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About Development Alternatives

Development Alternatives (DA) is a premier social enterprise with a global presence in the fields of green economic development, social empowerment and environmental management. It is credited with numerous innovations in clean technology and delivery systems that help create sustainable livelihoods in the developing world. DA focuses on empowering communities through *strengthening people's institutions and facilitating their access to basic needs*; enabling economic opportunities through *skill development for green jobs and enterprise creation*; and promoting low carbon pathways for development through *natural resource management models and clean technology solutions*.

Visit www.devalt.org for more information.

About Technology and Action for Rural Advancement

The Society for Technology & Action for Rural Advancement (TARA) is a social enterprise set up in 1985 at New Delhi, India. It is the 'incubation engine' of the Development Alternatives Group which has been providing development solutions in India and elsewhere.

TARA has been set up to disseminate the "means for creating sustainable livelihoods" on a large scale, and to thus mobilize widespread action to eradicate poverty and regenerate the environment. Briefly described, TARA's mission is to build capacities, incubate business models and manage processes to create economic, social and environmental value on a large scale.

Visit www.tara.in for more information.

About Green Economy Coalition

The Green Economy Coalition (GEC) is a diverse set of organisations from different sectors, including NGOs, UN organisations and businesses. Our vision is one of a resilient economy that provides a better quality of life for all within the ecological limits of the planet.

Visit www.greeneconomycoalition.org for more information.

A New Economy Paradigm for Achieving Genuine Human Well-being and Planetary Health Outcomes a.k.a. – the SDGs

Across the world, there is increasing disenchantment with 'economic growth' as a prime driver of 'development'. The fact is that economy measured in quantitative terms as a result of production and service transactions – the GDP (the more the better) is an easy and therefore popular indicator of 'overall' development. In fact, attempts to value other development parameters have often been in economic value terms as well. Yet we know that when economic growth becomes the primary aim of development, both human well-being, (especially in an equitable manner) and eco-system health suffer.

The emerging view is that economic processes reflect the way humans interact with each other and with their natural environment, resulting in positive or negative social and environmental outcomes. A variety of new approaches exist.

The green growth approach looks at dynamic economic development as fuel for societies to thrive, albeit within eco-system limits. It believes that any country (rich or poor) can increase its GDP by carefully designed strategies to exploit natural capital, making their growth greener and inclusive. Natural capital accounting enables smarter planning and decision-making, wherein countries may choose to conserve natural capital instead of further exploitation.

The green economy approach is "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive" (UNEP, 2011). Strategies for transforming economic processes into green and inclusive require understanding the social and ecological outcomes that must be measured and tracked; greening brown production and service sectors through technology and institutional measures, investing in natural systems and human capacity development (with focus on equity) and devising financial flows to facilitate this shift.

The blue economy argues - the possibility to move from scarcity to abundance through systemic design based on laws of nature, linking different production processes, using local resources and labour. There is no waste in a blue economy; and multiple benefit streams add value to local economies resulting in greater human prosperity. It relies on localisation of interventions for system correction and robustness to address inequities and distributional injustice within capitalist market systems.

Finally, the circular economy, an alternative to linear (make – use – dispose) economic growth, promotes "closing resource loops" in production cycles to maximise service value generated per unit of resource used, and subsequent recovery and regeneration of products and materials at the end of service life. Relying on technology and business model re-engineering, shifts in consumption patterns are expected to be driven by changes in production systems. A circular economy model need not be very localised or decentralised, breaking sectoral silos it focuses on resource use efficiencies and waste reduction but does not address social inequities.

There are some subtle and some significant differences in the approaches outlined above and both passionate and moderate criticisms of each. What is common, however, is that each looks at economic processes as means to achieve human prosperity and environmental health and not an end in itself.

What does this mean for India? A country of economic contrasts, its economic growth trajectory seen concurrently with its human development track record and state of environment leaves much to be desired. The country is set to design a 15 year perspective plan for sustainable development. Needless to say that the economy will need a serious re-design. Whatever be the approach(es) - new or a combination of existing, one aspect is clear; the approach, rooted in realities of this complex nation, will need to be based on key fundamentals that put both people and environment at the centre of its formulation. It will need to be based on the principles of: system integrity across sectors and resource flows that impact communities and their environment; efficiency and maximisation of service from resources with a zero waste credo, harmony and balance of natural systems with human needs; sufficiency determinants of resource consumption per capita and most importantly universality that ensures equity of opportunity and social justice. These principles and resultant tangible metrics will need to guide the evolution of new business models, technology applications, fiscal systems and market regulations. Such a blue print will help us track progress of and achieve genuine sustainable development for all. ❑

Zeenat Niazi

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Greening India's Growth towards a Sustainable Economy

India is one of the fastest growing economies in the world. It has in fact reached a growth of 7.5% during the period January-March of 2015 as compared to China's 7%. This has been quite impressive considering the economic slowdown globally over the last couple of years and the lack of adequate financial reforms by the Central Government.

Projections by international institutions (CID, Harvard University) show that India will continue to sustain its economic growth over the next couple of decades. This is contrary to the continued slowdown of China pegged at 4.3%. It has been projected (PWC 2016) that by 2050 India will be the second largest economy in the world after China, overtaking even the US. This sustenance of growth will be mainly due to the emerging youth population of India. It will not be possible for all of them to be employed, but they can be engaged in self-employment creating small and micro enterprises. Their employment will ensure greater share of revenues to the government in the form of taxes and other social exchanges which are the building blocks for the countries growth.

Most of the economic growth in India will be in the services and the manufacturing sector. The other sectors of importance will be mining and quarrying, electricity, gas and water supply, construction and transport. This will be sustained due to the recent policies of the government launching the 'Make in India' campaign to promote India as the most important and emerging hub for manufacturing.

Whereas the economic growth signs are positively riding on the manufacturing sector, questions arise on the issue of raw material availability for driving the growth. The major and critical raw materials to cater to the manufacture and infrastructure growth are steel, coal, cement, sand and aggregates to name a few.

To fuel the growth of the country one of the major raw material is coal. This is used as a basic raw material for power generation and also for producing steel, cement and other processed goods. Reports have predicted that India has enough coal to last for centuries. However, reports by TERI suggests that with current rates of consumption, we have enough coal and lignite to last for 140 years. If the country has to sustain the projected economic growth rate, then the total extractable coal reserves will last only 45 more years.

India ranks sixth in the world on the reserves of iron ore next to Australia, Russia, China, United States and Brazil having a projected reserve of 8,100 million metric tonnes. However, the future looks quite bleak with estimated life of the total reserves at 20-25 years (considering the increased rate of economic growth).

Thus to sustain the growth of the country in a sustainable manner two issues becomes important:

- Availability of natural resources for the future generation.
- Development without degrading the environment.

This requires a paradigm shift from the usual nature of doing business or production by standard processes and techniques. Whereas the business profits and goals need to be kept in mind, the issues of environmental degradation and resource availability are of prime concern.

Development Alternatives has been working for the last three decades on developing technologies which minimise the use of virgin natural resources and reduce pollution and the use of energy. This has been made possible through the use of industrial waste materials to realise improved profits through reuse and recycling. ❑

Soumen Maity

Source: This article was published in Development Alternatives Newsletter Vol. 26 No. 09 dated September 2016

Sustainable Development is Failing but there are Alternatives to Capitalism

All over the world, environmental justice movements are challenging growth-oriented development and neoliberal capitalism

In the face of worsening ecological and economic crises and continuing social deprivation, the last two decades have seen two broad trends emerge among those seeking sustainability: equality and justice.

First there are the green economy and sustainable development approaches that dominate the Paris climate summit and the post-2015 sustainable development goals (SDGs). To date, such measures have failed to deliver a harmonisation of economic growth, social welfare and environmental protection.

Political ecology paradigms, on the other hand, call for more fundamental changes, challenging the predominance of growth-oriented development based on fossil fuels, neoliberal capitalism and related forms of so-called representative democracy.

The false answers of the green economy

If we look at international environmental policy of the last four decades, the initial radicalism of the 1970s has vanished.

The outcome document of the 2012 Rio+20 Summit, The Future We Want, failed to identify the historical and structural roots of poverty, hunger, unsustainability and inequity. These include: centralisation of state power, capitalist monopolies, colonialism, racism and patriarchy. Without diagnosing who or what is responsible, it is inevitable that any proposed solutions will not be transformative enough.

Furthermore, the report did not acknowledge that infinite growth is impossible in a finite world. It conceptualised natural capital as a "critical economic asset", opening the doors for commodification (so-called green capitalism), and did not challenge unbridled consumerism. A lot of emphasis was placed on market mechanisms, technology and better management; undermining the fundamental political, economic and social changes the world needs.

A banner at the Put People First March ahead of the G20 meeting in 2009

Photograph: Dan Kitwood/Getty Images

In contrast, a diversity of movements for environmental justice and new worldviews that seek to achieve more fundamental transformations have emerged in various regions of the world. Unlike sustainable development, which is falsely believed to be universally applicable, these alternative approaches cannot be reduced to a single model.

Even Pope Francis in the encyclical Laudato Si', together with other religious leaders like the Dalai Lama, has been explicit on the need to redefine progress: "There is a need to change 'models of global development'; [...] Frequently, in fact, people's quality of life actually diminishes [...] in the midst of economic growth. In this context, talk of sustainable growth usually becomes a way of distracting attention and offering excuses. It absorbs the language and values of ecology into the categories of finance and technocracy, and the social and environmental responsibility of businesses often gets reduced to a series of marketing and image-enhancing measures."

Radical alternatives

But critique is not enough: we need our own narratives. Deconstructing development opens up the door for a multiplicity of new and old notions and world views. This includes buen vivir (or sumak kawsay or suma qamaña), a culture of life with different names and varieties emerging from indigenous peoples in various regions of South America; ubuntu, with its emphasis on human mutuality ("I am because we are") in South Africa; radical ecological democracy or ecological swaraj, with a focus on self-reliance and self-governance, in India; and degrowth, the hypothesis that we can live better with less and in common, in western countries.

These worldviews differ sharply from today's notion of development, challenging the dogmatic belief in economic growth and proposing in its place notions of wellbeing. They are internally diverse, but they express common fundamental values, including solidarity, harmony, diversity and oneness within nature.

There are already thousands of initiatives practicing elements of such socio-ecological transformation: the reclamation of indigenous territories and ways of life in the Americas, the Zapatista and Kurdish movements for self-governance, solidarity economies, producer cooperatives, transition towns and community

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URL: https://www.theguardian.com/ sustainable-business/2015/jul/21/ capitalism-alternatives-sustainable-development-failing?CMP= share_btn_tw

currencies in Europe, land, forest, and direct-democracy movements in Latin America and South Asia, the rapid spread of organic farming and decentralised renewable energy across the world, and others.

Many of these form a basis for transformational politics, potentially supported by the case with Syriza in Greece and Podemos in Spain. This is what has been called plan C, a reinvigorated bottom-up project of the commons and communal solidarity. This would be an alternative to the failed plan A (austerity) and untested, but flawed, plan B (Keynesian growth based on further indebtedness).

The inability or unwillingness of UN processes to acknowledge the fundamental flaws of the currently dominant economic and political system, and to envision a truly transformative agenda for a sustainable and equitable future, is disappointing. Even as civil society pushes for the greatest possible space within the post-2015 SDGs agenda, it must also continue envisioning and promoting fundamentally alternative visions and pathways.

Radical wellbeing notions are unlikely to becoming prevalent in the current scenario. But it is not an impossible dream. When even the green economy fails to deliver – as it inevitably must – people everywhere will be looking for meaningful alternatives.

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Ashish Kothari

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SDGs and their Implication for Businesses

The rise of knowledge societies and the rapid technological advancements have inarguably contributed towards raising standards of living across the world. However, many view that the global challenges that we face today are a result of past achievements in science and technology. For example, some medical technologies have helped in decreasing mortality rates of humans compared to the last decade. While other technologies such as nuclear weapons have had negative effects on human and environmental health.

It is not a debate of whether the continued advancement of these technologies will lead to a better future or not but it is about realising how wisely technology can be used to solve the grand challenges of society.

Technology is an integral component of business. Almost all businesses that exist today are dependent on technology. Technologies and business have become inseparable to an extent that if we were to take away technology, virtually all business operations around the globe would come to a grinding halt leading to an economic collapse. The SDGs present a huge opportunity for business-led solutions and technologies to be developed and applied to address the world's biggest sustainable development challenges.

SDGs and Business Relevance

Sustainable Development Goals (SDGs) were designed to pick up from where the MDGs left off. The list of 17 SDGs extend beyond the goals of MDGs and stress on everything from zero poverty, zero hunger, good health, quality education, gender equality, clean water and sanitation, affordable clean energy, to decent work and economic growth, innovation, reduced inequalities, sustainable cities, responsible consumption, climate action, unpolluted oceans and land and partnerships to achieve the goals.

One of key difference between the SDGs and the Millennium Development Goals (MDGs) is that businesses have been involved in developing the SDGs. Also unlike the MDGs, SDGs represent a common language that is more understood by the government, civil society and business. For example, Goal 8, Goal 9, Goal 12 and Goal 17 significantly acknowledge the role of business in achieving the global development agenda.

SDGs primarily emphasise the call for transformation in how societies interact with the planet and its ecosystems. Achieving such transformations heavily relies on action and collaboration from all actors such as governments, businesses and civil societies.

SDG awareness amongst business community is high (92%) compared to the general population (33% citizens aware of SDGs)

Source: PwC SDG Engagement Survey, 2015

Although the SDGs primarily target governments, the key role that businesses can play in achieving the global goals is undeniable. They must be seen as the channel for achieving all SDG goals that focus on key areas such as people, planet, prosperity, peace and partnerships.

Business Case for SDGs

The global goals represent universality and everyone has a role to play in delivering it. The business case for SDGs is based on the understanding that business and social values are inextricably linked. When business profits by solving social problems, it benefits society and business performance simultaneously while creating solutions that are scalable. For instance, businesses can play a role by innovating new technologies, products, services and business models such as developing clean energy, reducing emissions and waste, boosting the productivity of smallholder farmers, creating new market opportunities for MSMEs etc.

Successful implementation of the SDGs will provide businesses with numerous practical advantages and business opportunities including:

- Tackling sustainable development challenges while reducing legal, reputational and other business risks. This improves trust among stakeholders and strengthens a company's license to operate.
- Building resilience to costs or requirements imposed by future legislation.
- Lifting billions of people out of poverty, thereby growing consumer markets around the world.
- Strengthening education, thereby fostering more skilled and engaged employees.
- Ensuring that the global economy operates safely within the capacity of the planet to supply essential resources such as water, fertile soil, metals and minerals, thereby sustaining the natural resources that companies depend on for production.
- Creating more effective partnerships with governments, civil society organisations and other companies.

SDG Compass

This is a joint initiative between the UN Global Compact, Global Reporting Initiative and the World Business Council for Sustainable Development. The objective of the SDG Compass is to guide companies on how they can align their business strategies as well as measure and manage their contribution to the SDGs. It contains a self-assessment guide with five steps that can assist companies in maximising their contribution to the SDGs.

SDG Industry Matrix

The SDG Industry Matrix is a joint initiative between UN Global Compact and KPMG. The project will highlight industry-specific examples and ideas for corporate action that are related to each of the SDGs and the findings will be presented through a series of reports.

Business for 2030

A U.S. Council for International Business initiative that showcases examples of how business can contribute to sustainable development. Very similar to the SDG Industry Matrix, the site follows a three tired approach that showcases previous and continuing business contributions to sustainable development through the prism of the SDGs.

The Poverty Footprint

This is a collaboration between the U.N. Global Compact and the international advocacy group Oxfam to understand the corporate impacts on multi-dimensional poverty. It is a research partnership that provides an impact assessment of how a company and its value chain are functioning to alleviate poverty.

The Business Call to Action (BCtA)

BCtA is a unique multilateral alliance between UNDP and key donor governments. The global initiative aims to accelerate the progress towards the Sustainable Development Goals (SDGs) by challenging companies to develop inclusive business models that offer the potential for both commercial success and development impact.

Business Charter for Sustainable Development

This is a project by the International Chamber of Commerce which includes practical tools for all business sectors and geographies to shape their sustainability strategies and contribute towards the implementation of SDGs.

Tools for Businesses to help Implement the SDGs

There are multiple tools and resources that can assist businesses to gain the opportunities emerging out of SDGs. Below is a collation of most useful tools that can help businesses figure out how to put the SDGs into action.

Key Challenges towards Implementing SDGs

While there is much for businesses to gain from the implementation of SDGs, there are still challenges in putting the global goals into action. Some key challenges have been identified below:

- Although every business knows its activities and consequences, there is still a lack of clarity in how to measure and monitor actions linked to SDGs.
- New technologies, products, services or business models, very often face constraints within the wider ecosystem that are beyond the control of any single business.
- Many metrics used by the UN and the development community are not in line with what companies measure. A consistent set of key performance indicators is required for measuring development impacts.
- Identifying the few high-priority issues which the business will address.
- There are also structural challenges involved in determining a company's attribution when many partners are involved. ❑

Krishna Chandran

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"Business is a vital partner in achieving the Sustainable Development Goals. Companies can contribute through their core activities and we ask companies everywhere to assess their impact, set ambitious goals and communicate transparently about the result"

Ban KI-moon
Secretary-General, United Nations

Source: This article was published in Development Alternatives Newsletter Vol. 26 No. 09 dated September 2016

Innovation as a Precursor to Green Growth

Green Innovations can further be categorised into 'frontier innovations' i.e. new-to-the-world innovations and 'catch-up innovations' which comprise of diffusion (both across and within countries) and their adaptation to existing green products, processes, organisational and marketing technologies. Thus combining the understanding of innovation in the context of development and what is widely understood as 'green'1, 'green innovation' can be defined as different ways that support and enable wealth creation and achieve more resource-efficient, clean and resilient growth. Examples of these range from technologies that improve energy efficiency, resource efficiency (e.g. Vertical Shaft Brick Kilns, hollow bricks), production processes (e.g., cement industry using municipal waste as a source of fuel, fly ash bricks), design and planning (e.g. urban land use design, industrial symbiosis) etc.

As the above examples suggest, 'green innovation' can to a large extent influence the green growth agenda. Dutz and Sharma (2012), in their paper titled, 'Green Growth, Technology and Innovation' speak of a 'double externality', i.e., of knowledge-related market failures that have a compounding effect on the environmental externalities.

To develop an understanding of the term 'double externality', it is first essential to identify the different mechanisms of innovation. These comprise of direct government funding for research and development (R&D) which includes funding of public labs and universities, grants, soft loans and R&D tax subsidies to private firms for early-stage, pre-commercialisation technology development. These are referred to as supply-push mechanisms that allow for coordinated research with little or no duplication.

In contract to supply-push mechanism for innovation, there are demand-pull mechanisms, for example patents and prize funds. Patents are essentially decentralised self- selected mechanisms where those involved believe that they are most likely to succeed and thus risk their resources for the 'prize of a period of exclusivity' during which product prices are set and the disclosure of knowledge is restricted to other researchers. On the other hand, a prize fund refers to a pre-announced prize which is given to the creators of any innovation that meets defined objectives. Prize funds are considered most relevant mechanisms to promote technologies at the global level for the needs of countries with lower technological capabilities and less developed economies.

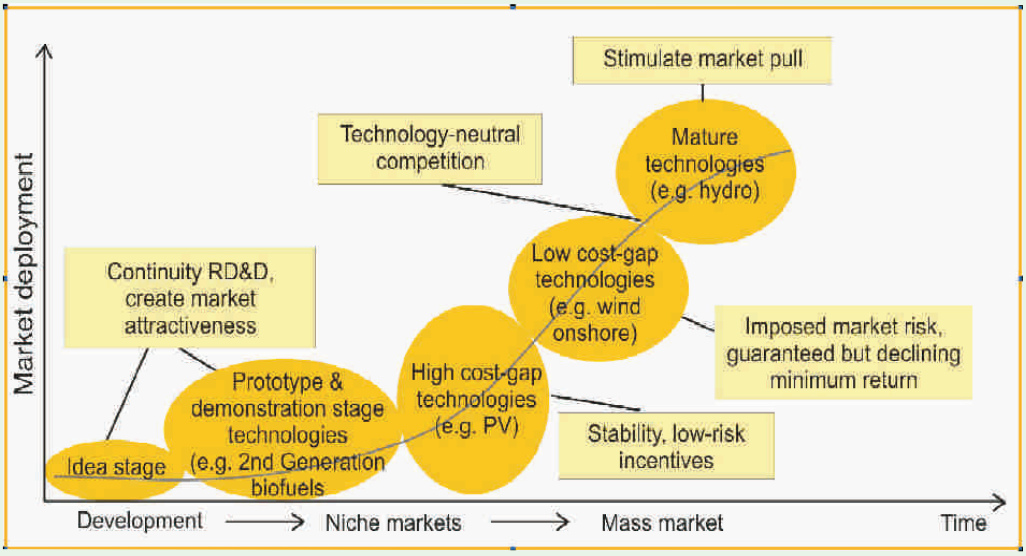
The above mechanisms are suggestive of various R&D policy instruments as drivers of long-term innovation. However, these R&D policies applied on their own are said to result in 'double externalities'. A classic externality problem in the production of knowledge, is that the benefits to society from the particular innovation, may exceed the private benefits from producing it (Schmidt, Hansen, Tops, Jensen, & Jespersen, 2010). Thus, what is evident is that the investments made are often not sufficient in comparison to the societal gains they create, which results in a 'missing price'. While the 'missing price' refers to a negative externality, the benefits to the society as well as to the environment, refer to the positive externality or the positive spill-overs, thus the term double externality.

Green Innovation and the Indian Green Growth Agenda

Research has shown that a significant proportion of frontier green innovation takes place in high-income countries, with Japan, Germany and US accounting for 60 % of the total green innovation worldwide. Between 2000 and 2005, these majorly comprised of greenhouse gas mitigation technologies. Developing countries have a large capacity for catch-up green innovation through new-to-the firm adoption and adaptation of existing green technologies and through indigenous base-of-pyramid innovation (Dutz & Sharma, 2012).

Base-of-pyramid innovations are defined as innovations to meet the needs of poor consumers. These innovations include formal innovations for the poor, primarily those by global and local private companies, public institutions, supported by public subsidies or produced through public-private partnerships. They also include informal innovations by local grassroots innovators which are based on improvisation and experimentation. These innovations aim at meeting the needs of poor households at affordable costs and at scale. Hence these innovations seek to create more products with less resources for a larger audience.

Thus both catch-up green innovation and base-of-pyramid innovation provide developing countries like India, who have lower technological capabilities to direct their green innovation policy agenda needs to take into account their local environmental needs, technological sophistication and implementation capabilities. A survey conducted on green base-of pyramid innovations by Dutz (2012) indicates that there continue to be very few



Policy instruments during innovation cycle

Source: Copenhagen Economics based on IEA (2008)

green base-of-pyramid innovations that have been sufficiently scaled up.

Further it is crucial to revisit the concept of double externality that suggests that that there is no single solution to solve both innovation and environmental challenges. Green innovation policies require to better understand both supply and demand side constraints, barriers to scaled-up commercialisation, identify the benefit-cost of particular policies and their implementation to improve market outcomes. It is often realised that a single innovation policy may lead to the rebound effect. That is to say that a single R&D policy could drive consumer demand towards supporting a technology that lowers the cost of energy used per unit, hence leading consumers to respond by increasing their level of energy consumption. This is called the rebound effect.

Innovation policies in developing countries like in India, need to put in place policy instruments that are able to address the complementary knowledge and environment-related market failures. The optimal combination of policies include both an incentive to stimulate innovation towards influencing more sustainable growth (R&D subsidy that directs technical change towards cleaner technology) and a separate environmental incentive to internalise the pollution externality. This could be in the form of an emission tax or specific targets. Thus a combination of technology and environmental policies can facilitate the creation and diffusion of new environmentally-friendly technologies, while complementary policies ensure that the environmental externality is corrected through stronger incentives for their creation and adoption (Dutz & Sharma, 2012).

Key Recommendations

As is implied previously, the promotion of green growth for most developing countries is largely in the form of catch-up innovation and the diffusion of already existing technologies and lesser in the form of frontier innovation. While developing countries like India do not have the technological capabilities for the creation of frontier innovation, it can neither deny that fact that cost of not adopting, adapting and using existing green technologies can be high in terms of impeding a greener development pathway. Thus innovation policies in India should aim at ensuring removal of existing distortions and weaknesses in the business environment that hinders private innovation, especially through adoption of more open foreign trade, investment and technology licensing regimes, improve access to finance, strengthen skills and capacity development and implement greater demand-side policies like public procurement, regulations and standards.

While there are numerous policy mixes that can enable diffusion and adoption of green technologies, the fact that remains is that there is lack of reliable data on the number of green base-of-pyramid innovations and the evaluation of the impact of these technologies in meeting the needs of the poor consumers. Thus, experimental evaluation with randomised controlled trials and quiz-experimental evaluation of existing technologies will require to be the first steps in identifying the appropriate mix of policies for a greener growth trajectory through the application of effective innovation policies. ❑

Pratibha Ruth Caleb

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Creating Job-Readiness for Emerging Needs

Skilling: An Emerging Need as well as a Solution for Growth

We are growing massively. With nearly 600 million of India's population below the age of 25 years, there is an urgent need for large-scale skilling and employment generation. Skill development and education are the major drivers of any economy. Education is definitely a fundamental building block for any civilised society, but if it is not linked with income generation activities, it can create huge problems. Youth vigour flowing in an unchannelised manner can result in economic, social and political turbulence.

Currently, India is positioned at a place where there is high potential to reap huge economic benefits by tapping on our demographic dividend in the coming decades. The average age of an Indian in 2020 will be 29 years, against 40 years in the US, 49 years in Japan and 37 years in China.1 It is a great opportunity if tapped properly. What the mechanical revolution did to the European economy in the 50s and the oil revolution did to the Middle East economy in the 70s, the skilled manpower revolution can do the same for the Indian economy. The pre requisite, however is that we should be able to aptly gauge and realise the exact requirement of the industrial and service sector globally and accordingly train and certify our youth to a level which is acceptable on the global platform. This is the main reason that now skilling has appeared on the national agenda for development and many policy interventions in this regard are being executed by the Indian government.

Current Gaps in Skilling

The World Bank Enterprise Survey 2014 reveals that the percentage of firms offering formal training programmes for its permanent, full-time employees in India is just 35.9, compared to China's 79.2.

There is a definite need to re-define the relationship of education, employment and skill development. Also, as a very large population, India would never be able to upskill all of its youth across the country through the conventional education framework. We need to do skill building in a manner that it is linked with income generation activities which enables the youth to earn decent livelihoods. Across India, population growth, combined with migration from rural to urban areas and increased urbanisation, have resulted in large pools of semi and unskilled workers, many of whom are unable to integrate socially, politically or economically into the mainstream society. The failure to provide this group with the appropriate skills, or support the upgrading of their existing ones, represents a loss of potential talent across a generation and could lead to a major economic downturn. The magnitude of the problem is represented by the following statistic: for a country that adds 12 million people to its workforce every year, less than 4 per cent have ever received any formal training.2

The Skill India Initiative

The government is already spending several thousand crores every year on skill development schemes through over 18 different central government ministries and state governments. Analysing the potential to become the worldwide hub for sourcing skilled labour, the Government of India has set a target to impart training in necessary skills to 500 million people by 20203 . In this area of skill development, Indian planners have created an enabling ecosystem for skill development for the large unemployed marginalised population. The Union Budget 2015 paved the way for the launch of a much-awaited National Skills Mission to complement the 'Skill India' and 'Make in India' programmes. The revised National Skill Development Policy was also announced in 2015. The National Skill Development Mission was adopted and developed to create convergence across sectors and states in terms of skill training activities. The mission aims to contribute significantly (30 per cent) to the overall target of skilling / up-skilling 500 million people in India by 2022, mainly by fostering private sector partnerships and funding in skill development programmes4.

Better Understanding and Means for Skill Development: NOS

There is no universal definition for skill development. The definition by Kenneth King and Robert Palmer (January, 2006) fits the most in this context. "Skill development is not equated with formal technical, vocational and agricultural education and training alone, but is used more generally to refer to the productive capacities acquired through all levels of education and training occurring in formal, non-formal and on-the-job settings, which enable individuals in all areas of the economy to become fully and productively engaged in livelihoods and to have the opportunity to adapt these capacities to meet the challenging demands and opportunities of the economy and labour market."

The National Skill Development Council (NSDC) through its Public-Private Partnership (PPP) models upgrades skills to international standards through significant industry involvement and develops necessary

frameworks for standards, curriculums and quality assurance. It has developed the National Occupational Standards (NOS) for various skills. These are to ensure the quality and job readiness for various courses. NSDC has approved 38 Sector Skill Councils (SSC) approved in services, manufacturing, agriculture and allied services and informal sectors. These sectors include 19 of 20 high priority sectors identified by the government and 25 of the sectors under Make in India initiative.5

As the scope of skill development has broadened, the contents of training have also widened. Apart from acquiring technical know-how, trainings now a days embody learning and skill acquisition through empowerment and capacity building. 'Training to overcome economic vulnerability' encompasses a much wider set of skills rather than just conventional technical and managerial competencies. In fact, other than the occupational standards, NSDC encourages that every trainee is imparted modules like basic spoken English courses and personality development to ensure the inculcation of job readiness virtues.

TARA contributing to Skill India as NSDC Partner

Technology and Action for Rural Advancement (TARA), a part of the Development Alternatives Group is a non-financial partner with NSDC through its special wing -TARA Livelihood Academy (TLA). TLA reworked its curriculum to be able to apply NOSs to its various skill development and up skilling courses for women and youth.

Gurukul: Banking for the Future

TARA Livelihood Academy with Fullerton India Credit Company Limited is imparting employability courses on banking and finance training for rural youth to make them market-ready for financial institutions. These trainings are being imparted in Gurukul Career Academy Centres in two small cities of Madhya Pradesh and Chattisgarh respectively, ie. Khandwa and Bilaspur. The 180 hours of residential training has the following components:

Training sessions at Gurukul centres

- Banking and Fullerton Specific Content
- Personality Development and Interview Skills
- Spoken English
- Computer Skills
- Facilitation of Placement Linkages
- Post Placement Follow Up for Six Months

Under Gurukul, 455 youth are being imparted training on communication, financial and personality development skills in both the centres collectively. Till date placement record has been 75 per cent. Half of the trainees have been absorbed by Fullerton India Credit Company Limited itself and the rest are guided for market placement with other companies.

Women Empowerment - Stitching Dreams

As a part of Fullerton India Credit Company Limited's Women Entrepreneurship Programme, TLA trainers have not only imparted courses on stitching and tailoring but beyond that as well. The trainees know how to cut the fabric pieces, stitch them together and also things like what is in demand, how to negotiate with different buyers and how to present their ideas. 1000 women who have been imparted this training in the states of Madhya Pradesh and Chattisgarh in Sagar, Jabalpur, Indore and Raipur today dream of their own boutiques and training centres. Some of them have been already linked to the market and some are working from home.

So, this idea of job readiness not only lends hope for the future but also trains minds to craft their own path and follow it with grit and determination. ❑

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and

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2 The Hindu, 23rd March 2015

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Source: This article was published in Development Alternatives Newsletter Vol. 26 No. 05 dated May 2016

Measurement for Transition towards A Green and Inclusive Economy

Measuring the performance of a country, an enterprise or a project is important for better decision making and planning. The kind of indicators used for this measurement often decide the direction and the quality of progress. For a country, the apt indicators help policymakers make better decisions and to re-calibrate plans by including physical and social science information into the decision-making process (DESA, 2007). As a developing country, Indian governments and businesses have the added responsibility of focusing on a development pattern that is inclusive, equal as well as ecologically sustainable. Although this is not a new understanding, there is a lack of alternative indicators that can help us measure our progress correctly.

The hegemony of a neoliberal understanding of growth still thrives and is epitomised by the Gross Domestic Product (GDP) which strongly steers decision making processes at the national and state level. GDP is simply a measure of the sum of finished goods and services produced in the monetised segment of the economy valued on the basis of cost, regardless of its benefit to human well-being, and without acknowledging any difference between productive and destructive, important and trivial, sustainable and unsustainable activities (Jacobs et. al., 2010). GDP does not include informal and subsistence economy, and although there are correlations between life satisfaction and income growth in countries, the rate at which these two increase is not necessarily the same (Stiglitz, Sen, & Fitoussi, 2009).

The Millennium Development Goals and currently the Sustainable Development Goals (SDGs) are some examples at the international level of measurements that look beyond economic growth. As a step in this direction, India has set up the NITI (National Institute for Transforming

India) Aayog which coordinates and collects data relevant to the SDGs as well as enables their fructification, in tandem with the Ministry of Statistics and Programme Implementation (MoSPI). NITI Aayog exemplifies two approaches towards having better measurements. Firstly, it shows a shift from a short five year planning term to a longer fifteen year transformation period. Secondly, it diversifies the pool of progress indicators by looking at multiple (and connected) axes. Managing economies on the basis of a wider set of indicators could avoid economic policy undercutting the aims of social and environmental policies.

Another approach for economies is to mainstream a measurement of our true progress, either as the true GDP of a country or the true progress of a business. This value would include subtractions and additions of various 'externalities' or hidden costs, of change in biodiversity, forest cover, employment rate, the cost of displacement and

What we measure determines where we want to go

dispossession of the per capita income along with a co-efficient for income inequality amongst others. Indeed, this has been attempted in a limited form through the creation of a framework in 2010 to calculate India's 'Green GDP' which would include conventional GDP figures adjusted for the environmental costs of economic activities. Businesses too are looking at corporate sustainability with sincerity and shifting their outlook benefits. A 2016 report on corporate social responsibility in India found that sustainability is central to top performing companies even as 33% of the 217 companies that were studied believed in looking at social responsibility and environmental costs while building business strategies. The Companies Act of 2013 has been touted to have provided a major push in this direction which highlights the role that legislation can play in this transition.

While numerous indicators, most by international NGOs do exist for both governments and businesses to track themselves on measurements that would enable a shift towards a green and inclusive economy, unfortunately, our individual understanding of progress and success remains heavily girdled by numbers of a certain kind – those that allow for too easy a parity to be created. This ease with which we allow such monetary numbers to help us judge our success and that of others should alert us to presence of limits to our understanding of happiness and success. ❑

Tarang Singh

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The Art of Lying Truthfully - Conflict Between Development and Development Indicators

What proportion of the Indian population is poor? In the last decade, the official estimate puts it at roughly 21%, the Suresh Tendulkar committee at 37% and the Saxena committee at 50%, while the Arjun Sengupta commission identified 77% of Indians as 'poor and vulnerable'. The World Bank's PPP estimate of Indian poverty was higher than 40% in 2005, the Asian Development Bank arrived at almost 50% and the current World Bank estimate pegs poverty at around 21% (Ghosh, 2011).

The range of poverty estimates available is dangerous because it allows the politicisation of poverty. Such politicisation neither helps in effective service delivery to the poor, nor does it build trust in these estimates.

Is the problem one of inadequate statistical capacity? There is reason to believe that India's statistical capacity is not so pertinent a problem as the statistics themselves. India scored 77.8 out of 100 in the World Bank's Statistical Capacity Indicator – a composite score assessing the capacity of a country's statistical system based on parameters such as methodology, data sources, periodicity and timeliness of data. While there is room for improvement, it is encouraging that India performed better than comparable nations such as Brazil and China. India was able to execute the 2011 Census at a reasonable cost of USD 0.5 per person, compared to the world average of USD 4.6 per person (Chandramouli, 2011). This is impressive considering the massive challenges posed by India's geographical and cultural diversity. Perhaps it is now time for India to turn its attention to 'what it measures' and 'why it measures' it, alongside improving its statistical capacity.

In the wake of the recently adopted Sustainable Development Goals (SDGs) and the 200+ indicators that member countries need to now monitor and report to the global community, this article explores whether India's development indicators and their definitions truly align with the needs of the poor.

Convenience Definitions

Development is often defined by the indicators used to measure it. I present here two statistics of interest. As of 2015,

- More than 90% of India is electrified.
- 86% of Indians have access to safe drinking water.

The above statements are indeed facts. But the picture of India they paint contrasts with our observations. They are true only because the definitions used allow them to be.

Consider the first statistic. Rural electrification rate is an important indicator to measure progress towards alleviating energy poverty. A village in India would be defined as electrified by the Ministry of Power if it meets the following criteria:

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- Basic infrastructure such as distribution transformer and distribution lines are provided in the inhabited locality as well as the Dalit basti / hamlet where it exists (for electrification through non-conventional energy sources a distribution transformer may not be necessary),
- Electricity is provided to public places such as schools, panchayat office, health centres, dispensaries, community centres etc.
- Number of households electrified should be at least 10% of the total number of households in the village.

Thus according to the above criteria set by the Ministry of Power, it is possible for a village to be 'electrified' even if 90% of the households are not. Indeed, over 90% of India's villages are electrified according to this definition, but a little less than a third of the population still lacks access to electricity according to Census 2011.

Now consider the second statistic. About 86% of Indians have access to 'safe drinking water' according to official data, yet diarrhoea associated with contaminated drinking water is common across India and is the third-most-common cause of death among children under five, killing 13% of the 300,000 who die every year in this age group (Kelkar-Khambete, 2015). The definition of safe drinking water allows this paradox. The Census considers water supply from hand pumps and tubewells as safe as piped drinking water, even though these sources are known to be carriers of several water-borne diseases.

Data submitted to the Parliament in 2012 by the Ministry of Water Resources show that groundwater sources in large parts of India are contaminated by arsenic, fluoride, iron, nitrate, and salinity (Sethi, 2012). The data shows the following:

- Groundwater in pockets of 158 out of the 639 districts has gone saline.
- In pockets across 267 districts, groundwater contains excess fluoride.
- In 385 districts, groundwater has nitrates beyond permissible levels.
- In 53 districts, groundwater contains arsenic.
- In 270 districts, groundwater contains high levels of iron.
- Aquifers in 63 districts contain heavy metals like lead, chromium and cadmium, the presence of which in any concentration poses a danger to health.

There is, therefore, no reason that groundwater should be defined as 'safe' by the government. It misleads the general public.

Measuring what Matters

The gross enrolment ratio (GER) in elementary education (Standard I to VIII) in 2014 was 101.5, and the primary school GER was 110.2 (Ministry of Human Resource Development, 2014). These are interesting statistics as they provide important insights on development that are often ignored.

GER is the ratio of the number of individuals who are actually enrolled in schools to the number of children who are of the corresponding school enrolment age. At the outset, two inferences may be drawn from the statistic.

First, it appears that most of the children in elementary school-going age are enrolled in school. This is encouraging, but it also emphasises the need to shift the focus from 'schooling to learning'. Indeed, in the case of India, there is evidence that despite high enrolment, children in even primary schools are not mastering grade-level competencies. Of all children enrolled in Standard V in 2014, about half are unable to read a Standard II level text (Pratham Education Foundation, 2014).

Second, the GER can be greater than 100% as a result of grade repetition and entry at ages younger or older than the typical age at that grade level. This means that India is faced with the issue of grade repetition and students enrolled in classes that are inappropriate for their age. This is a serious issue that requires attention. Grade repetition is a sign that students are not learning and can create psychological stresses in children. It may even lead to dropping out in later grades. If students are not enrolled in school at the right age, it reduces their ability to learn effectively, as the coursework of each grade is best learnt at the corresponding age for that grade. Even seemingly trivial problems such as the absence of age-appropriate furniture can have an impact on mental health and creativity (Childcare Education Institute, 2009).

There is a dire need for India to shift its focus from merely enrolment to learning. A fresh set of robust indicators need to be developed for the purpose. The Indian government measures learning through its National Achievement Survey (NAS) once every few years. However this is not frequent enough. Each year is a long and crucial period in the schooling of a child while NAS itself takes 2-3 years to complete. Further, NAS is conducted in schools, automatically excluding dropouts and absentee students who tend to be in large numbers in many states.

Lies, Damned Lies and Statistics

'Lies, damned lies, and statistics' is a phrase describing the persuasive power of numbers, particularly the use of statistics to bolster weak arguments. The term was popularised in the United States by Mark Twain (among others), who attributed it to the British Prime Minister Benjamin Disraeli: "There are three kinds of lies: lies, damned lies, and statistics." (Wikipedia)

The indicators described above are important, no doubt, but do not give a holistic picture of development in their respective sectors. There is a dire need to rethink development and redefine indicators in India. Especially now that the basic infrastructure for water, electricity and education seem to exist in most villages, it is important for definitions to encompass the inclusiveness and quality of these facilities. ❑

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Measuring What Matters - Towards a Relevant and Effective Framework for Sustainable Development Indicators

2016 marks the beginning of a new global commitment to eradicate poverty in all its dimensions. The 17 Sustainable Development Goals (SDGs) recognise that the well-being of People is inextricably tied to the health of our Planet and that ensuring sustained Prosperity for All will require genuine Peace and Equitable Partnerships.

But how will we know that the results of our actions are leading to the fulfilment of sustainable development at the most local and the most global of levels and everything in between? This is where indicators come in. Indicators form the back-bone of the SDG framework of the 2030 Global Sustainable Development Agenda. They are expected to be the management tools to help countries develop implementation strategies and allocate resources accordingly.

The situation in India is complex. The federal structure requires ownership of the metrics and the capacities to track development at the state level. The diversity across the length and breadth of the country means that each state will need to relate to a set of indicators that address their specific challenges, priorities and preferences while feeding into a common national indicator framework. This complexity is compound-ed by a nascent 'NITI Aayog', required to coordinate a nation-wide consultative process in a very short time frame.

In addition to the institutional challenges we face today, the indicators need to balance real development needs with pragmatic operational requirements. Obvious operational concerns demand that the development of national SDG indicators take into account the practical aspects of data collection for measurement – its source, periodicity, disaggregation level and collection methodology. Selected indicators must be relevant to the target. They must be measurable, easy to communicate and should be developed through due consultation with different stakeholders.

Besides the availability of data and human and institutional capacities for data management, one of the biggest concerns of tracking development is the definition of - 'What is being measured'. What we value determines what we chose to measure and what we measure will determine what we will act upon.

For example, with 300 million people lacking the benefits of modern electricity, indicators regarding energy access must not only measure the number of villages electrified by poles and wires reaching these and quantum of renewable energy produced but more importantly, the definition of 'access' must include quality and reliability of the energy service at the last mile and how 'green' this energy is.

A key desirable feature of an indicator is its representation of multiple targets. Many researchers have indicated the complex and interrelated nature of the SDG framework. This provides an opportunity to design smart indicators that reflect the connections and inter-dependence across the goals and respond to more than one target. An apt example is land - a limited eco-system on which depend most of the goals such as those relating to agriculture and therefore food security, urban growth, industrialisation, forests, energy, biodiversity etc. Availability, access and rights to land impact poverty and equity issues and therefore it is necessary to track shifts and trends in the human use of land and terrestrial eco-systems in order that we can track and predict what may happen to our food systems, our forests, our community economies as well as our industrial economies.

India is standing at very interesting cross-roads. Innovations in technology and delivery systems can help us leap-frog many hurdles and achieve our development goals for sustainable food production, energy access, sanitation, drinking water, health and shelter. The motivation, however, must be the greater empowerment of and expansion of human capacity and the conservation, indeed revitalisation of, our natural capital forming as it does the life support of our existence. The process must essentially be participative, accountable and just. The indicators must therefore measure the processes and the health of our life support systems along with expected human development results. And so while it may be necessary to prioritise in order to have a handle-able set of indicators to work with, it would be wise to select those that indicate the most connections across the goal framework so that these provide relevant information and knowledge to guide policy and programme action. ❑

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Capacity Building for a Resource Efficient Economy

The quest for alternative models of sustainable growth to address the global challenges of natural resource depletion and mitigating carbon emissions has led to the evolution of new green products and services. Routing investments in green technologies and business models can bring out innovative products that can revolutionise many sectors of the industry, mainly, the ones that are most resource and energy intensive like the construction sector.

This is one of the fastest growing sectors in India today. It is solely responsible for emitting about 22 per cent of India's total annual CO2 emissions. It's impact on resources is set to increase further due to the rapid economic growth in India, driven by increasing population, rising income levels, increasing urbanisation rates along with the rise in per capita consumption of materials thereby adding immense pressure on the finite natural resources.

Currently, the per capita consumption of materials in India is around 1.5 tonnes, which is a remarkable fivefold increase since 1980 and if the trend continues, the construction sector will have the highest levels of material consumption in India within a decade (IGEP, 2013). The combined challenges of climate change and exploitation of natural resources urges us to deviate from the current path adopted by the sector and look for different options and alternate modes of economic growth that are most resource-efficient and which have the lowest environmental impact.

Approaches to Resource Efficiency

Resource efficiency (RE) can be simply defined as 'creating more with less'. In broad terms, it is a way of delivering more with less resource inputs in a sustainable way thus minimising the impact on the environment. RE has always remained a priority in the policy agenda around the world as countries realise its significance for transitioning to a green economy.

Use of secondary raw materials is seen as a practical approach to achieving resource efficiency through decoupling of critical building materials. A secondary raw material can be anything ranging from waste from another industry or an alternate building material available in nature that could be substituted in place of a critical resource (e.g. sand, stone and gravel). Construction and Demolition (C&D) waste is one such secondary raw material which offers great recyclability potential for utilisation in various construction applications.

Focus on Non-Technological Developments

Current innovations fostering resource efficiency tend to focus primarily on technological advances and solely focusing on such technical developments will not make a greater impact. Non-technological drivers such as local capacity building and training have often played a prominent role in driving these innovations further while complementing these technological changes. For instance, diffusion of green technologies whether it be solar or biomass technologies, to regions could fail over time if local capacities were not developed for local manufacturing, repairing, operating and maintaining the facilities. Evidence from various sources suggests that successful technology development and diffusion have often emphasised the need to develop and strengthen local capacities.

Why is Investing in People Important?

The industrial shift to adopting resource efficiency brings out new opportunities for growth which demands new set of skills and failing to bridge the skills gap can seriously hamper the growth of the industry. Capacity building lays a solid foundation for effective and efficient functioning of activities. It is a broad term which encompasses a multitude of activities ranging from strengthening processes, systems and rules that influence collective and individual behaviour and performance to enhancing people's technical ability and willingness to play new developmental roles and adapt to new demands and situations (UNEP, 2002).

Drivers of Skill Change

As economies go green, the need for skilled jobs arises. It is very important to understand the basic drivers of skill change to predict the future training needs and jobs (ILO, 2011). Major drivers of skill change identified by experts have been listed below.

- Changes in the physical environment
- Policies and regulation
- Technology and innovation
- Demand for greener products

These drivers of change are interlinked to each other and can be easily understood using a well-known assessment framework known as DPSIR (Kristensen P, 2004).

Figure 1 explains the components of the DPSIR (Driving Forces-Pressures-State-Impacts-Responses) framework in the context of capacity development for resource efficiency in the construction sector. A 'driving force' is basically a need such as a need for food, water, energy and housing. The human activities performed towards meeting these needs results in excessive use of natural resources which exerts 'pressures' on the environment causing different types of emissions to the air, water and soil. The changes in the physical, chemical or biological state of the environment may have environmental or economic 'impacts' on the functioning of ecosystems resulting in shifting from traditional production processes to innovative technological processes to avoid further damage to the ecosystem. The

'impacts' observed as a result of changes in the industrial systems demand changes in the economy, educational skills, training and other social aspects. This in turn demands a 'response' from society or policy makers.

Existing Policies and Initiatives

The amendment to the existing Municipal Waste Management Rules, 2015 is aimed at the proper streamlining of C&D waste management in India. Unlike the existing rules where no specific guidelines were given for the management of C&D Waste, the new version included the responsibilities and timelines for implementation for all stakeholders involved with the management of C&D Waste. Also, as part of the Swachh Bharat Mission in India, policy interventions have been initiated for C&D Waste management and recycling on a national scale.

These new rules set a benchmark for C&D waste management, but it is critical that capacity development is imparted to each stakeholder for proper implementation and monitoring of these rules.

Key Challenges

Major challenges in capacity development that were highlighted during the transition to resource efficiency in the construction sector are as follows:

- Ensuring the right supply of skilled technicians to take up resource efficient technologies remains a major challenge and acts as a roadblock towards the successful adoption of resource efficiency in the construction sector.
- Lack of awareness towards the utilisation of resource efficient materials is observed at all levels including professional sectors (architects, building material manufacturers etc). There is also limited availability of technology know-how.
- The demand for alternate building materials like fly ash bricks and aggregates from C&D waste is seriously hampered due to the lack of acceptance and perception of poor quality of users.
- The lack of favourable policies and cumbersome procedures to set up new enterprises affects the promotion and uptake of new technologies.

Key Actions and Recommendations

To create an enabling environment and encourage the industrial shift to adopting resource efficiency, the following set of actions have been recommended:

- Establishment of policies and practices to promote selective collection of waste that have higher recycling rates such as C&D waste can lead to swifter processes while ensuring constant supply of secondary raw materials for processing and use.
- Creating information hubs to learn and replicate resource efficiency can spread information on specific upcoming technologies in the sector and experiences of energy efficiency to the wider society.
- Facilitating capacity building in the private sector - The information campaigns targeted towards builders, architects and engineers will have major impact towards building resource efficient infrastructure and can also influence choices of companies and house owners.
- Since there is a lack of awareness towards adoption of resource efficient technologies and practices, capacity building efforts from local governments should not only focus on the municipal technical staff, but also on the other main actors that are involved in the local roll-out of resource efficiency.
- Capacity building for employers in the informal economy and micro and small enterprises to enter green markets in localities where they are most needed.
- Establishing a network of business development associates, equipment manufacturers and service providers and building their capacities for accelerated service delivery and demand creation. ❑

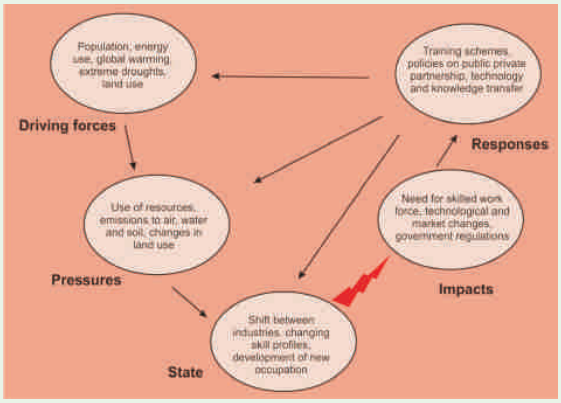

Fig 1: DPSIR assessment framework

Krishna Chandran

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Influencing Financial Flows for a Sustainable Future

Directing Economies through Finance

Finance is an important component of any economy. The direction of financial flows enables an analysis of the kind of economic growth experienced by a country and the expenditure and investment made in certain sectors (proportionate to the priority sectors), and the skills required. So far, the world has regarded economic growth as a prerequisite for poverty reduction, human advancement, economic stability etc. However, the kind of economic development processes that have been adopted have exerted significant pressure on the environment, thus undermining the capacity for future development to take place.

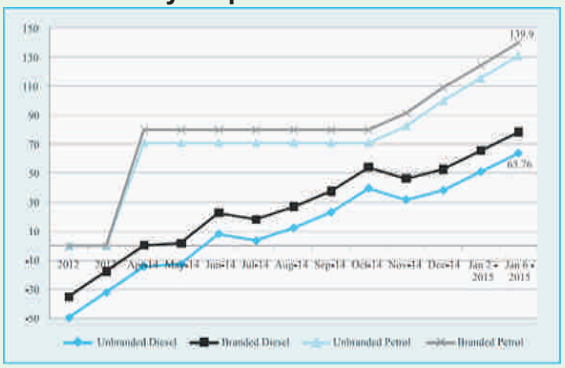
The global community has in the past decade come to a global consensus that the current economic development (overexploitation of natural resources, high dependence on fossil fuels, increasing population etc.) have been the biggest cause of climate change and environmental degradation. While these challenges of climate change and environmental degradation might seem as isolated phenomena, their impact on human life and livelihood irrespective of the stage of economic development a nation is in, have been severe.

In order to meet these challenges, new strategies will need to be adopted that lead to economic growth and greater social equity both for the present and future generations, while preserving the environment and responding to the increasing impacts of climate change. In this case, one of the important mechanisms is the appropriate flow of finances towards low-carbon and resource-efficient economies.

For a transition to a greener economy, finances are to be mobilised by smart public policy and innovative financing mechanisms . A pertinent example is the scale of investment made by developing countries against that of developed countries in the renewable energy sector. According to the UNEP report titled, 'Global Trends in Renewable Energy Investment 2016', developing world including China, India and Brazil committed a total of USD 156 billion (up by 19% in 2015) in new renewables capacity, compared to the developed world's investment of USD 130 billion which was down 8% in 2015 . Experts around the world have stated that such a leap in investment has been the result of a conducive environment that governments have created for greening of capital markets and encouraging market innovations that bolster national initiatives to green economies.

While it is imperative that the global/ national markets see finance as a means to greater

Implicit carbon tax from increasing excise duty on petrol and diesel



Source: (Ministry of Finance, 2016) World Bank estimates

environmentally sustainable and inclusive processes, it is the government agencies and the effective voice of civil society that will guide and support this transition to a greener and more inclusive economy.

Public Financing Instruments

In the role of driving the economy, government functionaries play the role of providing subsidies and taxation, commit to sustainable public procurement, help grow new markets in environmental services, improve investor confidence and support and guide private sector finance.

India has taken a number of actions that are targeted towards curbing the use of fossil fuels and incentivising the renewable energy sector through various fiscal measures. The fiscal policies are now gradually shifting from a carbon subsidisation regime to one of significant carbon taxation regime.

The figure above illustrates the rising carbon tax equivalent to US$ 70 per tonne of CO2 (Unbranded Petrol) and US$ 42 per tonne (Unbranded diesel) since October 2014. This has resulted from change in the excise duties imposed on these petroleum products. This has steeply risen the implicit carbon tax to what is now considered reasonable at US$ 140 for petrol and US$ 64 for diesel (upto January 2015).

Re-Financing through Government Programmes

Given India's growth trends both in terms of its teeming population and the growing resource demands, India has over the years acknowledged the need to take into account the opportunities and challenges as well costs and benefits of green economy policies in the context of sustainable development and poverty eradication. While the first ten 5 year plans of the Indian Government had largely focused on

economic growth, from the Eleventh Five Year plan (2007-2012) onwards the government has given greater emphasis on social policies of sustainable development with the 12th five-year plan titled, 'Faster, Sustainable and More Inclusive Growth'. In order to achieve this, the government has adopted a series of methods of action that range from environmental legislations like Biological Diversity Act, 2002; National Rural Employment Guarantee Act, 2005; Energy Conservation Act, 2001 to targeted initiatives like the National Action Plan on Climate Change (NAPCC) under which lie 8 Missions that target various green economy policies. The other initiatives include Smart Cities Mission, Skill Council for Green Jobs, Swachh Bharat Mission etc.

Agricultural Sector: The agricultural sector plays a vital role in India's economy, with approximately 58% of the rural households depending on agriculture as their principle means of livelihood. Agriculture and allied sectors (including agriculture, livestock, forestry and fishery) contributed to 15.35% of the Gross Value Added (GVA) during 2015-16 at 2011-12 prices (IBEF, 2016). While this sector is one of the largest contributors to the country's GDP, it is highly vulnerable to the risks associated with climate change and the decline in quality of land and water availability and quality due to over-exploitation and other mal practices of modern agriculture. In the recent past, the Government of India has recognised that sustainable agricultural growth is necessary to ensure food security and poverty eradication. It has thus planned several steps for the sustainable development of agriculture. The National Mission for Sustainable Agriculture addresses issues regarding sustainable agriculture in the context of risks associated with climate change by devising appropriate adaptation and mitigation strategies for food security, equitable access to food resources, enhancing livelihood opportunities and contributing to economic stability. Steps have also been taken to improve soil fertility on a sustainable basis through the Soil Health Card Scheme and to provide continued support to the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) that ensures the development of sustainable livelihoods and farmer welfare.

Renewable Energy Sector: According to the Planning Commissions Interim report of the Expert Group on Low Carbon Strategies for Inclusive Growth (April, 2014), India's per capita energy consumption, in terms of kilogram of oil equivalent (kgoe), 2008 was only 0.53, compared with the world average of 1.8. Given that India's primary energy requirements are going to increase considerably, India will require to address this challenge through ensuring sustainable modern energy access for all, in particular for the poor in a reliable, affordable, economically viable and socially and environmentally acceptable manner. In this regard, the Jawaharlal Nehru National Solar Mission was established to promote ecologically sustainable growth while addressing India's energy security challenge. It has been estimated that India's 100GW solar target is likely to create 1 million jobs by 2022 (NRDC & CEEW, 2015). In order to achieve this the government has been working towards setting up both robust regulatory and market based mechanisms to ensure use of solar power in the overall energy mix. Under the National Tariff Policy, 2006, State electricity regulators are mandated to fix a percentage for the purchase of solar power, so as to make it as competitive as coal-based power. Solar specific Renewable Energy Certificate (REC) mechanisms have been set up to allow utilities and solar power generation companies to buy and sell certificates to meet their solar power purchase obligations.

Forest Sector: The objective of the National Mission for a Green India is to ensure increased forest/tree cover and quality, improve ecosystem services and increased forest-based livelihood income. It further aims to ensure carbon sequestration of 50-60 million tonnes by the year 2020 through conservation and sustainable use of forest resources.

Green Accounting: Further, recognising the importance of Environment Statistics as a means to measuring green GDP, the Central Statistical Organisation has issued eleven issues of publications titled, 'Compendium of Environment Statistics' (1997-2011) presenting available data relating to the environment of the country. The compendium is aimed at helping the 'Expert Group on Green National Accounting' (August 2011) to develop a frame work for 'Green National Accounts' for India and to identify the data requirements for the implementation of the recommended framework.

It must be noted that while the Indian Government has taken considerable steps towards raising green finance through the National Adaptation Fund, budgetary allocations for the missions and tax disincentives like the Clean Environment Cess and the Infrastructure Cess, there continues to be little financial flow from the private sector, barring a few examples like Green Bonds developed by Yes Bank and Exim Bank that enable funding for renewable energy projects. Thus while India transitions to a greener economy, the role of Indian banks and financial institutions for facilitating this transition will be critical. ❑

Pratibha Ruth Caleb

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Investing in People in India's Transition towards Sustainability

Current economic models have failed to deliver well-being to the people, despite the paradox of apparently high rates of growth. The idea of 'people' becomes a powerful way to tangibilise the outcomes of a sustainable economy. Therefore, 'investing in people' becomes a way of making people the centre of the sustainable economy agenda.

Investing in people should be defined by an agenda that goes beyond mere technological fixes of the short-term and business-as-usual approaches. At present, investing in people mainly relates to the issue of equity – the idea that a transition to a low consumption and sustainable production pathway does not compromise the needs of the less well-off people in the world especially in the developing countries. A glaring example of inequity can be seen from the fact that the world extracts 50% more raw materials today than it did in 1980; yet 80% of this is consumed by the wealthiest 20% .

This means that the issue of equity should address the problem of 'resource grab', where resources like land, water, air, fisheries and others are cornered by the rich. This often translates into a conflict between people and the environment.

According to a Livemint report, "The number of jobs created in 2015 is much less than what it was a few years ago. As mechanisation of agriculture and manufacturing is moving at a faster pace and the services sector is becoming more skill-oriented, fewer jobs are being created which can match the existing skill level of the vast majority. Consequently, it is not difficult to surmise that while India's gross domestic product (GDP) is growing, such growth is increasingly becoming exclusionary. Much of India's growth is emanating from services, and taking place in sectors which require middle- to high-level skills."

Therefore, in the Indian context, the key to intervention in the new economic paradigm includes livelihood security and basic needs fulfillment for all in an equitable manner, preventing human rights abuse and displacement in development projects, addressing corruption and political hurdles, reforming the financial and services sector, and creating market linkages in critical sectors while ensuring businesses' commitment to people.

The government is leveraging several existing economic resources to create a more sustainable pathway for the people. This is being done through:

A Rights-Based Approach: The government is increasingly being compelled to adopt a rights-based approach to development, thanks to the government-civil society synergies. One of the landmark recent issues in this regard has been the Forest Rights Act protections, with a renewed vigour in implementing the Forest Rights Act – a key law for protecting the livelihoods of people dependent on forest produce. The government will mainly use technology to survey the details of forest land owned and create more awareness. The Forest Rights Act has the potential to give an estimated 150 million people rights over at least 40 million hectares (100 million acres) of forested land.

Enhancing Citizen Participation: NITI Aayog proposes to launch a programme involving citizens of India for the key challenges facing the country and to develop the social sector by innovating ideas and solutions through the Atal Grand Challenge Awards, with the objective of developing novel solutions that are ultra-low cost, low maintenance, durable and customised to the local conditions of India.

However, despite this, there are several current gaps that the government needs to address. The Tribal Committee Report of 2014 mounts a scathing attack on India's development path by stating that about 40% of all people displaced in India due to development activity have been tribals (pegged at 24 million), even though they constitute less than 10% of the total population. Only 21.16% of these have been resettled (though most have not been rehabilitated).

Therefore, India needs to urgently reform its developmental pathway from its current skewed, unjust trajectory. ❑

Garima Maheshwari

Household expenditure for India by expenditure level 2011-2012

India: Average monthly expenditure by the richest 10% in 2012	Total amount under all deciles	Richest 10%	Poorest 10%
Total expenditure	82,309 Rupees	25,565 Rupees	1,996 Rupees
		(31% of total)	(2.4% of total)
Fuel for private transport	2,656 Rupees	1,261 Rupees	1.6 Rupees
(Petrol, diesel, lubricants & other fuels for vehicles)		(47% of total)	(0.06% of total)
Meat consumption			
(Meat, fish and eggs)	2,558 Rupees	505 Rupees	67 Rupees
		(19% of total)	(3% of total)

Source: National Sample Survey Organisation; Analysis from (Why Green Economy)

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Measuring Agriculture to Achieve SDG 2

The global community has formulated the post 2015 agenda in the form of Sustainable Development Goals that the world aims to achieve by 2030. Agriculture in India is a critical sector in India's development paradigm. It must ensure secure food access to all, now and for the future, in the changing climate scenario and shrinking resource base. All of this has to be achieved while taking care of around 263 million or 22 per cent of the Indian population dependent on agriculture for their livelihood.

The Goal 2 of the Sustainable Development Goals aims to 'End hunger, achieve food security and improved nutrition and promote sustainable agriculture'. Targets 2.3 and 2.4 of the Goal specifically deal with goals set for agriculture systems.

This article critically studies the indicators of these targets that have been agreed upon by the global community and the corresponding national indicators. Post identification, it looks at the concerns and areas of improvement in the current data systems of the country. A brief analysis is presented as follows:

Indicator 2.3.a. Value of Production Per Labour Unit

What does the indicator measure?

Agriculture value added per worker is a measure of agricultural productivity. Value added in agriculture measures the output of the agricultural sector less the value of intermediate inputs. Agriculture comprises value added from forestry, hunting and fishing as well as cultivation of crops and livestock production. The value of production per labour is expected to be calculated by different classes of farming/pastoral/forestry enterprise size in order to track the changes in the agricultural productivity and incomes of small scale food producers, especially women, indigenous people etc.

What do we measure in India?

The data on value of production per unit labour is calculated by the Ministry of Statistics, Planning and Implementation. The Department of Economics and Statistics, Ministry of Agriculture collects and collates the data on total agriculture value every year. The total workforce in agriculture is calculated by Census of India, decanally. In parallel, National Sample Survey Organisations also provide insights on the agriculture workforce of the country. Central Statistics Office, Ministry of Statistics, Planning and Implementation using the above two data calculates the value of production per unit of labour. FAO estimates Agriculture value per unit labour for the country but the methodology of it is not available in the public domain.

What are some critical concerns?

a) Agriculture value per unit labour by different classes of farming/forestry enterprise are not available

The data on total agriculture value produce is not available by different classes of farming/pastoral/forestry enterprises. This is a concern because the total agriculture value per labour may not be a comprehensive indicator to ensure increase in productivity of small scale food producers. The methodology for arriving at the agriculture value includes data on agriculture input and output prices at the district level and the total agriculture land and food production from the respective district. The current data on total agriculture value from districts may not be enough for measuring agriculture value per unit labour for different classes of labour. This would require revision in the methodology of collecting data.

b) How much land is actually cultivated in India?

The census, conducted by the ministry of agriculture, says that the total area under operational holdings was 159.6 million hectares. However, the National Sample Survey Organisation's (NSSO) report on land and

No.	TARGET	CORRESPONDING INDICATORS
2.3	By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.	Value of production per labour unit (measured in constant USD), by classes of farming/pastoral/ forestry enterprise size.
2.4	By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.	Percentage of agricultural households using irrigation systems compared to all agricultural households. Percentage of agricultural households using eco-friendly fertilisers compared to all agricultural households using fertilisers.

livestock holdings estimates that around 95 million hectares of land was classified as operational holdings in 2012-13. The NSSO figure is about 65 million hectares lower than the numbers put out by the ninth agricultural census conducted in 2010-11. While the agricultural census's definition of operational holdings is also broadly similar to NSSO's, there are differences between the two surveys in collecting information. The divergence between the two estimates has increased in the last two decades, on account of a sizeable decline in NSSO estimates.

Some academicians say that the NSSO report probably indicates that active participation in farming is declining. Indeed the agricultural census admits that the situation reflected in land records might be different from the actual situation on ground.

The glaring divergence in estimates of agricultural land is not of academic interest alone. For the government to calculate total value from agriculture and the actual land under cultivation for estimating the total production, it is essential for estimates closest to reality. Given such large-scale differences in estimates of agricultural land, according to its own data and the number of people dependent on each tract, policies for supporting farmers and agriculture in India has the possible of mis-judging the scale and quantum of agriculture produce, number of agriculture labourers and cultivators and the subsequent agriculture value.

Indicator 2.4.a Percentage of agricultural households using irrigation systems compared to all agricultural households

The Agriculture Census, India estimates the number of operational holdings by size classes and irrigation status (fully irrigated, partially irrigated and un-irrigated) quinquineally. The minor irrigation census is also conducted quinquineally by the Ministry of Water Resources, India. As per the definition of irrigated area, a particular parcel is classified as irrigated if it has a source available like canal, well, etc. A crop will be considered as irrigated if it received irrigation at least once. This indicator may require further detailing on quantum of water consumed from irrigation sources to assess the use and availability of water from different sources and assess the sustainable agriculture practices from that.

Indicator 2.4.b Percentage of agricultural households using eco-friendly fertilisers compared to all agricultural households using fertilisers

The Agricultural and Processed Food Products Export Development Authority (APEDA), Ministry of Commerce and Industry, GoI has implemented the National Programme for Organic Production (NPOP). The national programme involves the accreditation programme for certification bodies, standards for organic production, promotion of organic farming etc. The total area under organic certification is 4.72 million hectare (2013-14). This is the only measure available in India about organic agriculture. There are two caveats in place here:

1. The programme only measures the land under organic agriculture and does not provide information about agriculture households.
2. The assumption here is that eco-friendly fertilisers are organic fertilisers. Organic fertilisers are derived from animal matter, human excreta or vegetable matter (e.g. compost, manure).
3. Given the miniscule percent of land under organic agriculture in India with respect to the total land, it may be important to develop a dedicated policy for leading and promoting organic agriculture.

The collection of data on organic production conducted by APEDA is for the purpose of creditions to export the organic food. It might be useful to survey the use of fertilisers and organic manure used by farmers in the NSSO surveys to provide insights on the percent of organic manure used in the fields by different classes of farmers to get a clearer picture on the use of eco-friendly fertilisers.

Food security is one of the top priorities to achieve the SDGs. Agriculture production is dependent upon soil fertility, adequate water, suitable techniques/practices and adaptation to climate change. The indicators analysed above point out to glaring concerns in measuring the sustainability of agriculture systems. This is in addition to other critical concerns like that of climate change, resource constraints for which indicators that measure the health of the agriculture systems with respect to its climate adaptation, mitigation and resource use goals are also measured. This may include agriculture product per unit resource use, indicators for measuring resilience and adaptability of the agriculture systems.

*This is an excerpt from a report developed by DA, "Assessing SDGs in the Indian Context" ❑

Anshul S Bhamra

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Measuring Access to Electricity - Turn the Framework Around

Maximise Access and Installed Capacity

The Sustainable Development Goal number 7 of achieving universal access to affordable, reliable, sustainable and modern energy by 2030 was adopted in 2015 by the UN General Assembly1. The fact that the objective is linked to increased access to electricity and not to the increased amount of electricity generated sends a clear message that it is the share of households with access which is assumed to be the true driver of human development. The objective of universal access to sustainable energy is based on the experience that such access is one of the key drivers of poverty alleviation and human development through its enabling role for education, communication and productive use.

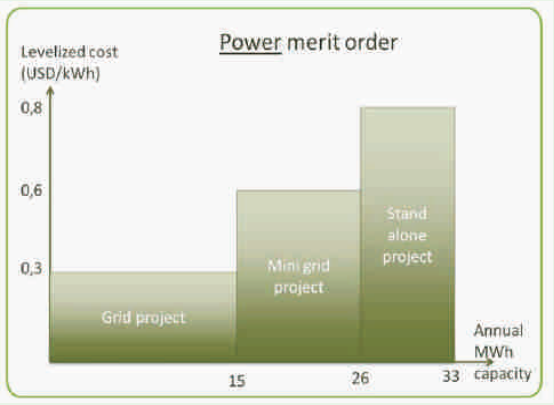
Apart from universal access, the SDG also mentions reliable and modern energy. This is an important qualifier to have for end mile consumers connected to the central grid, as often the electricity that reaches these consumers comes at random hours during the day and that too of low voltage. This impacts the luminosity for lighting and the potential use for income generating livelihoods.

Ideally, in most public policies and strategies, electrification should be developed with an objective of maximising the expected development impact per unit of money invested, not only the capacity installed. The success of an electrification objective should be based on the impact, not the input. In order to maximise the development impact, focus going forward should be on maximising access to reliable electricity services for the budget available, rather than maximising added power generation capacity.

Monetary Value of Electricity

The problem in this context is that the standard analysis frameworks applied by governments, institutions and donors for developing electrification plans and policies fail to properly capture the development value of access to electricity. The standard 'Power Merit Order' prioritises projects based on cost per watt installed or per kilowatt hour (kWh) generated. However, research indicates that the value of a kWh in a development perspective is dependent on its use. The development value is likely higher for one kWh used to provide high quality evening lighting to 60 off-grid households, relative to running one machine wash or 45 minutes of air conditioning for one grid connected household with the same kWh.

The same way, India assesses the Levelised Unit Cost of Electricity (LUCE) of different



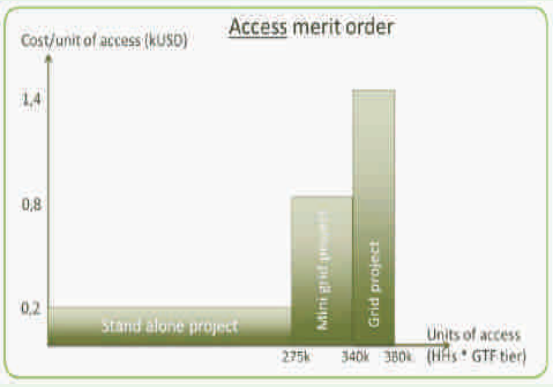
Source: The Differ Group, 2015

electrification efforts based on the traditional power generation i.e. Lowest cost per installed capacity (Wp or KWh). This Power Merit Order typically shows that a grid project has the lowest cost per KWh generated.

This is reflected in our country's large scale electrification efforts as well, where extending the existing grid and adding thermal power plants are seen as the best way forward to provide electricity to the 75 million unelectrified2 rural households.

Development Value of Electricity

With energy efficiency measures in basic household appliances, 1 Kwh/week can give you 4 lightbulbs, mobile charging and a TV. A fan run on DC electricity may require slightly more than 1 KwH. With this low energy consumption required for basic services, the traditional power generation order fails to reflect the very high development impact of these services provided within 1 Kwh. With access to lighting, entire generations can be educated. It can be seen that these first few Kwhs providing access to basic services like lighting have the highest development impact per Kwh. The fact that lighting for a household can now be provided with 80-90% less Kwhs though the use of LED bulbs instead of incandescent light bulbs does not reduce the development impact from providing light, even if the power used is now very small.



Source: The Differ Group, 2015

Solar-based micro-grids provide access to sustainable modern renewable energy

Along the same vein, the UN Sustainable Energy for All (SE4ALL) Global Tracking Framework defines six different tiers of access (Electricity service levels) ranging from no access (Tier 0 or 1) to 24x7 access to run any high power appliance (Tier 5)3. An electrification intervention which targets Tier 1 or 2 would impact a larger number of households at a much larger scale of impact. The number of households then becomes the unit of measurement.

This changed unit, when put into a framework, reflects the true value of each Kwh. As an addition to the Power Merit Order, it is time for an 'Access Merit Order'. Instead of measuring cost per 'unit of power' (i.e. per Watt or kWh), this new framework measures cost per 'unit of access'. If the unit power i.e. Kwh is replaced with 'units of access', a different picture will emerge for electrification efforts. For example, if the tiers of access are multiplied by the number of households provided access, each project represents a number of access units. The total budget allotted for electrification efforts divided by units of access gives the cost per unit of access.

For un-electrified areas, you could experience that the 'Access Merit Order' reverses the relative attractiveness of the projects compared with the 'Power Merit Order'4.

All the households that receive access to electricity will be able to use this electricity to reduce their spending on kerosene, dry batteries, candles and/or diesel generators. Hence, there is a modest, but significant ability to pay for the electricity received in order to secure a robust electricity service that later can be maintained and scaled.

Allowing for this perspective and taking into account a model of community co-financing, projects will be able to provide access to an even higher number of households over time, making the payback time for a stand-alone solution 40 months. Disallowing the hidden subsidies, a grid project comparatively has a payback time per connection of 550 months.

Financing and Scaling the Development Goal of Access

The year 2014 was a successful year for energy access companies, securing at least $64 million in investments5. The investment one gets can be either debt financing or equity. Debt financing signals achievements of past success as opposed to equity which is riskier. Though difficult to obtain, debt investment is essential for attracting commercial banks, which are vital to truly scale the energy access sector.

Scaling of the energy access sector is what is truly required for effectively implementing a goal which says universal access to all. Behind the SDG Goal 7 lies an expectation that in order to achieve it the share of population gaining access increases and not doubling of global energy installed capacity and generation.

In order to get the highest possible development impact per unit of money invested in electrification, the Access Merit Order could be actively used alongside the Power Merit Order when electrification strategies are devised and revised going forward. Only then can access be the key driver of development and poverty alleviation. ❑

Rowena Mathew

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Smart Power for Rural Development - Fostering Local Economic Growth

Today, power generation has become one of the key indicators of economic growth and industrial development of any country. However, it contributes significantly to greenhouse gas emissions as fossil fuels such as coal have a major share in the total power generation especially in the developing countries.

The power situation in India is characterised by demand in excess of supply, high Transmission and Distribution (T&D) losses, low Plant Load Factor (PLF), peak demand and energy shortages, poor financial health of the State Electricity Boards (SEBs) and severe resource crunch. Further, owing to the complexities involved, the power sector reforms in the country such as promotion of viable renewable energy technologies and the subsequent privatisation of electricity generation, T & D etc. have been rather slow1.

In the current scenario, some 400 million Indians lose electricity access during blackouts. While 80% of Indian villages have at least an electricity line, just 52.5% of rural households have access to electricity2.

The main challenge in addressing the above has been the inadequate last mile connectivity for all users. This has been despite the country's ability to generate adequately (to exceed 99%) and have the transmission capacity to meet the full demand temporally and spatially3. This has led to many consumers being dependent on DG (Diesel Generator) sets using costly diesel oil for meeting unavoidable power requirements. Besides, the growing aspirations of people, especially in rural areas has further added to the dependency on using DG based electricity.

Smart Power for Rural Development Programme

TARA (a social enterprise of the Development Alternatives Group), with support from The Rockefeller Foundation initiated a rural electrification programme in 2011 (erstwhile Smart Power for Environmentally-sound Economic Development or SPEED) with a focus on enhancing local economic development across 1000 villages of India. This programme is called – Smart Power for Rural Development (SPRD).

An on-going programme, it commenced with undertaking pilot projects across villages in Uttar Pradesh and Bihar, where 20 decentralised renewable energy (Solar Photo Voltaic) plants each of 30 KW capacity were installed. Owned and managed by TARA's energy business – TARAurja, these plants were set-up with the intention of catering load of approximately 45% to an anchor load (telecom tower), 20% to lighting (lights / fans / TV etc. for households and shops) and 35% to commercial loads (enterprises that require electricity to run businesses such as sweet shops that run freezers or electronic juicers, carpenters who use electronic planar, computer shops, mobile repairing shops that use soldering machines etc.).

TARA also organised a specialised team called 'CELAMeD' (Community Engagement, Load Acquisition, Micro-enterprise Development) for load development activities such as mobilising the communities around the plant location, helping TARAurja to acquire loads (commercial and lighting) and for setting up new enterprises that would run on TARAurja's electricity. It is estimated that for each site to have an optimum load utilisation, approximately 10-12 months are required to undertake CELAMeD activities.

The integral components of the Smart Power for Rural Development (SPRD) include:

- Tie-ups with ESCOs (Energy Service Companies), such as OMC (Omnipower Minigrids Corporation), whereby these companies were expected to bring in funds to set-up plants with subsidy from RF and CELAMeD support from TARA.
- Support the development of micro enterprises in rural areas through loans, community engagement and partnerships with companies with rural footprints (TARA's responsibility).
- Build capacities of more Load Development Partners, NGO Partners (local implementation partners) and transfer know-how to ESCOs, enabling them to sustain the intervention (TARA's responsibility).
- Support policy innovations and promote platforms for networking and knowledge sharing about best practices in rural electrification.

The pilot project at 20 TARAurja sites helped gain significant experiences around community engagement strategies, packaging of tariff structures for different kinds of loads (various commercial and lighting loads) and understanding around the kinds of new micro-enterprises (MEs) that can be set-up (including knowledge on the market for these new MEs).

These experiences and learnings led to 60 more plants being set-up across Uttar Pradesh, with OMC as an ESCO and TARA as the load development partner. TARA's CELAMeD team played a critical role in engaging and mobilising

communities of these 60 villages and provided electricity access to over 1500 rural households / shops (mix of lighting and commercial loads across 30 locations) in a period of eight months. An overall 15-20% enhancement in income was reported for the shops that were provided electricity access (either through just lighting – which led to these enterprises running for longer hours; or enterprises that switched from unreliable grid supply to run their appliances / devices on solar based electricity; or enterprises that added a new appliance / device resulting in greater productivity, hence increased income).

The programme is not just reaping environmental benefits (through use of renewable energy based electricity provision) but also social benefits (by fulfilling the basic need of access to electricity to the poor and vulnerable sections of the society) and economic benefits (by strengthening existing businesses through income enhancement and by setting up new enterprises resulting in job creation and local economy being strengthened).

Kismat Jahaan, SPRD programme's and Kataliya village's first woman entrepreneur set up a namkeen making unit in Shrawasti district of UP. With her own investment of 30% of the capex, she also represented the programme in the 'UN Women in the World' Conference, sharing the panel with Dr. Ashok Khosla, Chairman, Development Alternatives Group and Ms. Madhuri Dixit Nene (Bollywood Actress).

Today, there are over 4,500 (and counting) rural households / enterprises (existing and new) across 80+ villages in UP and Bihar, that are being supported under the programme. The current focus areas of the programme includes local economic development (strengthening existing enterprises by expanding their business and setting up new micro-enterprises), social inclusion and basic need fulfilment (women based enterprises, basic needs enterprises such as RO unit for safe drinking water), agri extension services (irrigation pumps run on solar electricity, agri-resource centres establishment – boosting agriculture in rural areas) and social marketing (generating greater awareness around benefits of renewable energy based electricity).

"I have gained a new respect in the society and amongst my friends after I opened my own computer shop. I am no longer a good-for-nothing son, but an earning family member. With the reliable 7 hours of electricity supply from TARAurja, I will be expanding my business and buy connection for more hours soon." – Dilip Kumar, Computer Shop, Nasirganj Village, Shrawasti, UP.

Kumar, a TARAurja customer was a school drop-out about a year ago. TARAurja lighting connection at his father's cloth shop encouraged him to set up his own computer shop. With a package of Rs. 350 per month (7 hours daily), he earns Rs. 6500-8000 per month, running a laptop, a printer cum scanner, mobile charging points on the TARAurja connection.

Some of the key performance indicators that TARA is using for measuring its success under the SPRD programme include:

- Rate at which loads are acquired.
- Diversity in packages (tariff structures) that can be brought about, particularly for commercial and new micro-enterprises.
- Number and kinds of tie-ups for alternate anchor loads (example: petrol pumps) and institutional loads (example: schools / banks) – at least one per site.
- Local economic development – new jobs created in the village (15-20 jobs per village) and / or 20-25% enhancement in income for community members.
- Number of women-based enterprises established. ❑

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