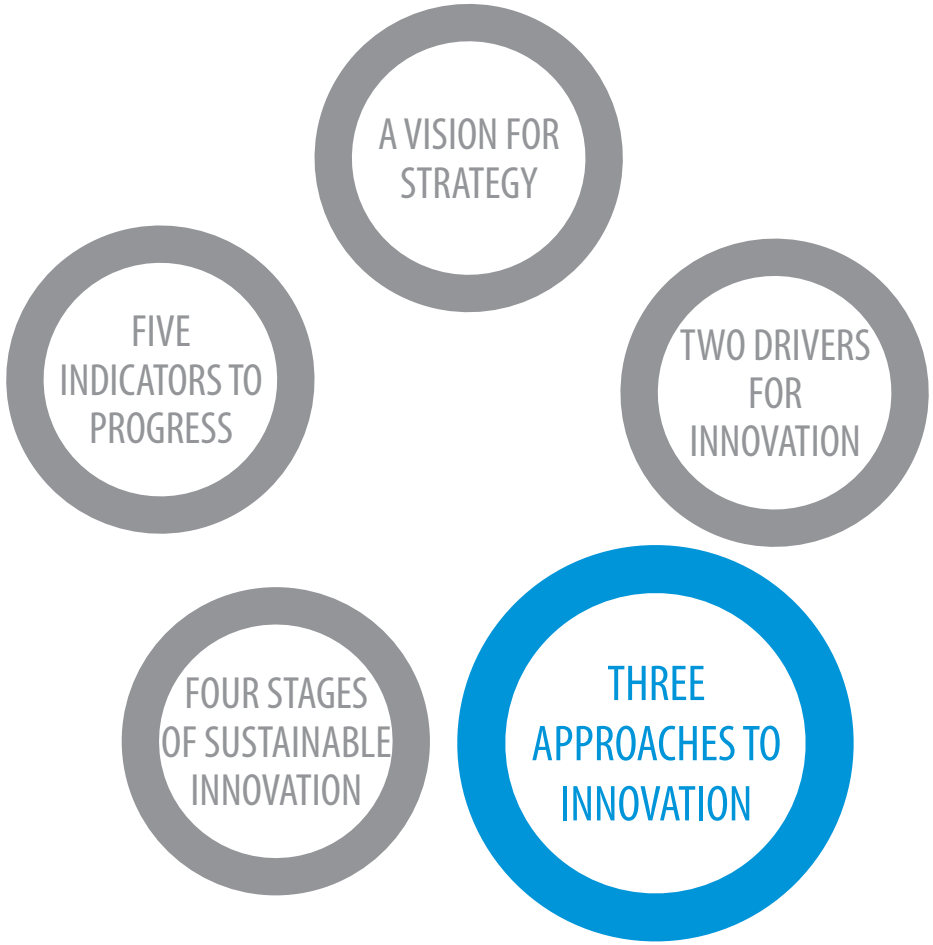
# TWO DRIVERS FOR INNOVATION

Two major drivers – poverty and natural resource depletion – will continue to put pressure on all institutions in society such as, government, companies and NGOs.

All companies aiming for sustainable innovation should in a transparent way present how they help reduce poverty and increase resource efficiency, and provide products and solutions that meet sustainability challenges.

Exploring how poverty and resource efficiency can become two common platforms for innovation that can help spread sustainable and inclusive solutions through society is an area where companies could engage.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# THREE APPROACHES TO INNOVATION

There are three different kinds of approaches that companies can use to embrace sustainability as driver for innovation where identified. These three can exist together within the same company, and within big companies they usually do.

## The Clean slate approach

This approach can be used by a company, or a part of a company, that can start fresh from sustainability need and look for services needed. Integrated light system with solar PV, batteries and LED lamps, as provided by Selco is one example where the need for poverty reduction and sustainable energy solutions are needs that are met. Grameen Bank and Grameen Solar are two other similar examples, where financial needs among the poor and smart energy solutions are met with smart innovation.

This approach is often technology-driven and it is important to include mechanisms within the company that explore if there are other technologies that can provide the same service in a better way. If a company only focuses on improvements in one technology, it can contribute to a technology lock-in even if the original intention was meant to deliver a sustainable solution. The car dependence and coal dependence are two examples of solutions that have created a technology lock-in over time and where many companies involved do not look beyond the technology they provide. Similar mistakes should be avoided in new areas that are today seen as sustainable.

## The Springboard approach

This approach can be used by a company that realises that at least a part of its business is not currently sustainable. This realisation often happens due to external pressure. Instead of only defending their business, they can look for new business areas that build on their current strengths using the outside pressure to find new business paths, and

thereby use the outside pressure as a springboard for a new and more sustainable business strategy.

IKEA is a good example where initial outside pressure, related to toxic materials in part of their product line, resulted in a dialogue with environmental NGOs and an increased focus on strategic environmental work way beyond the initial work with toxic chemicals. Using the outside pressure, IKEA developed a strategy that resulted in a proactive approach.

Electrolux and other providers of white-ware is another sector that has applied a springboard approach. Many of them got the impetus to rethink their old business approaches during the CFC discussions in the 1980's. It was also after this that many of the companies started to explore a service-based approach (they realised that in order to be sustainable they need to move away from a perspective where they sell products, as their incentive is not sustainable then, to a business model based on service). As the outside pressure was reduced, the appliance providers have lost some momentum and are more focused on incremental improvements in existing products these days.

An interesting case demonstrating the difficulties of the springboard approach is the oil sector. Companies like Shell and BP are examples of companies that, after heavy criticism, opened up new lines of business and invested in renewable energy and energy efficiency. Lately however, partly due to investor pressure but also the companies' inability to make sustainability fit in the core business, they are increasing investments in unsustainable practices. In some cases their new areas are worse off than earlier work, such as exploration of tar sand. [36] Still the work of Shell and BP has to be put into the context of their competitors. It is worth noticing that as late as June 2002 ExxonMobil's chairman, Lee Raymond, said: "We in ExxonMobil do not believe that the science required to establish this linkage between fossil fuels and warming has been demonstrated". [37]

As is true in the case of a person using a springboard, a company using a springboard approach must ensure that the direction is right, because if it is not, it might bounce back to the old way of doing business or even shift its business in a less sustainable direction.

One major challenge for companies driven by outside pressure and applying a springboard approach is to ensure that basic structures in the companies are

36 http://www.independent.co.uk/environment/the-biggest-environmental-crime-in-history-764102.html

37 http://www.guardian.co.uk/science/2004/jun/17/sciencenews.research

reformed so that the energy that is turned against the company's unsustainable part is directed in a sustainable direction without coming back again due to lack of supporting structure and links to the company's core strategy, KPIs (Key Performance Indicators) and future revenue flows. The company needs to engage with stakeholders that are sceptical of a new sustainable direction. It is especially important to discuss with investors and be transparent about the needs for innovation to ensure that the sustainable direction is profitable.

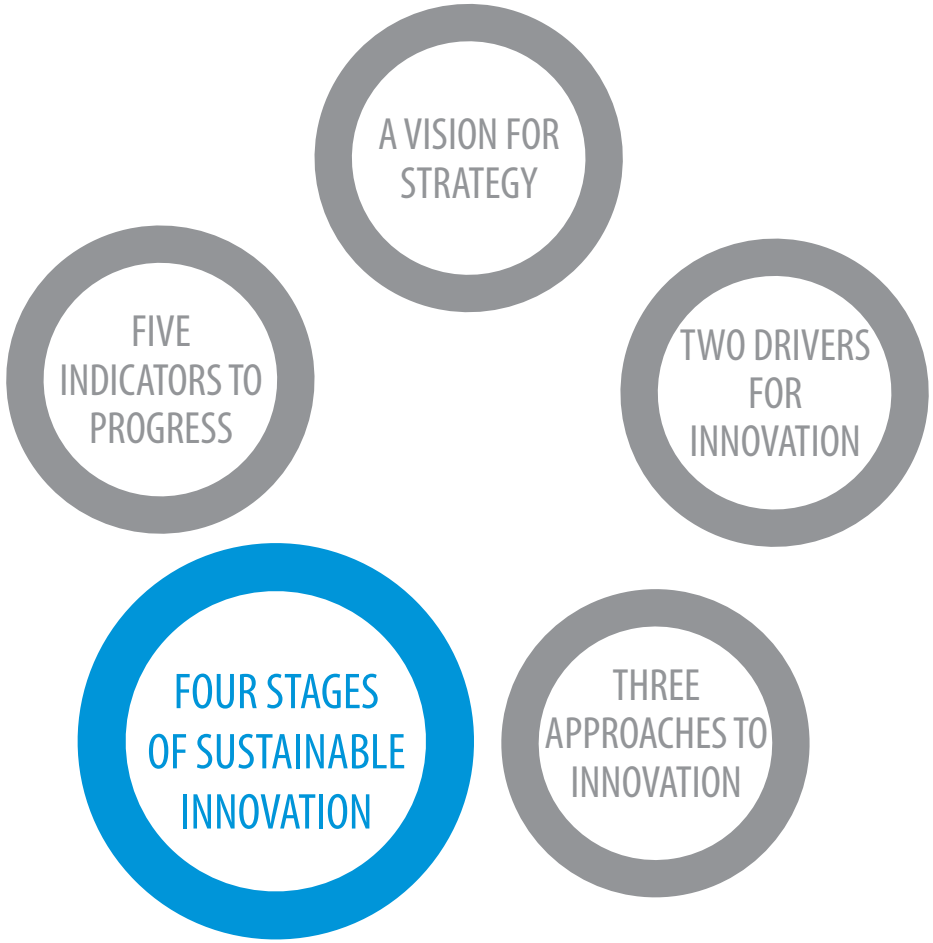
## The Quantum leap approach

The quantum leap approach is for companies that don't have any outside pressure to deliver sustainable solutions but have products and services that are part of a sustainable development. These companies have either new or existing solutions that can help society become more sustainable.

One of the challenges for a company applying a quantum leap strategy is that they might have outside pressure in an area that is not that important, but it may shift the focus away from the proactive strategy. The internal energy use by IT companies is an example of this. It is not irrelevant, but it represents approximately 2% of the global emissions and IT companies can provide low carbon IT solutions that provide a significant reduction of the other 98% emissions. In such a situation, it is not very strategic to spend most of the resources addressing the 2% internal emissions while ignoring the 98% they can help reduce overall emissions to a considerable degree.

Biotechnology is another sector where focus so far has been on their internal environmental performance, or risk with certain technologies. These are important areas, but there are also significant opportunities with smart biotech solutions using biomimicry. For serious biotech companies that stay away from high risk technologies, there will be significant opportunities for a quantum leap approach.[38]

38 http://en.wikipedia.org/wiki/Biomimicry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# FOUR STAGES OF SUSTAINABLE INNOVATION

It is important to establish the ambition for innovation within the company. In many cases different kinds of innovations are needed on different stages at the same time. For instance, the EHS department might need 'innovation' to comply with new legislaton, at the same time the product development division may want incremental innovation to keep up with competitors's enhanced performance, and at the same time the CEO and the senior management team might decide that they want to support transformative innovation to move into new business areas.

## Reactive

This is probably still the most common stage and usually treated as innovation in relation to sustainability today. Due to new legislation, changing customer preferences, buyer demands, competitor moves, media attention and others, companies find that they are under preassure to change. There is a tendency to resist change or adapt to secure existing business deals. Increasingly however companies try to comply with legislation and improve their performance. The incremental innovation is an important part of strategies of most companies to ensure that resource efficency and environmental improvments are constantly improving.

## Incremental

Leaving an ad-hoc approach to sustainable innovation behind, many companies now try to build in systems for constant improvement using ISO systems and other management systems. The case studies have demonstrated that incremental steps, beyond-compliance processes – addressing current issues of cost, risk and footprint reduction – have been an important step towards a better understanding of what sustainability means. Indeed, pollution prevention and product stewardship have succeeded in reducing waste, emissions and impact, while simultaneously reducing cost risk and stakeholder resistance. The incremental gains are generally inadequate to change the course fundamentally.

The first step towards sustainable innovation is often focused on reducing risks and cutting costs. This means reductions in waste, air emissions and energy use. Companies come to understand that their sustainability efforts will end if they don't demonstrate a viable commitment to cutting their environmental footprint and reducing risks today.

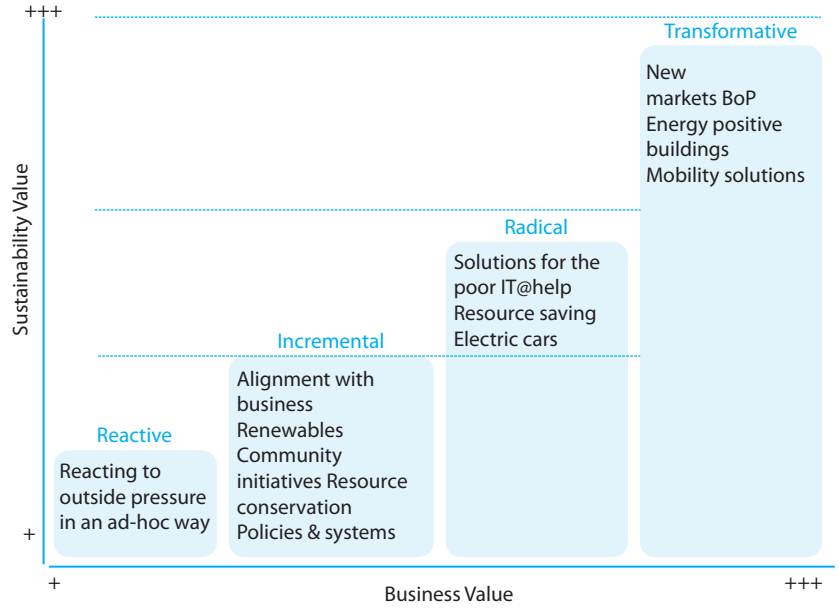
Demonstrating significant progress on reducing waste and emissions is crucial for external credibility. But keeping an eye on the bottom line is equally important inside the company. Cost reductions can often go straight to the bottom line, improving competitiveness and reducing risks.

Reaching out beyond internal borders to engage outside stakeholders, including powerful community groups, NGOs and regulators, is unusual for most companies. This nature of engagement can often be defensive and combative. Listening to many people with whom they do not usually interact and taking their input seriously are crucial to the process of sustainable innovation.

For innovation to be successfully introduced into the marketplace and accepted by society, it must be based on many forms of partnerships and continuous dialogue with stakeholders, including government, NGOs and academia. Innovation that does not address pressing human needs will not advance sustainability. Likewise, a vision of sustainability detached from science and technology will not succeed.

Something fundamental must change if we are to accommodate a burgeoning population of nine billion globally. Looking at the overall trend and the need to bring billions out of povery, it is obvious that incremental innovation is not enough. The transport system, energy system and urban development today make buildings and energy part of the problem rather than part of the solutions. Moving beyond incremental improvments to transformative solutions will allow this to change.

## DERIVING VALUE FROM SI2



## Radical

A company's growth trajectory is what will propel it to create sustainable value and provide it with the ability to make a significant positive difference in the world.

It is at this stage that companies ask questions like:
How are we going to bring our products and services to a larger world and shift our way of thinking about global social and environmental issues?
?How are we going to reach people who want and need to improve their quality of life and standard of living?

Many of the advancements pertaining to sustainability initiatives to date have been achieved within manufacturing plants. But as companies reach out to new markets, they may realise that their products have far greater impact than their manufacturing facilities.

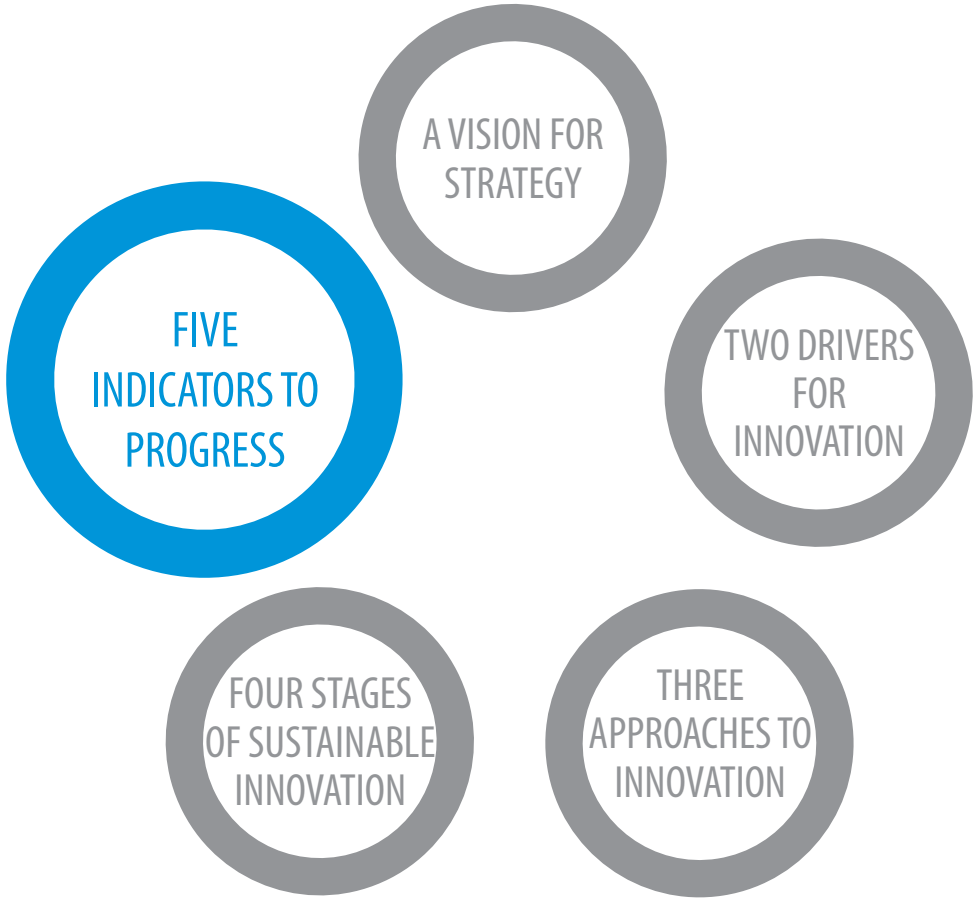
Driven by an accelerating rate of technological change, radical innovation is a vital stage in transition to sustainable business and low-carbon economy. In doing so, the corporate sector becomes a primary driving force for sustainable development. This is the advantage that social enterprises presumably begin with.

## Transformative

When a company begins to look towards the future, the shift in focus is transformational. Many companies, for example, are reinventing themselves. The first-half of the 21st Century will witness many companies embracing this approach and will involve a focus on the combination of bio-mimicry, natural material use and its recycling and others, in a most environment friendly and coservation oriented manner .

In addition, companies need to be focussed on few 'mega sustainability trends' that will shape the markets of the future: the drive for renewable energy and materials, the demand for greater safety and security and the need for increased food production. Also vital is how some of the unmet needs could be met by rethinking delivery processes and methods.

Leapfrogging to inherently clean technologies through disruptive business models, for instance, at the base of the pyramid, enables companies to confront directly the sustainable development challenges. These also provide the basis for the repositioning and growth that will be needed for companies – and society – to thrive in the future.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# FIVE INDICATORS TO PROGRESS

A long-term approach requires business leaders to make judgments that incorporate long-term measures into definition of success.

## 1 Create a sustainability vision

Many companies cannot survive without a great vision. Especially in the current climate, how can an organisation survive without a well-defined vision? It's not just about the vision-statement alone. But a real vision – a vivid enough picture of the future that has no boundaries, it is larger then the organisation itself and it is lofty enough to want to work hard for. If a company has a great vision, everyone can see a clear direction and a focused path to the future. Good organisations have a vision. Great organisations redraw the vision for the entire society. Traditionally it has been said, without a vision, the company will fail. Now, without a sustainability vision, the company is bound to fail.

2

## Ensure leadership conviction

A comprehensive sustainability strategy can only be implemented with support from the top by leaders who have strong convictions. Long-term, sustainable profitability is the key measure of success and such profitability comes through creating the right products and services for the right customers over time. Such convictions should be reflected in the way leaders identify opportunities that are radically different from those prevailing in current times.

New opportunities and challenges emerge and it is important that a company spends resources to stay ahead as a leader. The world needs companies that produce tough leadership material and explore new ways to deliver sustainable results. These leadership initiatives must be clearly linked to the key challenges, or open up a discussion for potential new challenges and opportunities that have not been acknowledged so far in society.

3

## Check if there is a strategy pay-off

Is the sustainability-driven innovation and profit-making strategy paying-off? Transformations are not trivial. Implementing a sustainable innovation strategy requires internalising sustainability notions in profound ways. Sustainability-based thinking, perspectives and behaviours are integrated into everyday operating procedures and the culture of the organisation. When these migrations happen, the metamorphosis is underway. The payoff is tapping into the revenue, innovation and productivity side of the sustainability business case rather than just the risk mitigation and cost-savings side.

## 4 Work with stakeholders

No company can achieve transformative change alone. To work with other companies is therefore necessary. To present results from these collaborations is also important. As many companies focus more on communication than actual results, it is important for serious companies to use independent verification of the results and ensure that collaboration is encouraged with those groups that can help keep the focus on actual results and not mere communication. To actively be a part of creating new networks that focus on concrete reductions, it is also important that the companies help to develop tools to calculate the savings from the networks that they participate in.

## 5 Measure value-add

Annual or quarterly financial results tell only a part of the story. Social and environmental factors also play a part in any holistic process of performance measurement because a company with a good record in these areas will attract employees, and build trust among current and potential employees, customers and governments, while a company with a poor record will suffer increasing isolation.

Companies need to design such long-term measures and metrics, explaining to the external world why these are valid as indicators of sustainable value creation. How many people have they helped to move out of poverty and how have they provided solutions that reduce use of natural resources and improve quality of life?

For innovation to work, as argued earlier, employees must be fully engaged – more often, everyday, in every project they are contributing to - more creative in their work, more passionate, more meaningful, less stressful, collaborative etc.


Identify opportunities
Create solutions
High asset use
Process re-engineering
Technology empowerment
Redesign processes
Mobilise resources
Price modelling
Micro distribution
Beyond job-to-be-done

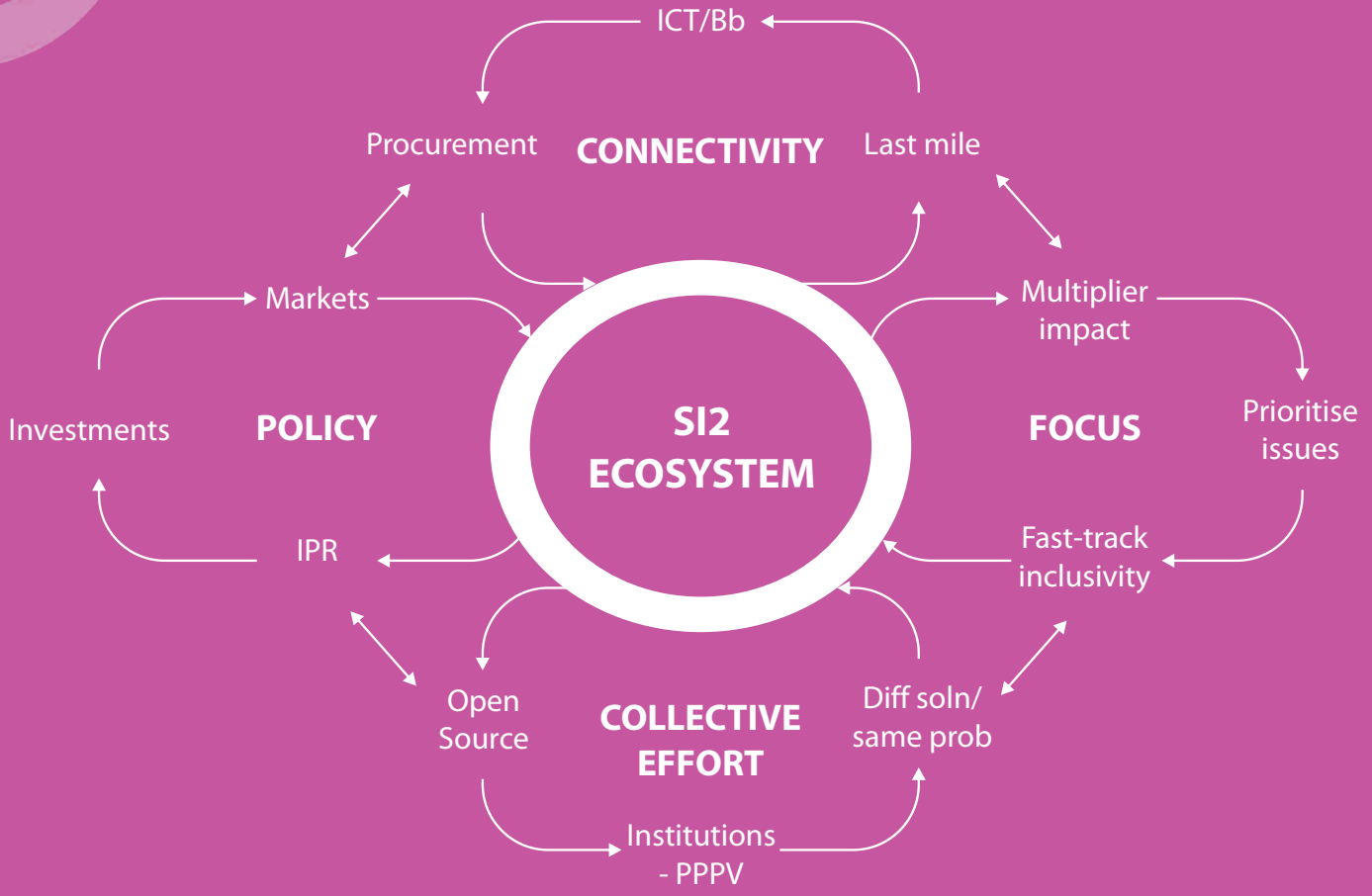
# FOUR ABILITIES FOR SI2

There are four distinct features that have defined the ability of these businesses to create something fundamentally different. One, they created high quality solutions at affordable prices for the poorest people of the world. Therefore, their SI2 is based on reducing cost without sacrificing quality standards. For instance, the mortality rate in Narayana Hrudyalaya is much lower than in New York state for similar kinds of heart diseases. Performance of students at Gyan Shala is better than at any of its competitive places. This comes with a conviction that the poor are willing to pay for world-class quality.

The second is to design and implement an entirely different work process. For example, Narayana Hrudyalaya, Aravind, Gyan Shala and others provide uncompromising quality service delivered through highly skilled recruits, but not necessarily through highly qualified graduates. It is an orientation towards skill development rather than credentials. So, process people do not have to be university graduates. In other words, because of the large volumes of people, these businesses are able to attract highly-specialised people, who are oriented towards specific skills, not necessarily globally recognised credentials.

The third is the ability to mobilise very large human resources as well as financial resources. Whether they are economies of scale through mega-central structures (NH and Aravind), or through decentralised structures (Gyan Shala and LifeSpring) or micro-distribution strategies (HUL and others), it is the ability of each one of them to mobilise human and financial resources. But each one of them has sufficient scale so that they can have specialists. Here, each human resource is a specialist in a highly special sub-process, which is possible only if scale is to be achieved.

Finally, the ability to identify opportunity very differently. Global standards for the poor come from the grassroots and not necessarily Western standards. This is a major lesson to be learnt: that you can combine high quality, affordability, scale and decentralisation simultaneously. It is this that enables one to create a fundamentally different innovation model that is both sustainable and inclusive.


ICT/Bb
Procurement
CONNECTIVITY
Last mile
Markets
Multiplier impact
Investments
POLICY
SI2 ECOSYSTEM
FOCUS
Prioritise issues
IPR
Fast-track inclusivity
Open Source
COLLECTIVE EFFORT
Diff soln/ same prob
Institutions - PPPV

# SI2 ECOSYSTEM

Innovation ecosystem is understood as the aggregate of public and private organisations that contribute to the generation and application of new technological and market knowledge, and policies and incentive systems within an economic system to support innovation process. Ecosystems such as these are receiving increased attention from policy makers as it helps to map out actors involved in innovation generation, to identify the linkages among them as well as gaps and missing links reducing various capabilities.

Creating innovation ecosystem is necessary to enable solutions that are sustainable and inclusive. Thus called SI2 ecosystem primarily adds value to existing innovation ecosystem. Considering there are basic challenges to sustainability and inclusivity, such as gaps in physical infrastructure that provides last-mile connectivity with beneficiaries, SI2 ecosystem includes bridging such gaps, which may not be found in otherwise evolved innovation systems.

The SI2 ecosystem has four key subsystems that interact with each other. These are: focus on issues, connectivity through physical infrastructure, policy that nurtures innovation, and collective effort between different actors.

A credible ecosystem should identify priority issues from time-to-time. These issues include the environmental and social challenges that need to be addressed, but they also include identification of bottlenecks and hurdles in promoting innovation and making them succeed. Prioritisation helps fast-track progress on some of the chronic and

immediate challenges. Often, SI2 creates multiplier impact on connected issues. For instance, provision of renewable based decentralised energy tackles twin challenges of energy poverty and carbon emissions.

Physical infrastructure to connect innovators with financiers and ultimately users is an uncompromising success factor of good SI2 ecosystem. Last mile connectivity also using modern technologies bridges many gaps in taking innovation to marketplace. However, preferential procurement for SI2 solutions can assist to fast-track progress, create multiplier impact and enable up-scale.

In addition, there is also a need to provide the physical infrastructure for an innovation ecosystem, including broadband Internet access, seed funding to bridge the "valley of death" between the development of a technology and its ability to generate a sustainable revenue stream for a company, and incentives and effective business services to make investment in aspiring entrepreneurs more attractive.

The importance of SI2 enabling policy can only be emphasised, and this is best provided by governments. Channelling investments to facilitating creation of market and providing a healthy IPR regime are within the purview of governments. Changes in industry policy could also foster more effective collaborations with higher education. Industry "pull" relevant research from universities by jointly identifying their needs for pre-competitive research and communicating those needs to relevant experts at universities, rather than waiting for academia to approach them with products or processes of potential commercial value.

To develop a thriving innovation ecosystem requires a fundamental reorientation toward entrepreneurship, commercialisation, and collaboration on the part of government, industry, not-for-profits, academia, and investors. It is a collective effort of many actors in jointly developing solutions. This could potentially reduce unnecessary duplication to some extent.

Building a robust innovation ecosystem will pay off in many tangible ways: in more powerful research in fields of direct relevance to our everyday lives; in new high-technology businesses that leverage the ideas; in higher-paying jobs, more vibrant academia, and an economy that is more sustainable; and in increased tax revenues to support programmes and services that benefit all.

# AFTER WORD

Examples in this report epitomise what we firmly believe will be the new age of innovation – the age of SI2. It will be the time when new ideas transformed every aspect of peoples' lives.

One doesn't have to search for problems; look around and they are every where. Stare at them and these are solvable problems. Unaffordable healthcare and education, water that is miles away, unreliable energy, livelihoods lost for economic development, waste mounts that sicken people as well as the Earth, and poverty that glares in your face. It is a vicious cycle.

These are our problems. We are central to them. And, therefore, it is for us to solve them through innovative ways. It is for us to be part of the SI2 ecosystem in roles that we can best assume. It requires combination of visionary thinking and baby steps to convert ideas to innovations that work in the marketplace.

# AFTER WORD

There are no doubt myriad ways of SI2 for agriculture, energy, health, water or sanitation that people are able to use. Engineers, scientists, financiers, entrepreneurs and others can innovate and deliver the means for increased productivity and social benefits.

SI2 transforms problems into solutions. It is a blend of bottom-up and top-down processes that brings the outside in, and overcomes limitations of solitary actions. The six strategies, five steps and four abilities enable us to do just that.

The positive economic impact of SI2 for society is so profound that it leverages productivity platforms and elucidates the power of collaborative efforts from the bottom up. Although this may be less dramatic when applied to innovations beyond technology platforms, it still holds true. Technology allows ordinary people to become more productive, adds to economic activity, spreads widely, and impacts many other areas. This creates a virtuous cycle. The potential of this virtuous cycle lies in breaking into the vicious cycle.

The positive economic impact of SI2 for business is also so profound that it extends the competitive advantage from traditional to new markets. It even goes beyond, in some cases, to disrupt existing industry and create completely new ones. Some of the industries at the edge of disruption are healthcare, energy, and mobility. These will, of course, demand technological breakthroughs and huge investments. But for these breakthroughs to succeed and investments to earn returns, innovations will have to work in the market place.

The positive economic impact of SI2 for governments too is profound that it adds to macro competitiveness, generates an economic system based on knowledge, raises guard to economic downturns, and creates an inclusive socio-economic culture.

The need for SI2 is, if anything, greater now than ever before.

# RESOURCES

Ashoka
www.ashoka.org

Center for Social Innovation
http://csi.gsb.stanford.edu

Centre for Innovation, Incubation and Entrepreneurship
www.ciieindia.org

Changemakers
www.changemakers.com

CII-Raunaq Singh Innovation Grid
www.innovationgrid.org

Honey Bee Network
www.sristi.org/hbnew

International Business Leaders Forum
www.iblf.org

National Innovation Foundation
www.nif.org.in

Schwab Foundation
www.schwabfound.org

Stanford Social Innovation Review
www.ssireview.org

World Business Council for Sustainable Development
www.wbcsd.org

The CII-ITC Centre of Excellence for Sustainable Development is an institution that creates a conducive, enabling climate for Indian businesses to pursue sustainability goals. It creates awareness, promote thought leadership and build capacity to achieve sustainability across a broad spectrum of issues.

A pioneering effort by CII, the Centre is the fountainhead of ideas and practices to promote Sustainability. It enables Indian businesses become sustainable, and channels the potential of Indian industry to power India's agenda for inclusive growth and sustainable development. It enables businesses transform themselves by embedding the concerns of sustainable development into their own strategies and processes.

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