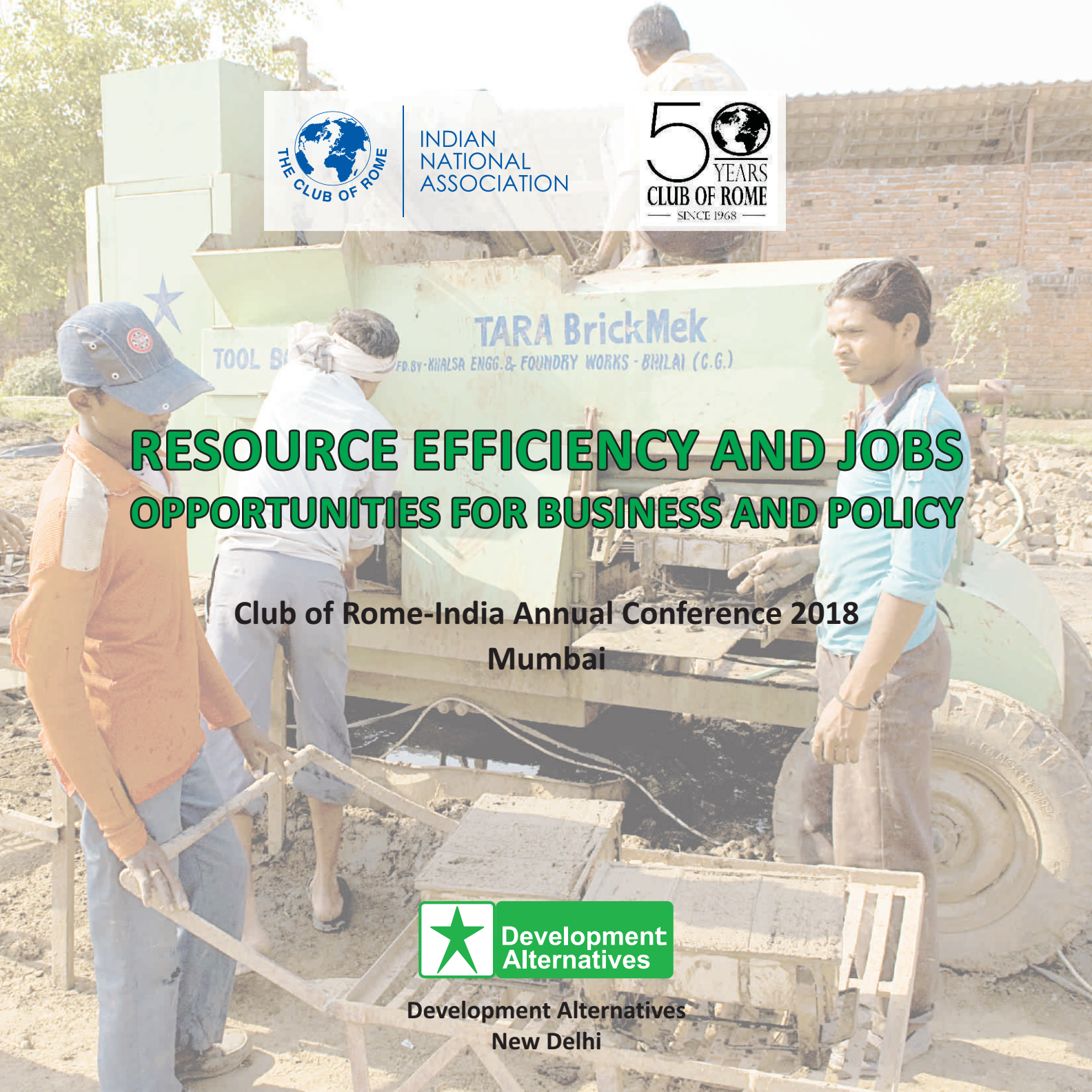


THE CLUB OF ROME | INDIAN NATIONAL ASSOCIATION

50 YEARS CLUB OF ROME SINCE 1968

# RESOURCE EFFICIENCY AND JOBS

## OPPORTUNITIES FOR BUSINESS AND POLICY

**Club of Rome-India Annual Conference 2018**

**Mumbai**

Development Alternatives

**Development Alternatives**
**New Delhi**

## Acknowledgements

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I am deeply grateful to Mr Vishal Massey, Secretary of the Indian National Association for the Club of Rome, who helped draft this booklet and to my co-workers in DA and Ms Indira Mansingh for their very valuable and substantive inputs to present the issues at stake.

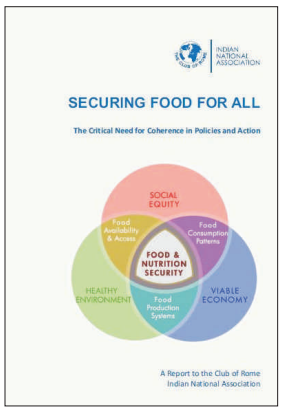
**Ashok Khosla**
Trustee - Club of Rome – India
Chairman, Development Alternatives
Co-President, Club of Rome (2005-2012)
Co-Chair, International Resource Panel (2008-2017)

# Contents

## Policy Coherence for Managing the Nation's Resources

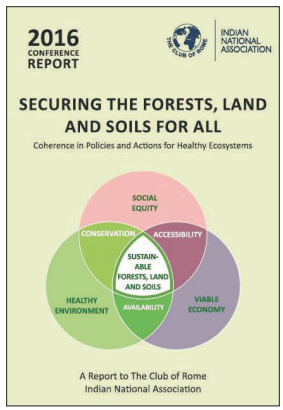
Established in 2011, the Indian National Association for the Club of Rome is a non-profit organisation, which aims "to act as a global catalyst for change through the identification and analysis of the crucial problems India is facing and the communication of such problems to the most important public and private decision makers as well as general public." The broad goal of the national Chapter, CoR-India, is to help design a coherent and synergistic agenda for governments, the business sector as well as citizens' organisations in India that could ensure a productive resource base and enable everybody in the country to live fuller lives in harmony with their surroundings by the centenary of the nation, 2047.

In 2014, the Indian National Association for the Club of Rome initiated a 5-year series of Annual conferences to examine and analyse the issues of policy coherence in how India manages its key resources. This series was designed to cover the following critical resource issues facing India today:

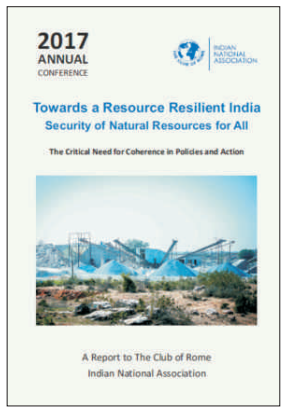



2014: Food


2015: Water




2016: Land



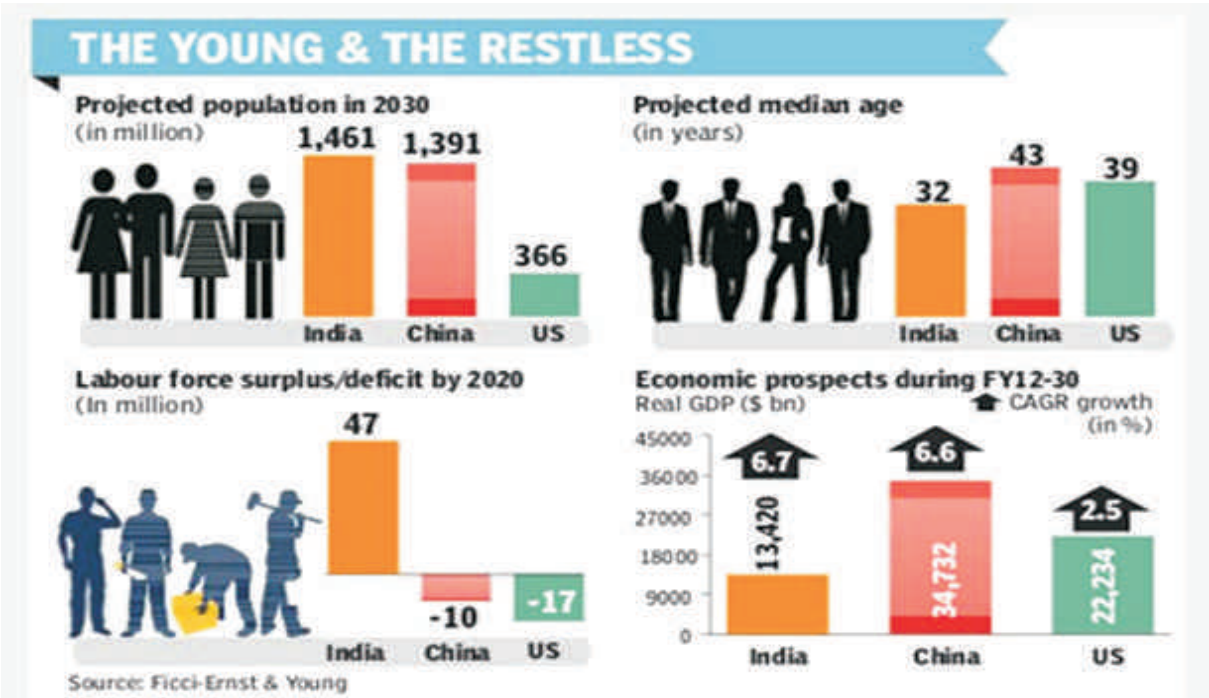

2017: Resilience

# RESOURCE EFFICIENCY AND JOBS

## OPPORTUNITIES FOR BUSINESS AND POLICY

## Summary

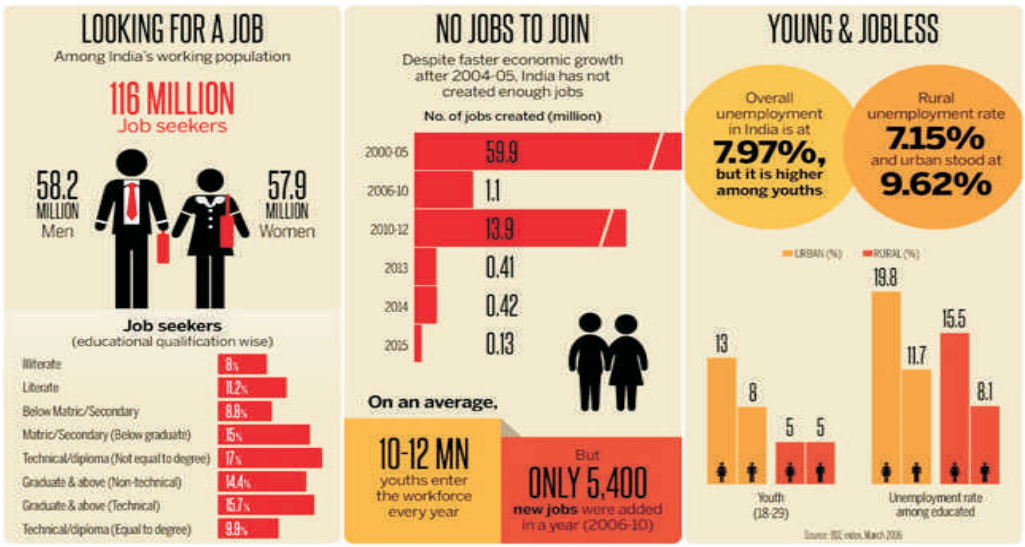
Resource efficiency and innovation for less damaging resource substitutes, even through automation and mechanisation do not necessarily lead to loss of jobs. Indeed they have historically been seen to create more jobs, particularly requiring higher skills and better pay. India is today among the world's most rapidly growing economies. It is also home to one of the world's largest pool of young people looking for jobs. This combination of factors has led many to believe that the "demographic dividend" it produces will automatically drive our nation to the top of the global economic ladder within a few decades. For this dividend not to become a "demographic disadvantage", let alone a "demographic disaster", several of our economic, sectoral and social policies will need radical change. Some of these changes are self-evident and generally recognised by government and business leaders; many of them introduced and evolving steadily since the grand liberalisation of 1991. Others are emerging, subsumed under the more recent concerns with raising the "ease of doing business". While several of these are important and necessary, however, it is less well-understood that they are not at all sufficient.



The national economy unquestionably needs to grow, and to grow rapidly. But its benefits have also to spread to all our citizens and be sustained for our children and future generations. The basic purpose of national development is, after all, achieving universal human wellbeing and social justice, now and in the future – which are the constitutionally-defined goals of our society: GDP growth is simply one of the means to that end, no more important than equity and social fairness, education and participation, nutrition and healthcare, and opportunities for fulfilment and a healthy environment.

Measures to facilitate business activity must, therefore, be complemented by measures that unequivocally raise the quality of life of the poorest half of the economic pyramid and improve the long-term productivity of our natural resource base.

By 2030, India will be the most populous country with over 1.4 billion people surpassing China. More significant, the median age of an Indian will be 32 years in 2030, much younger than of the US with a median age of 39 years, UK (42), Japan (52), and even China (43) or Brazil (35). This means within a decade, India will have the worlds largest youth workforce. This demographic advantage can help propel India's GDP growth to rate faster than any large economy, including that China, according to most analysts such as Ernst & Young and IHS. Much of this young work force will be absorbed by the fast-growing service sector whose share in GDP is anticipated to grow from 57% in FY10 to 68% by FY30, India will still be exporting some 50 million surplus labourers who can migrate to other labour-deficit countries.




*Source: Ficci – Ernst and Young / BSE Index*

## The Indian Advantage

**Low-cost labor force**
India's manufacturing wages are among the lowest worldwide, averaging US$1.50 per hour.

**Demographic dividend**
India's abundant labor force is English-speaking, young, skilled, and cost-efficient.

**Currency**
The rupee's falling value against the dollar makes Indian exports increasingly competitive as the yuan continues to rise in value.

| India's Manufacturing Sector at a Glance | |
|---|---|
| Share of GDP | 15% |
| Share of global manufacturing | 2.1% |
| Growth in 2012-13 | 1% |
| Average hourly compensation | US $1.50 |
| Key industries | Textiles, engineering goods, automobiles, electronics, chemicals, paper |

*Source: India Briefing - The Indian Advantage: Asia's Next Manufacturing Juggernaut, By Shawn Greene*

This in turn means that economic policies must also be put in place to accelerate job-creation and facilitate the ability of communities and businesses at all levels – local, regional and national – to speed up regeneration of the environment, while producing the goods and services needed in the marketplace.

To ensure widespread sharing of the benefits of economic growth and maintaining the health of our resource base, without which the demographic advantage could become a heavy, long-term "demographic debt" burden on future generations, the equity and environment underpinnings of sustainable development must receive equal support by policies and programmes to that received by the economy. Otherwise, many in the present generation and most in future ones will pay a debilitating cost in declining human wellbeing and mounting resource scarcity.

With less than 30% of India living in urban areas, we also currently have the largest agrarian population, large numbers of which will presumably want to move to the cities in the coming decades. Our job markets are

experiencing deep macro-structural changes, taking increasing numbers from farming to other occupations. At the more micro-structural level, the drive for global competitiveness and higher productivity is revolutionising activity in all economic sectors such as manufacturing, construction, trade and transport and, even agriculture. The pursuit of "economic efficiency" is now forcing all sectors of the economy to adopt technologies that aim to raise productivity: mechanisation, automation, chemicalisation, robotics, genetic manipulation, digitization, data analytics and artificial intelligence. But, these can also have a huge potential impact – often negative -- on both social goals, such as creation of jobs, identity and lifestyles, and environmental objectives such as the human health and productivity of land, water and air.

If not proactively and systemically dealt with, these factors will create a complex set of pressures on the types and quality of jobs and simultaneously a very large impact on the health and productivity of our human and natural resources. The overall consequences could in turn harm many and will certainly show up in slowing down the nation's economic progress into the future.

Following the previous four Annual Conferences of the Club of Rome-India, which were devoted to Resource Security Issues (covering Food in 2014, Water in 2015, Land, Soils and Forests in 2016,and Materials in 2017 ), the 2018 Annual Conference is expected to reflect upon various relationships and trade-offs among consumption patterns and production systems, with particular focus on technology choices, policy alternatives, and economic instruments that can achieve a desirable balance between material wellbeing, jobs and livelihoods, and the management of our natural resources to attain a sustainable, healthy future for all. Its deliberations are structured under five themes:

Theme 1: Enhancing Future Livelihoods in Rural India and Resource Efficiency

Theme 2: Employment Opportunities in Infrastructure and Environment Challenges

Theme 3: Circular Economy in urban India

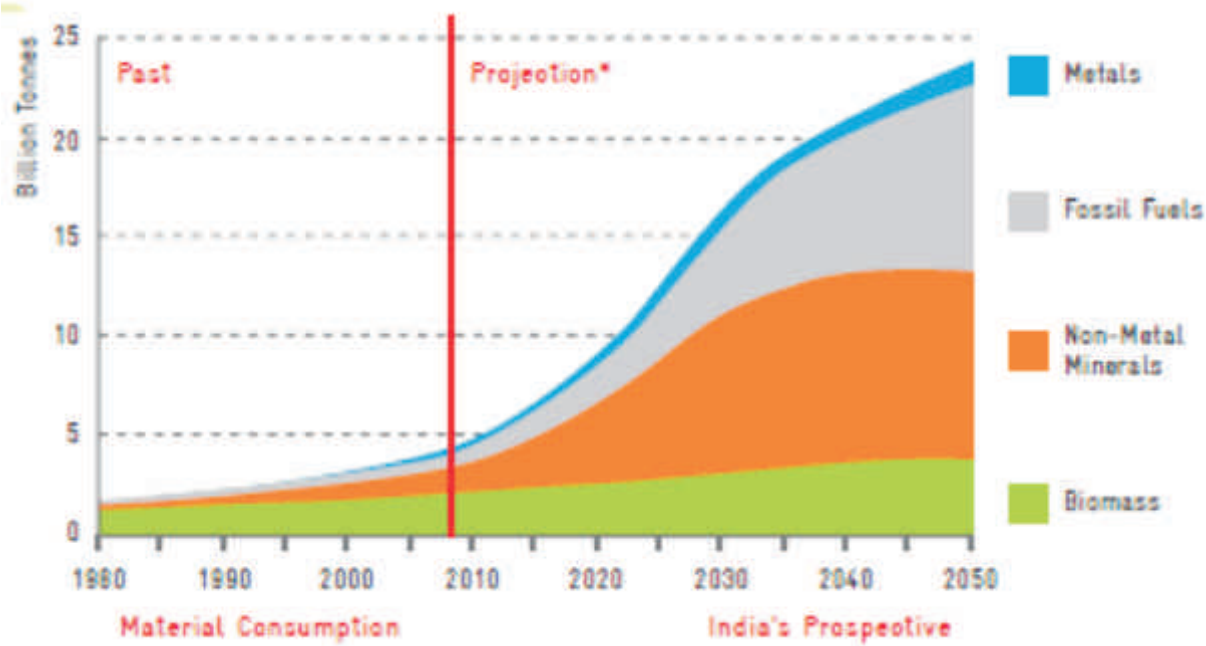
Theme 4: Changing Skills in Emerging Service Sectors

Theme 5: MSMEs: Key to India's Manufacturing Ambitions

## Resource Efficiency and Jobs - Concept in the Indian Context

Resource Efficiency is a fundamental element of sustainable development and the key to implementing the global Agenda 2030. It is embedded in the 12th Sustainable Development Goal (SDG) – "Ensure Sustainable Consumption Patterns and Production Systems". Achievement of eight other SDGs (2, 6, 7, 8, 9, 11, 14 and 15) depend integrally on raising resource efficiency.

The wise use of resources - conservation and efficiency standards for economic, social and environmental sustainability is intrinsic to the interests of India and to the resilience of the nation's future economy. Since the last decade, the country has undergone an active step jump in economic growth, an expanding industrial and service related output, a rise in average income, a thriving middle class and rapid urbanisation. Resource efficiency and resource productivity are the ratios between the benefits gained and the natural resources consumed for obtaining them. While the term "resource efficiency" is predominantly used in business and engineering as a measure of material flow, "resource productivity" is a measure of the economic value of an intervention.



India’s extraction and use of primary raw materials have increased by over four hundred percent in the past forty years, though it is lower than the Asian and world average. While the extraction of biotic materials only increased by a factor of 2.4, extraction of abiotic materials, especially of non-metallic minerals, have undergone exponential growth. In particular, extraction of non-metallic minerals, predominantly used for construction, has grown rapidly, reflecting the increasing demand of the construction sector during recent decades. With some 17% of the world’s people, but just 2.3% of the world’s land resources and 2% of its forests, the pressure on resources is and will continue to be intense/extreme.

India's economic reforms and the rise in per capita income and consumption levels, is creating a sizeable urban middle class. It is estimated that by 2025, the urban consumer market will increase by more than 50 per cent. While such development leads to increase in material demand for production and use of goods and services, the unsustainable extraction of natural capital, going beyond the ability of ecosystems to regenerate or produce it. The resulting shortages will impose significant environmental and economic costs in terms of loss of ecosystem services, habitat loss, biodiversity, increase in commodity prices and so forth - also impacting the sustainability of businesses and jobs.

## The Debate Needed Today

The past four decades have witnessed deep, structural changes in the range of issues that policy makers are used to dealing with. Until the 1980s, the primary topics of concern in politics were: economics, international relations -- and war and peace. While these worries have not gone away, in recent decades, the corridors of power and the headlines of newspapers are increasingly being overtaken by problems that have virtually no precedents in history: local and global processes that threaten the very life support systems of our fragile planet. Much of the attention of world leaders, the media and the public is now increasingly being captured by such complex and possibly irreversible anthropogenic processes as climate change, biodiversity loss and species extinction, large-scale destruction of lands, forests and oceans.

Natural resources including renewable and non-renewable energy, metals and minerals, water, air, biomass and land, are key factors of production. Restoring and maintaining the health of these resources through resource efficiency is a critical element of sustainable development. It is fundamental to feed current and projected populations, and also to provide a better quality of life for future generations.

A better, more desirable future lies in reconciling the three strands of sustainable development - Environmental, Social and Economic -- a viable natural environment will then boost economic development in the long run.

### Economic Benefits

By using primary resources more efficiently and utlizing secondary resources more actively, businesses can greatly improve competitiveness and viability. Numerous studies show that in many industries, material inputs form the biggest component of costs. By maximising resource productivity and minimizing dependence on virgin materials, an economy can be less vulnerable to price spikes and be more consistently profitable.

### Social benefits - Human Wellbeing

The dominant growth paradigm is not capable of satisfying the legitimate needs of the poorest or maintaining the health and productivity of the planet. Resource Efficient approaches have enormous, yet under appreciated potential to decrease conflict and displacement and improve human wellbeing. This can increase affordability and access to resources, critical for removing poverty and realising human potential. A strong economic argument for resource-efficiency is the significant prospect of improved competitiveness and job creation. Further, a responsible and efficient use of resources will contribute to higher social welfare by making available more for less; to human health through improved access to clean water and food and to quality of life through improved waste management.

### Environmental Benefits

Resource-efficiency can make significant contributions towards achieving climate change targets for reducing greenhouse gas emissions, without necessarily having adverse effects on the economy. Lowering ecological degradation and other risks leads to opportunities for landscape restoration and regeneration of degraded areas.

Besides the positive economic, social and environmental advantages, the benefits of resource efficiency could be technical, monetary, aesthetic, cultural, etc.

## Targets

- Enabling policies for sustainable growth in the job market
- Food and nutrition security of farming households
- Technological upgradation in agriculture sector to increase livelihoods
- Creating job opportunities for marginalised segments
- Effective implementation of zero defect, zero effect and the circular economy
- Facilitating a centralised system of data management - jobs and resources use
- Skill enhancement in MSMEs, maintaining gender balance, social securities, etc.

# Theme 1: Enhancing Future Livelihoods in Rural India and Resource Efficiency

India has some 1,300 million people living in 640,000 villages located in 676 districts which comprise 36 states and Union Territories. According to the 2011 census, rural India has about 69% of the country's population and the remaining 31% live in cities and towns. Some one-half of them are illiterate or semi-literate and half the workforce is unemployed or underempolyed. To bring rural living standards and job opportunities closer to those in urban areas the government has introduced a wide variety of programmmes for enhancing the livelihood opportunities of rural people and also reducing their need to migrate to the cities.

Agriculture and allied activities employ almost 52 % of the labour force and account for about 15.7 % of the nation's GDP. Although the share of employment and output produced by this sector has been declining since independence, the on-going shift in the composition of food is raising the value of its output – and the impact on the resource base. This shift, generally towards higher protein and nutritional foods, from basic cereals to dairy products, fruits and vegetables, meat and meat products, many of them processed, results from many factors, including rising incomes, urbanisation, trade liberalisation and communication. As the consumption of high-value agricultural products rises, the output of agriculture-food industry, which includes processing, wholesale, and retail, also expands. The rapid growth of this sector, the rising use of machines, energy and chemicals and the increasingly wasteful practices are causes for considerable concern in terms of their impacts on jobs, the environment and the resource base.

*Source: https://www.siliconindia.com*

Low awareness, poor connectivity and policy neglect have had a catastrophic impact on the lives and livelihoods of farmers. The current agricultural practices are extremely inefficient, in terms of all factors – labour, land, materials and energy – becoming the prime reason for the poverty trap (and the occasional suicidal hole) in which farmers find themselves. To maintain food and nutrition security in rural communities, to earn a decent income and invest in improved productivity of land and water, resources should be the highest priorities for farming families, and given their numbers and national contribution, the very highest priority for policy makers and development practitioners.

A resource resilient future for India, the topic that the 2017 Annual Conference endorsed, can only be achieved by introducing much higher levels of resource efficiency throughout the economy. This is certainly true of the urban and industrial sectors, and perhaps even more of the rural economy.

Historically, such efficiencies have been achieved mainly through mechanisation and the extensive use of chemicals in agriculture and related activities. This has led not just to massive losses of jobs but also consolidation of land and wealth, resulting in increasingly desperate economic disparities. Furthermore, the fertilisers, pesticides and other chemicals have poisoned the soils and water systems, in some cases to the point of no return.

The unintended negative consequences of technological progress like improved productivity and resource efficiencies can be large – occasionally, even larger than the benefits. The case of the Green Revolution in Punjab illustrates this starkly. One of the most successful development initiatives anywhere, widely acknowledged for saving much of the country from starvation, has now led to massive degradation of land and water, widespread poisoning of soils, rampant unemployment and drug epidemics, and enough disease to require daily trains to Delhi and Jaipur called the "Cancer Express".

This conference will review the means to create a better balance between land, labour, technology and material resources, and identify possible synergies among these so that future livelihoods of rural India would be more logical. The plenary session will address the following questions:

Q1: What are the existing policies for rural areas which need to be revisited - basic amenities and enhancing skill jobs for all while regenerating?

Q2: How to improve the supply chain, augment shelf life, value addition in agriculture production and increase local market opportunities instead of dependency on urban markets?

Q3: What improvements are needed for the proper execution of resource efficiency and resource security in rural settings?

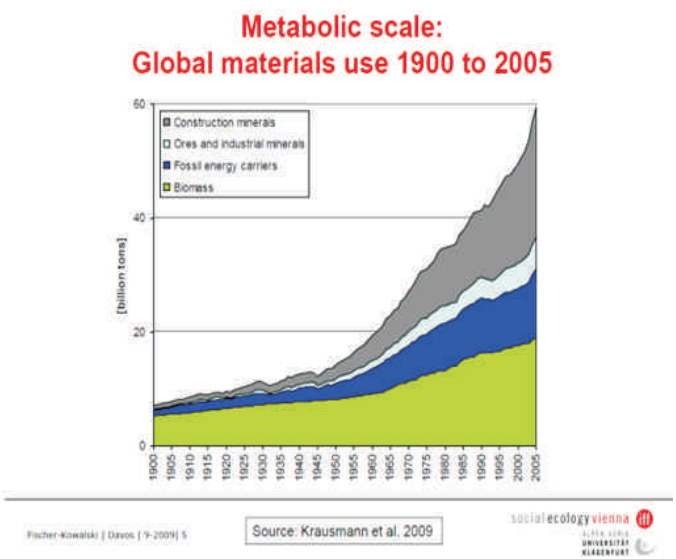
## Theme 2: Employment Opportunities in Infrastructure and Environment Challenges

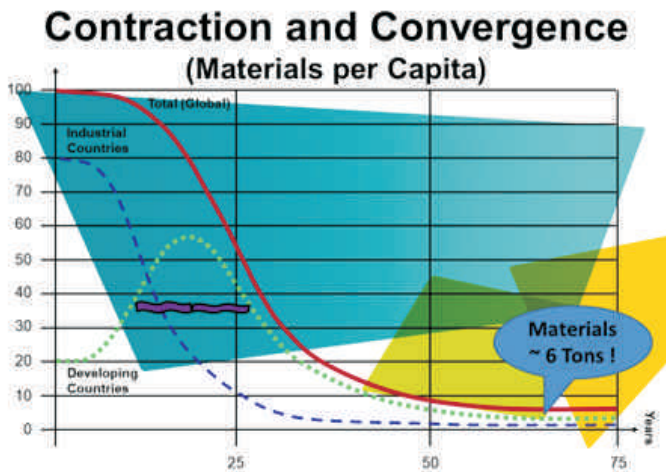
Rapid urbanisation and infrastructure deployment mean massive growth in the construction sector. After agriculture, construction is among the top users of labour, materials and energy and contributes 10% of GDP. With extensive use of natural resources – topsoil for bricks, iron for steel, limestone for cement, stone, timber, water and other non-renewables – and 23% of the country's GHG emissions, the environmental and resource footprint of the construction sector is very high. India will soon become the third largest global constructer, making its global impact on resources and climate - a cause for alarm.

With the ambitious and much needed schemes such as Housing for All and Make in India the resource scarcity implications will only worsen in the future if 'business as usual' for resource consumption by the sector continues. Some of the resources such as sand, topsoil, and water have already become critical in the industry. The Conference will address availability of these materials in future in a 'business as usual' and 'alternative coupled scenarios' with implications of each scenario on environment, society, economy and jobs prospects:

***A-Business as Usual Scenario***

The BAU scenario will look at the growth of the construction sector and resource consumption pattern in absence of any major changes in current practice. It will explore future availability of natural



resources to meet the demands of the sector. The scenario will also assess the replenishment to extraction ratio of of natural resources and the opportunities for recycling.

***B-Alternative Hybrid Scenario***

The Alternatives scenario, based on Circular Economy principles, will look at natural resource consumption by the sector coupled with alternative materials (such as fly ash, construction and demolition (C&D) waste, etc.). This scenario will aim to utilise the potential of unconventional resources to avoid the use of natural resources for construction while yet meeting the demand requirements. It will basically show the effect of supplementing natural resources with viable alternatives and decoupling the growth of this sector from environmental degradation.


**Criticality**

- Scarcity: Primary resource use versus its natural availability and replenishability.
- Cost: Cost of extraction and transit /carriage under the framework
- Environmental impact: Damage due to extraction and processing of resources
- Embodied energy: Energy consumed during extraction, production and transport of the resource
- Supply risk: Accessibility of the resource, legal restrictions and political risks
- Lack of recyclability: Secondary uses of a resource
- Conflict of use: Competing uses of a resource by other sectors, e.g., topsoil - brick manufacturing vs food production

India needs a sustainable construction approach in infrastructure development. This can be set as a dynamic between developers of novel solutions, investors, the construction industry, professional services, industry suppliers and other relevant parties towards achieving sustainable growth. It covers a number of aspects such as conception and management of buildings and constructed assets and alternatives. The Ministry of Urban Development has issued directives that call for the setting up of construction waste recycle units in every city with a population of over one million. More plants should be promoted and linked suitably to the supply chain of construction sector.

Although there is significant potential for eco-innovation in the infrastructure sector, yet a candid discussion about the benefits of renovation versus new construction, and the political frameworks which favour one over the other is needed. This discussion should happen today, to set the tone for the role of the infrastructure sector tomorrow. The conference will therefore, reflect on the following questions:

Q1: How can the criticality challenges of resource efficiency in Infrastructure be overcome?

Q2: How can government and the corporate sector set up methodologies and institutions for making informed decisions on renovation versus new construction - promoting both efficiency and jobs?

Q3: How to ensure an efficient labour force in the Alternative Hybrid Scenario?

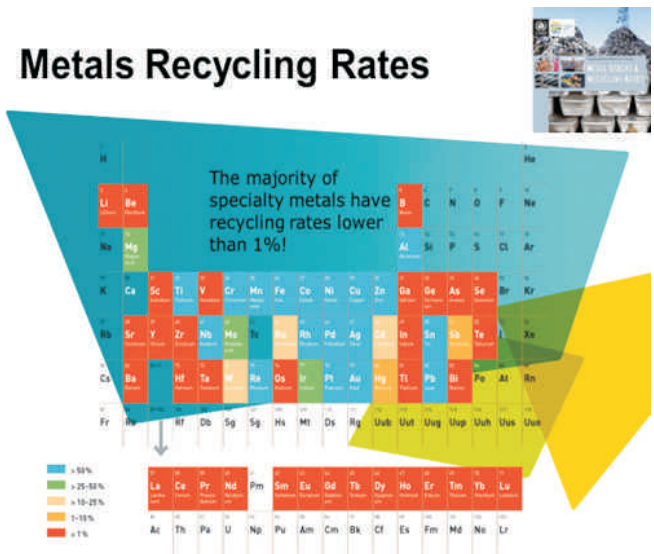
## Theme 3: Circular Economy in Urban India (Harmonising Employment and Quality of Life)

India's rapid growth should enable it to overcome the challenges posed by the sluggish global economy. Sustaining such growth is a necessary, if not sufficient, condition to ensure that the living standards of hundreds of millions of people living in absolute poverty are improved. Today's economic systems are complex, rapidly changing and vulnerable to external perturbations of many kinds, ranging from natural disasters to hostile trade-related actions to changing fashions.

Many businesses that were iconic five decades ago no longer exist. Many businesses that did not exist five decades ago are among the largest corporations today. Every decade, a completely new business model becomes the dominant paradigm, only to be replaced by another, often after an unexpected and sometimes catastrophic collapse of the market.

Appropriate skills, knowledge and attitudes are essential for conducting a successful business in the modern economy. And because of the fluidity of business requirements, the ability to let go of old skills and quickly learn new ones becomes more important for retaining jobs than ever before.

Moreover, single-minded focus on the bottom line (or even top line) is no longer acceptable, given the broader landscape of stakeholders that today's businesses have to operate in. Sustainability issues dictate that the minimumt number of bottom lines a business must pay attention to now is three – financial, social and environmental.




Fifty years ago, a professional with a freshly minted degree in a specific subject could spend an entire working life without any further need for study. Today, technology and markets are changing so rapidly that a professional may well change specialisations three or four times within his or her working life. In many cases, because of changing demand patterns, obsolescence, mechanisation or other reasons, jobs simply disappear and no new ones with similar skill requirements take their place. Often a country's development is correlated with rapid urbanisation. Besides changes in the core

economic life, urban livelihood is closely linked to modernity that implies cultural civic values vastly different from rural interpretations. The challenges in urban settings are high, but they can be diverted towards economic growth along with job opportunities.

The World Bank estimates that 1% of the population in cities of the developing world are employed in recycling. However, the recycling rate of metals is lower than this percentage. It has been determined that while the urban poor get the least measure of waste, they survive in areas that have limited, or no waste handling facilities, as well as inadequate service delivery. Additionally, waste generally dumps on the fringes of the city where the poor also live. Almost all of the recycling is through the informal sector, which comprises waste pickers, small buyers, a host of agents and finally, the recyclers. Indian policies and rules need to revisit this sector so that urban policy makers, and private companies, conduct solid waste management business with important safeguards and get recognition for informal sector recyclers and up cyclers.

The plenary will examine upcycling, recycling, the green economy; hospital waste management; municipal waste, plastic industry and more and try to address the issues.

Q1: What are the job-related challenges to policies that encourage Resource Efficiency in India?

Q2: How can a circular economy that upcycles and recycles, be scaled up without losing jobs?

Q3: How can secondary raw material usage be facilitate in the public and private sectors?

Q4: Should the following be given priority or do they require a change in course?

- More relaxation in taxes for upcycle, recycle, waste management businesses
- Separate public and private procurement policies
- Easy availability of finance and capital
- Inbuilt environment profit and loss in audit and more as cohort deems suitable

## Theme 4: Changing Skills in Emerging Service Sectors (Finance, Service Industry, Renewables, IT and Telecom)

As elsewhere, the Service sector in India is growing rapidly. It has attracted substantial foreign investment flows, contributed significantly to exports as well as provided large-scale employment. It now contributes more than fifty percent of GDP and employs around 28% of the total population. Government incentives in health care, tourism, hospitality, education, engineering, communications, telecom, media - entertainment, transportation, information technology, real estate, banking, finance, insurance, management, etc. are significant, but studies, including from ILO, indicate a declining future for good quality of jobs in this sector.

India's distinctive competencies and competitive advantage formed by the knowledge-based services makes it unique emerging market in the world. Supported by several government initiatives, the services sector in India possesses the potential to unlock a multi-trillion-dollar opportunity which can create symbiotic growth for the whole nation.

Digitisation in service and knowledge enterprises to support mechanisation in agriculture, industry, and services and new businesses to build skills, create, manage, interpret big data analytics, cloud and cyber security services, service delivery automation, robotics, artificial intelligence, machine learning, and natural language processing, among many others -- are replacing current jobs at an accelerating pace. While they are also creating new job opportunities to replace the ones that are lost due to these very technologies, the skills and numbers required mean that other employment opportunities will also be needed. To reduce unemployment, much more effective systems will need to be set in place to improve the process of matching skills to opportunities, for which digital employment exchanges run by businesses are an excellent initiative.

The education and labour markets need to communicate much more on current and future skills needs, how these may be met and how future needs can be anticipated. The circular economy will create new jobs, both high-skilled and low-skilled. The goal is to create high quality jobs. Policymakers need to better integrate their environmental policies and skills policies. Services that promote and deliver resource efficiency as a business objective are among the most needed: energy efficiency, renewable energy appliance maintenance and repair and other circular economy enterprises. However,- it should be promoted by the business sector rather than a thrust from the government.

Many employers have targets to reduce their environmental impact by a certain date. One notable example is Unilever, the fast-moving consumer goods (FMCG) company (Partial Sponsor- the 2018 Annual Conference,

CoR-I) , which aims to half its impact on the environment by 2030. In order to do so, it is taking a range of actions including introducing new recyclable packaging and sourcing goods from sustainable sources. Unilever CEO Paul Polman[1], London, United Kingdom, was awarded a Champion of the Earth Award by the United Nations to acknowledge the company's commitment to green issues. These kinds of initiatives need to push more in business and its related jobs - however, their nature and trends can differ in sectors based approaches.

In light of above, the conference would try to capture following questions.

Q1: What are the existing means and policies available to integrate environment-skills- jobs in context of Livelihoods for All? Do these policies need changes or revision? Q2: How to make a balance of job losses and new skills enhancement with existing educational and skill development policies and their sonority?

Q3: What are the challenges to engage rural youth dividend in emerging service sectors? How to overcome them so that equality can be maintained in the service sector's growth ?

[1]https://www.unilever.com/about/who-we-are/our-leadership/paul-polman.html

## Theme 5: MSMEs: Key to India's Manufacturing Ambitions

With 110 million workers, MSMEs are major employers in India. They contribute almost 17% of the nation's GDP and produce more than 8,000 different products. As shown by the experience of USA, Germany and Japan – and more recently Korea and China – MSMEs will always be the backbone of industry, exports and even innovation.

Indian MSME statistics now need to show employment figures in addition to the existing focus on capital and turnover.

The majority of MSMEs operate in only six states in India. And only 7% of MSMEs are managed by women. This is a sector which could help in decreasing income, gender and regional disparities, but it faces many challenges such as lack of access to efficient technologies, poor infrastructure, deficient institutional credit and inadequate market linkages. MSMEs are often handicapped in this area for lack of capital and technical support.

A beginning has been made by Government, which has significantly raised public investment in roads, railways, rural facilities, power, telecom, housing, and the "soft" areas of health care and education, creating work opportunities for thousands of workers, at wages which are higher than for farm workers. Initiatives like Make in India, Startup India, Digital India have been planned to upscaling the sector. In the past few years, more than 100,000 projects have been approved.


*Source : Ministry of MSME, Govt of India*

| Problems & Challenges | Solutions |
|---|---|
| Lack of Adequate Capital and Credit | Easy Access to Finance and Credit |
| *Poor and Inadequate Infrastrucural Facilities* | *Stepping up Infrastructural and Support Facilities* |
| *Inadequate Access and Marketing Linkages* | *Creation of adequate Marketing Linkages* |
| *Lack of Skilled Human Resources* | *Skill Development and Capacity Building* |
| *Lack of Access to New Technology* | *Access to Modern Tools and Technology* |
| *Dilatory and Cumbersome Regulatory Practices* | *Policy Intervention and Support Mechanisms* |

However, the demand for jobs in India is outstripping their supply and if MSMEs are to take up the slack, future, speedier, implementation will need better understanding of the natural resource constraints. Initiatives like 'Zero Defect and Zero Effect', 'Udyam Sangam' are critical for promoting resource efficiency in industry, but they need much more support capacity to promote and spread them and other ideas such as the circular economy, secondary resource use and the 3 R's among entrepreneurs.

Given the importance of MSMEs to the national economy, much more needs to be done to formalise the labour laws, environmental performance and resource efficiency expected of them and to set up the support mechanisms – knowhow, technology access, financial support and skill development.

The conference will try to capture the following questions:

Q1: What should be the more interconnected opportunity framework at different stages of development of MSMEs with reference to infrastructure, regulations, financial support and skill India?

Q2: How to enhance the partnering approach by the various stakeholders through incentives, rather than compliance - and encourage more environment friendly start-ups?

Q3: How can leading corporate houses, government and civil society organisations contribute jointly to enhance production led MSMEs where more resource efficient jobs can be developed in India?

INDIAN NATIONAL ASSOCIATION

Established in 2011, The Indian National Association for the Club of Rome (CoR-India) is a non-profit organisation, which aims "to act as a global catalyst for change through the identification and analysis of the crucial problems facing India and the communication of such problems to the most important public and private decision makers as well as to the general public." The broad goal of the national chapter, CoR-India, is to help design an agenda for governments in India, the business sector as well as all its citizens' organisations that could enable everybody in this country to live a full life in harmony with their surroundings by the centenary of the nation, 2047.

*(www.clubofrome.in)* *Contact: info@clubofrome.in*

Development Alternatives

Development Alternatives (DA), a not-for-profit action research and development organisation, is the primary knowledge partner of CoR-India. DA innovates and disseminates sustainable solutions aimed at reducing poverty and regenerating natural ecosystems and their services. Established in 1982, its eco-solutions deliver basic needs products through the small, local enterprises that generate green jobs and sustainable incomes. Based on its innovative environment-friendly technologies and market principles, these enterprises help build local economies and communities while maintaining a minimum ecological footprint.

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