GOVERNMENT OF KERALA

PERSPECTIVE PLAN 2030 - KERALA

Volume II

The Key Bases of Knowledge Economy

Kerala State Planning Board
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Foreword

Sri. Oommen Chandy
Chief Minister of Kerala

Kerala Perspective Plan 2030 is a perception of the future, which reveals and points to something new, beyond what is already available and accessible. The goal of the Perspective Plan is to improve the quality of life of the people of Kerala to the level of Nordic countries (Sweden, Denmark, Norway and Finland), by 2030. These countries have achieved high material, human, social and ecological development and a highly regarded balance of all aspects of development. In order to get there, we need a framework that defines clearly where we are today, what challenges we face, where we want to be by 2030 and how to get there. Perspective Plan for a State/region means creating a set of alternative long term development strategies and integrated implementation approaches, for reaching the goal of future development.

Our future is about the people. This plan has been prepared after considerable consultations with various expert groups and citizens. The expected change would be to transform Kerala into a healthy and knowledge based economy, in which people enjoy high standards of living, a good quality of life and have access to quality education, health and other vital services.

The Vision of Perspective Plan 2030 is the creation of a diversified, knowledge economy with a resource-based industrial sector, competitiveness and productivity in agriculture, placing great emphasis on skills development. In addition, the Plan will promote competitiveness in all sectors, in terms of product quality and differentiation.

As required by this perspective, the State will operate a totally integrated, amalgamated, flexible and high quality education and training system, which prepares Kerala's learners to take advantage of a rapidly changing global environment, including developments in science and technology. This, in turn, would contribute to the economic and social development of the people of Kerala. Arising from the overall capacity building investments, Kerala will be transformed into a knowledge-based society, and changes in production and information technology will revolutionalize all aspects of the manufacturing process.

Perspective Plan 2030 is expected to reduce disparities and move the State significantly up the scale of human development, to be ranked on par with the developed countries in the world. There will thus be a pervasive atmosphere of tolerance in matters relating to culture, religious practices, political preference and differences in social background. The plan will facilitate equity in access to social services and facilities, as well as access to productive resources such as land, labour and capital. Kerala will be a just, moral, tolerant and safe society

with legislative, economic and social structures in place to eliminate marginalisation and ensure equity between women and men, the diverse and ethnic groups, and people of different ages, interests and abilities and harmony and peace in society.

The major challenge of this Perspective Plan is for all of us (Government, private sector, civil society, as well as individuals) to make a determined effort to concentrate on resolving, not just addressing, very important State level problems. This document: Perspective Plan 2030, presents a clear view of the major problems faced by the State and how these problems can be effectively resolved by deploying-to the fullest extent-our human and natural resources.

Kerala's future will also depend largely on the people themselves; much will depend on our ability and willingness to respond with innovation and commitment to new challenges. The immediate challenge we face as a State, now that we have a Perspective Plan document that defines our state's future development possibilities, is to ensure that the Perspective Plan is translated into reality. As a step in that direction, implementation strategies will be developed and human and financial resources will be mobilized. The programmes of Perspective Plan 2030 have specific targets and periodically, through the State Development Plans, we will evaluate the programme's performance. The success of the Perspective Plan depends on commitment not only of successive governments at the State level and local body level but also on the support we receive from the Union Government in achieving the goals. By the year 2030, with all of us working together, we should be the most developed state in India enjoying prosperity, interpersonal harmony and peace.

(Oommen Chandy)

Preface

Sri. K.M. Chandrasekhar
Vice Chairman, State Planning Board

Perspective Plan is a plan for a fairly long period, say 15 or 20 years, less detailed and less concrete than plans actually implemented scheme wise. The purpose of a perspective plan is to set a 'perspective' for the short term plans. The short term plans, so worked out, would be such as to lead to certain long term results. Thus it is neither a fully worked out plan nor just a theoretical exercise, but a framework within which concrete short term plans can be fitted.

Kerala Perspective Plan 2030 presents a clear view of where we are, where we want to go from here, and over what time frame. It is a vision that will take Kerala from the present into the future; a vision that will guide us to make deliberate efforts to improve the quality of life of our people. Creation of a knowledge-based economy is central to this Perspective Plan. It is designed as a broad, unifying vision which would serve to guide the State's five-year development plans and, at the same time, provide direction to government departments, the private sector, NGOs, civil societal and local Government authorities. Therefore, Kerala Perspective Plan 2030 will create policy synergies, which will effectively link long-term perspectives to short-term planning. The plan will be implemented through the next four Five Year Plans.

Unless and until there is commensurate increase in productive capacity, maintaining growth rates above 8 per cent may prove to be difficult to sustain in the long run. There is relatively high personal and regional inequality in Kerala. The State faces several problems: an aging population, rapidly increasing urbanisation and increasing pressures on natural resources, especially land and water. In a highly competitive business scenario, there is need to improve the quality of growth in terms of productive capacity, structural transformation and the quality of human development. Strategic planning is an essential first step to place a region on an upward trajectory.

One of the major principles upon which our Perspective Plan 2030 is based is 'partnership'. Partnership is recognised as a major prerequisite for the achievement of dynamic, efficient and sustainable development in the State. This involves partnership between government, communities and civil society; partnership between different branches of government, with the private sector (the business community), banks and financial institutions, nongovernmental organisations, community-based organisations and the international community; partnership between urban and rural societies and, ultimately, between all members of Kerala society. While the principle of sustainable development is the cornerstone on which the strategies for realizing the objectives of perspective Plan 2030, the driving force among the complex agents of our development comprises the sectors Tourism, Information Technology,

Education, Science and Technology, Health, Sustainable Agriculture, Energy, Social Justice, Gender Equality.

In support of the objectives of Perspective Plan 2030, capacity building will be pursued with the utmost vigour by both the private and public sectors to facilitate the implementation of the Plan. The capacity building process (including institution restructuring and building, and human resource development) will continue to be promoted by the existence of a suitable, economic resources and opportunities, and social norms which are conducive to sustained development. In order to realise the objectives of capacity building in Perspective Plan 2030, human resource information management systems will be strengthened; the ultimate objective is to balance supply and demand in the labour market and in this way achieve full employment in the economy. With determined effort to address macro economic imbalances, and to achieve effective implementation of the strategies and action plans suggested in this four volume document, there are strong possibilities of bringing our State on par with the status of developed countries by the year 2030.

Acknowledgements are necessary in full measure of those who helped us in the task of preparation of Perspective Plan 2030 in the State to suggest suitable framework for both long term and short term plans. We are thankful to the National Council of Applied Economic Research (NCAER), New Delhi and its officials, particularly, Dr. Shekhar Shah, (Director General), Dr. Aradhna Aggarwal (Coordinator of the team) and Dr. Bornali Bhandari (Fellow) for carrying out this task in consultation with various stakeholders and submitting the report in time. We are most grateful to the Chief Minister, Ministers and MLAs for their valuable guidance. We are obliged to the Government Secretaries, Heads of Departments, officials of line departments and experts involved in preparation of this document. Our sincere thanks to the general public and students who have offered valuable suggestions and comments on the draft report.

I would like to place on record the valuable inputs and contributions provided in shaping the document by the Members and Member Secretary of State Planning Board, Dr. D. Narayana, (Consultant, State Planning Board), Division Chiefs of State Planning Board and officials of Perspective Planning Division who have coordinated this initiative.

I am sure that Kerala Perspective Plan 2030 would serve as a blue print for the development of Kerala through shorter term Annual and Five Year Plans. We look forward to support and assistance from the Government of India to convert this Perspective Plan into reality.

(K.M. Chandrasekhar)

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Acronyms

AIMO	All India Manufacturers' Organisation
ASER	Annual Status of Education Report
ASSOCHAM	Associated Chamber of Commerce and Industry
BAU	Business as Usual
BIG	Biotech Ignition Grant
BIPP	Biotechnology Industry partnership programme
BIRAC	Biotechnology Industry Research Council
BIRAP	Biotechnology Industry Research Assistance Programme
CFL	Compact Fluorescent Lamp
CII	Confederation of Indian Industries
CLT	Community Land Trust
CPF	Central Provident fund
CSS	Common School System
CTCRI	Central Tuber Crops Research Institute
DBT	Department of Biotechnology
DDP	District Domestic Product
DISE	District Information System for Education
DKV	Dubai Knowledge Village
DML	Domestic Migrant Labour
DWCUA	Development of Women and Children in Urban Areas
EDP	Entrepreneurship Development Programme
EE	Employment Exchanges
EMI	Emigrants
FASII	Federation of Small Industries of India
FDI	Foreign Direct Investments
FICCI	Federation of Indian Chambers of Commerce and Industry
FISME	Federation of Indian Micro and Small & Medium Enterprises
GDP	Gross Domestic Product
GEM	Global Entrepreneurship Monitor
GER	Gross Enrolment Ratio
GIAN	Grassroots Innovation Augmentation Networking
GSDP	Gross State Domestic Product
ICOR	Incremental Capital Output Ratios
IEDC	Integrated Education of Disabled Children

KSHEC	Kerala State Higher Education Council
IIM	Indian Institutes of Management
IISER	Indian Institute of Science Education and Research
IIST	Indian Institute of Science & Technology
IIT	Indian Institutes of Technology
IPD	Integrated Product Development
ITBA	Ireland Turkey Business Association
ITI	Industrial Training Institutes
KESRU	Kerala Self Employment Scheme for the Registered Unemployed
KIED	Kerala Institute for Entrepreneurship Development
KMS	Kerala Migration Survey
KSCSTE	Kerala State Council for Science, Technology and Environment
KSIDC	Kerala State Industrial Development Corporation
KSSEDM	Kerala State Self Entrepreneur Development Mission
KTTC	Korea Technology Transfer Centre
LARR	Land Acquisition Rehabilitation and Resettlement Act
LED	Light-emitting diode
MIDC	Maharashtra Industrial Development Corporation
NABARD	National Bank for Agriculture and Rural Development,
NFT	Nutrient Film Technique
NIMZ	National Investment and Manufacturing Zones
NISIET	National Institute of Small Industry Extension Training
NIST	National Institute of Interdisciplinary Sciences and Technology
NORKA	Non-Resident Keralites Affairs
NRK	Non Resident Keralites
NSHIE	National Survey of Household Income and Expenditure
NSS	Nair Service Society
NSS	National Sample Survey
NSTEDB	National Science & Technology Entrepreneurship Development Board
NVEQF	National Vocational Education Qualifications Framework
OECD	Organisation for Economic Cooperation and Development
OMI	Out Migrants
PISA	Programme for International Student Assessment
PUD	planned unit Development
RCC	Regional Cancer Centre
RGCB	Rajiv Gandhi Centre for Biotechnology
SAC	Social Accountability Cells
SBIR	Small Business Innovation Research
SBIRI	Small Business Innovation Research Initiative
SCERT	State Council of Education Research & Training

SCT-IMST	Sree Chitra Tirunal Institute of Medical Sciences and Technology
SEEA	System of Environmental-Economic Accounting
SES	Selected Education Statistics
SEZ	Special Economic Zone
SIDO	Small Industries Development Organisation,
SMBA	Small and Medium Business Administration
SNDP	Sree Narayana Dharma Paripalana Yogam
SPREAD	Sustaining Partnerships to Enhance Rural Enterprise and Agribusiness Development
SPV	Special Purpose Vehicle
SSP	Singapore Science Park
STEC	State Committee for Science, Technology and Environment
STEM-VLN	STEM Virtual Learning Network
SWF	Sovereign Wealth Fund
JNTBGRI	Jawaharlal Nehru Tropical Botanic Garden and Research Institute
TBI	Technology Business Incubators
TECHFEST	S&T. Technology Festival
TiE	The Indus Entrepreneurs
USEP	Urban Self-Employment Programme
UWSP	Urban Women Self Help Program
VET	Vocational Education and Training
ZDP	Zonal Development Plan

Appendix

General Introduction*

Towards A Globally Competitive Kerala

An Innovator Lagging Behind?

Historically, Kerala was an innovator. It chartered a path somewhat different from that followed by other Indian states and many countries. Kerala's approach put human development at its centre — it emphasised education and health; upheld gender parity; and channelled public funds to schools, hospitals and infrastructure. Individual resources too were directed into areas such as private expenditure on health and education as well as to build health and educational institutions. The results of these policies and investments are there for everyone to see. Global recognition came, with Kerala celebrated as one of the few cases of 'good health at low cost' and, more generally, 'high human development at low per capita income'. The State stood alongside Cuba, Costa Rica and Sri Lanka on these parameters.

The high human development, however, had two dark spots: the 'outliers' who missed the larger gains in human development and the regional inequalities, which were not entirely independent of the 'outliers'. It also could not take growth to a new level. Hence, a new development model more responsive to local needs, which also responded to the voices of the poor and marginalised on the one hand and faced the challenges of growth on the other, had to be invented. An opportunity came Kerala's way in 1992 with the 73rd and 74th amendments to the Constitution of India and the consequent instituting of the third tier of government. Kerala took the lead in devolving the three Fs — funds, functions and functionaries — to the local governments. No other Indian state has thought it necessary to devolve over one-third of plan funds to local bodies and give them the freedom to experiment with local planning.

The enactment of the 73rd and 74th constitutional amendments ushered in a new era of decentralised democratic governance in Kerala. By giving a legal status to the rural (panchayats) and urban (municipalities) local bodies it intended to enable them to function as effective democratic self-government institutions. This ensured people's participation in local level planning and enabled them to be part of the development process. The effective functioning of local governments was, however, subject to the devolution of larger funds to them. Kerala has done this since 1996, the results of which are being taken note of.

Kerala has also made creditable progress in the reduction of poverty and the provision of public services through decentralisation. The Multi–Dimensional Poverty Index (MPI) constructed in terms of lack of access to education, health and other basic services has shown a remarkable reduction in the recent past in the State. For instance, the Adjusted Headcount Ratio for Kerala, which shows the percentage deprivation in terms of the MPI indicators, was 0.136 in 1999, the third lowest in India, and fell to the lowest at 0.038 by 2006 (Alkire and Seth, 2013[1]). The Multi–Dimensional Headcount Ratio too has performed very well. This is especially noteworthy for a state like Kerala, where deprivation levels were comparatively low by the 1990s, as it is generally difficult to bring it down further. The Population Census 2011 confirms the findings of Alkire and Seth as Kerala is reported to have the largest proportion of households with latrines and *pucca* houses. Access to basic services, the levels of which took over 40 years to reach, could be reached in less than half the time. These achievements are largely attributable to the experience of the past two decades of decentralisation ensuring local planning and people's participation.

**General Introduction is common to all volumes*

Kerala has continued with its human development achievements. Its local governments have strived to provide access to basic services to all and the State has reached income levels above the national average. While the quality of infrastructure and the quality of nutrition supplements in anganwadis and schools have shown an improvement, it is doubtful whether the quality of education has got much better. The infrastructure in primary healthcare centres and hospitals has improved, but a worrying public health situation persists. Kerala's growth rate has continued to move above the national average, but it is nowhere near the top; there are many states doing just as well if not better. Agriculture, where local governments have made many interventions, has slipped into negative growth in recent years. Even sectors where Kerala had the lead seem to have lost out: One of the first techno-parks was established in Kerala, but neither the State's exports nor its companies are visible at the very top. Companies based in some other states in India have gained a global reputation through high value addition, with marketing and effective branding. Unfortunately Kerala-based companies have yet to be recognised as major players in any field.

Kerala is part of a globalised world in which rapid change is a constant. In such a setting, the State's growth hinges on ensuring that it is competitive, accessible, liveable and safe. In order to achieve this, Kerala needs to foster an economic environment that helps businesses succeed, simultaneously holding on to the gains in human development and decentralised democratic governance. As the experiences of some of the world's leading nations show, a free, open and innovation-embracing economy can lay the foundation for thriving businesses, markets and investors, which, in turn, will create an impetus for development.

The US is still on top because it embraces innovation, helping promising businesses flourish irrespective of their size. Similarly, Germany is an industrial powerhouse because of its higher education and training sectors and infrastructure; its training and career track programmes are the envy of the world. Likewise, Finland's competitiveness stems from its top ranking position on parameters such as innovation, higher education and training institutions, health and primary education. Singapore is among the best in the world as it ranks high on infrastructure, financial market development, health, primary education and institutions. All these countries are great places for doing business, and that spurs growth.

The imperative for Kerala, therefore, is to create an international business climate, clearly prioritise investments and link spatial development and infrastructure. The State needs to work towards this goal alongside the central government and local governments, spelling out clearly defined responsibilities, simple rules and selective government involvement and by creating freedom of choice for individuals and companies. This new approach will require an overhaul of the State's policies and programmes. Kerala Perspective Plan 2030 (KPP 2030) seeks to set out the contours of such an approach.

Need for a Policy Change

A thriving private sector with new firms entering the market contributes to a growing economy. Governments play an important role by setting clear rules that create and support a dynamic ecosystem for firms. Without good rules, entrepreneurs have a hard time starting and building small and medium-size firms that are the engines of growth.

The World Bank's 'Ease of Doing Business' reports provide a snapshot of business environments across the world, including the bureaucratic and legal hurdles that entrepreneurs need to overcome to start a business. So where does India (and Kerala within the country) stand on creating an enabling environment for firms to start business?

The 11th edition of the report, released in 2014, ranks India at 134 of 189 countries in ease of doing business. In areas such as starting a business, dealing with construction permits, getting electricity,

paying taxes, trading across borders, enforcing contracts and receiving insolvency, India is ranked between 111 and 179. On the ease of registering property, India is somewhere near the halfway mark. It is only on parameters such as getting bank credit and protecting investors (both more of a central government domain) that India is ranked high, at 28 and 34 respectively.

While all the states and cities in India have similar legal and institutional frameworks, local regulations and the implementation of national laws vary. And these variations are not small. The report found that, "… it is easiest to start and operate businesses in Ludhiana, Hyderabad and Bhubaneswar. Starting a business is fastest in Mumbai and Noida, at 30 days, while it takes 41 days in Kochi." The report found that among the 17 Indian cities considered, Kochi ranks 16th overall. Kochi's does poorly on starting a business (16), dealing with construction permits (15), paying taxes (14) and receiving insolvency (10). Therefore, it seems the economic environment for doing business is not very conducive in Kerala.[2]

Over the past few years, The Institute for Competitiveness, India has regularly published 'State Competitiveness reports', a 'Manufacturing Competitiveness Index' and a 'City Liveability Index'. The Manufacturing Competitiveness Index is constructed based on four inter-related factors — company operations and strategy, state business environment, social infrastructure and political institutions and macroeconomic indicators. In the index for 2014 Kerala is ranked 'medium' along with Chhattisgarh, Madhya Pradesh, Uttar Pradesh and others, way below the 'medium and strong' category (Uttarakhand, Karnataka and Andhra Pradesh) and 'strong' category (Punjab, Haryana, Tamil Nadu, Gujarat and Maharashtra). Kerala's score at 58.30 is only about six or seven points above the lowest scoring Meghalaya (51.47) and Bihar (52.35), while Maharashtra scores highest at 67.07.[3]

Similarly, the Liveability Index 2013 computed for 50 Indian cities puts Thiruvananthapuram at 19, Kozhikode at 21 and Kochi at 24. The cities are ranked on the basis of demographics, education, health and medical standards, safety, housing conditions, socio-cultural and political environment and economic environment, and 20 constituent sub-pillars. Surprisingly, all three cities of Kerala are not only ranked low, but have also slipped in their rankings from 2010: Thiruvananthapuram from 16, Kochi from 12 and Kozhikode from 15. This suggests that over the past three years, other cities have been improving their liveability standards relative to these three cities in Kerala.[4]

The 'India Public Policy Report 2014' goes beyond the ease of doing business and competitiveness and liveability indices and assesses public policy effectiveness in the broad area of well being. The policy effectiveness index presented in the report is a composite of four component indices — livelihood opportunity index, social opportunity index, rule of law index and physical infrastructure development index. The component indices reflect livelihood opportunities, socially meaningful life, security of life and rule of law and amenities for a sustained improvement in living standards. The indices have been estimated for four points of time, 1981, 1991, 2001 and 2011. The analysis at the state level shows that Kerala's rank, which was 18 in 1981, after showing a slight improvement by 1991 (rank 16) has dropped to 20 in 2001 and 21 in 2011. Kerala seems to be doing well on gender equality, reducing infant mortality rate and raising school education. But in terms of crime, inequality in consumption, proportion of underweight children and access to electricity, water and sanitation, the State's performance is poor.

Similarly, Kerala does rather poorly on factors such as the time taken to obtain construction permits, get electricity connections, pay taxes and other similar services required to run a competitive businesses; the delays involved are among the longest in India. The State's manufacturing competitiveness is poor because of a weak business environment, unhelpful social infrastructure and political institutions; it does not appear to provide sufficient livelihood and social opportunities. Overall, it seems that Kerala does not provide a conducive environment for starting a business. This possibly explains why few businesses are started, and grow, in Kerala.

What Trajectory to Take?

Encouraging, sustaining and enhancing growth will require decisive action by the State's leaders in order to boost its competitiveness and improve its future economic outlook. Reforms and the right set of investments to enhance competitiveness are crucial for the economic transformations that can lead to sustained higher growth and development over the long term. It is, therefore, imperative that competitiveness — the set of institutions, policies and factors that determine a country's level of productivity — features high on the economic reform agenda.

A competitive economic environment is built on eight pillars, of which the first is the institutional environment determined by the legal and administrative framework within which individuals, firms and governments interact to generate wealth. The quality of institutions has a strong bearing on competitiveness and growth. The role of institutions goes beyond the legal framework. Government attitudes toward markets and freedoms and the efficiency of its operations are also very important. Excessive bureaucracy and red tape, overregulation, corruption, lack of transparency and trustworthiness and the inability to provide appropriate services can considerably slow the process of economic development.

An equally important factor in the institutional environment that determines investor interest is the credibility of the government. A government that promises, but fails to deliver will not attract as much interest as a government that offers an answer after careful examination of a proposal and sticks to its decision with firmness, regardless of opposition from pressure groups. A recurring and persisting gap between promises and delivery will quickly lead to the loss of all credibility of the government among entrepreneurs, adversely affecting the business environment.

The second pillar is infrastructure. It is critical for ensuring the effective functioning of the economy as it is an important factor in determining the location of economic activity and the kinds of activities or sectors that can develop within a region. Well-developed infrastructure reduces the effect of distances, lowers costs and reduces inequalities in a variety of ways. Effective modes of transport — quality roads, railway, ports and air transport — enable entrepreneurs to get their goods and services to market in a secure and timely manner and facilitates the movement of workers to the most suitable jobs. The quality of electricity and telecommunications too play an important role.

The third pillar of a competitive economic environment is health and primary education. A healthy workforce is vital to a region's competitiveness and productivity, not to mention the State's well being. Workers who are ill cannot function to their potential and will be less productive. Poor health leads to significant costs for businesses, as sick workers are often absent or operate at lower levels of efficiency. Catastrophic health expenditure could also greatly reduce savings and investment. This pillar takes into account the quantity and quality of the basic education received by the population, as basic education increases the efficiency of each individual worker. Often, workers who have received little formal education can carry out only simple manual tasks and find it much more difficult to adapt to more advanced production processes and techniques, thereby constraining productivity growth.

The fourth pillar is quality higher education and training, which is crucial for economies that want to move up the value chain, beyond simple production processes and products. Today's globalising economy requires countries to nurture pools of well educated workers, who are able to perform complex tasks and adapt rapidly to their changing environment and the evolving needs of the production system. Higher education is also crucial for sustaining a knowledge economy by providing a continuous supply of personnel for centres of higher learning.

The fifth pillar is labour market efficiency. The efficiency and flexibility of the labour market is critical to ensure that workers are allocated to their most effective use in the economy and provided with

incentives to give their best effort in their jobs. Labour markets must, therefore, have the flexibility to shift workers from one economic activity to another rapidly and at low cost, and to allow for wage fluctuations without much social disruption. Efficient labour markets must also ensure clear, strong incentives for employees along with efforts to promote meritocracy in the workplace, and must create gender equity in the business environment.

Development of the financial sector is the sixth pillar of a competitive economic environment as it allocates the resources saved by citizens, as well as those entering the economy from abroad, to their most productive uses. It channels resources to entrepreneurial or investment projects with the highest expected rates of return rather than to the politically connected. A thorough and proper assessment of risk is, therefore, a key ingredient of a sound financial market. Therefore, economies require sophisticated financial markets that can make capital available for private sector investment from such sources.

The seventh pillar is technological readiness, which is the agility with which an economy adopts existing technology to enhance the productivity of its industries. It also includes a specific emphasis on its capacity to fully leverage information and communication technology (ICT) in daily activities and production processes to increase efficiency and enable innovation for competitiveness. ICT has evolved into the 'general purpose technology' of the era, given its critical spillovers to other economic sectors and its role as industry-wide enabling infrastructure. Therefore, ICT access and usage are key enablers of a region's overall technological readiness.

The eighth pillar, innovation, can emerge from new technological and non-technological knowledge. Non-technological innovation is closely related to the know-how, skills and working conditions that are embedded in organisations. In the long run, sustained gains in productivity depend on innovation, which is a strong source of market power that entrepreneurs compete with existing firms to build. The introduction of innovation is responsible for both the progress and instabilities of the capitalist economic system. Entrepreneurs positioned at the top of the knowledge economy excel at ideating and taking these ideas to the market. Ideation requires powerful higher education initiatives provided by dynamic centres of learning and university-industry linkages. The creative arts and broader humanities too can drive, produce, apply and diffuse innovation in different, but equally useful ways compared to the science and technology sector. Therefore, a broad platform that embraces both science and technology and the arts and humanities needs to be built: That is the fount of knowledge creation. Innovation is also not just about coming up with new products — it is also about doing things differently. For this to happen, the entire innovation ecosystem, which consists of a set of closely intertwined and reinforcing factors, is critical.

Local governance (increasingly urban governance, as the State is urbanising rapidly) too has an important role to play in sustainable competitiveness. Globalisation and state devolution establish the contemporary context of urban governance. Economic globalisation has made cities more vulnerable to the ebbs and flows of the international economy, compelling them to compete for business investment. Cities have to become competitive to be successful. Cities such as New York, London and Paris, which have adjusted to the 'new economy' that emphasises corporate and financial services, high technology, higher education and tourism and entertainment services, are advantageously placed to attract mobile capital and skilled workers. If cities have to work towards such a goal, then more administrative authority and functional responsibility should be transferred from the higher to the lower levels of government.

Economic globalisation involving mobile capital investments, the emergence of world wide economic sectors and large movements of domestic labour has changed the context of urban governance. In an increasingly competitive world, urban governance has been forced to transform from welfarist models into economic development models where city governments, both elected members and officials,

have to become more entrepreneurial. Globalisation demands that pro-growth and environmental sustainability concerns be balanced. The mode and manner of governing has to change from hierarchism and bureaucracy to self-organising networks. The general consensus is that positive benefits are to be had from cities taking an entrepreneurial stance towards economic development. Urban entrepreneurialism could take advantage of the resource base, location or physical and social infrastructure created through public and private investments. Direct interventions to stimulate the application of new technology, the creation of new products or the provision of venture capital to new enterprises may also be significant. International competitiveness also depends on the qualities, quantities and costs of local labour supply. Labour of the right quality, even though expensive, can be a powerful magnet for new economic development.

Sustainable competitiveness is the keystone of rapid economic growth in a globalising era. Throughout the second half of the 20th century, increasing productivity and economic growth went hand in hand with better and improving living conditions. But it does not seem to hold true any longer. The relationship between economic competitiveness and social and environmental sustainability has become tenuous. The need to consider sustainability along with competitiveness has become all the more relevant. The World Economic Forum puts it as competitiveness adjusted by two additional pillars: The **social sustainability pillar,** *"the set of institutions, policies and factors that enable all members of society to experience the best possible health, participation and security; and to maximise their potential to contribute to and benefit from the economic prosperity of the country in which they live"* and the **environmental sustainability pillar** which measures *"the institutions, policies and factors that ensure an efficient management of resources to enable prosperity for present and future generations."* [5]

In 1987 the Brundtland Commission defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This initial concept, which mainly focused on the environmental aspects of development, has evolved significantly over time and today it is widely accepted that sustainability also includes economic and social dimensions. But the complex relationship between competitiveness and sustainability is poorly understood. Although environmental limitations to growth are important, recent studies have shown that the state of the environment tends to worsen during the initial stages of industrialisation, but then improves as income increases — a concept known as the Environmental Kuznets Curve. But it cannot be assumed that environmental sustainability will be automatically achieved at a certain income level. In order to preserve future generations' ability to benefit from nature's resources and services and increase standards of living, policies and measures that ensure an efficient use of natural resources as well as the adoption of clean industrial processes need to be in place. The efficient use of natural resources includes both managing exhaustible raw materials and using renewable resources within their regenerative capacity in order to minimise production costs, ensure the legacy of future generations and reduce pollution.

Environmental degradation can impact the way ecosystems work and reduce biodiversity. Biodiversity losses caused by deforestation or significant land use changes increase the vulnerability of terrestrial and aquatic ecosystems. Biodiversity is also the key driver of economic growth because it provides the basis for many innovations in pharmaceuticals and cosmetic products. Also, investing in the greening of tourism can reduce the cost of energy, water and waste and enhance the value of biodiversity. And overall, opinions are moving towards the belief that 'green' growth leads to higher energy and resource efficiency.

The concept of social sustainability is not widely accepted, but human rights, equity and social justice are its recurring themes. While the relationship between social sustainability and development is hazy, the sense is that an unbalanced social model can undermine the stability of the growth process for both current and future generations. If economic benefits are perceived to be unequally distributed

within a society, discontent could erupt, undermining the growth process. Thus, the growth process needs to be inclusive, which is a prerequisite for social cohesion. Social exclusion, apart from being non-democratic, could have a negative impact on competitiveness. Lack of access to basic necessities, gender discrimination, polarisation and lack of social security could be serious problems.

Social sustainability and environmental sustainability are interrelated. Institutions that set clear rules on managing the environment increase the quality of life and provide better opportunities to the whole community. Well managed environmental systems may also translate into equitable income flows. Environmental degradation, on the other hand, could seriously affect the health of the population, especially the underprivileged segments, while pressures on water and land could aggravate social instability. That demography, poverty and environmental sustainability are intricately related is well known.

Combining the ideas of competitiveness and sustainability, sustainable competitiveness may be defined as "the set of institutions, policies and factors that make a nation remain productive over the longer term while ensuring social and environmental sustainability," (Schwab, 2013: 61[6]). **It is a combination of competitiveness or high quality growth, an equitable society and sustainable environment that creates the ideal conditions for life.**

Kerala wishes to be one such society by 2030, and that requires developing policies that balance economic prosperity with social inclusion and environmental stewardship. KPP 2030 explores the current status of Kerala on these dimensions and offers strategies to take the State towards sustainable competitiveness.

Vision in terms of Measurable Indicators

In order to assess progress and facilitate meaningful discussions on a vision for Kerala 2030, a series of indicators have been identified. These include economic prosperity, quality of life, equitable society and environmental sustainability.

Economic prosperity

- To achieve a compound annual growth rate of 7.5 per cent in GSDP per capita for the next 20 years.
- Increase per capita income from the current US$4,763 (in terms of purchasing power parity of 2005[7]) to US$19,000 by 2030, and then to US$36,000 by 2040.
- Achieve sectoral growth rates of:
    - √ 2 per cent minimum growth in agriculture
    - √ 9 per cent in manufacturing
    - √ 9 per cent in construction
    - √ 7.5 per cent in communication
    - √ 10 per cent in the education and health sectors

Quality of life

- Increase the share of the education and health sectors in GSDP to 15 per cent from the current 11 per cent by 2030.
- Increase the enrolment ratio in higher education to 48 per cent by 2030.
- Create health security for all.

- Move Kerala to the highest category of the UNDP human development index.
- Achieve high standards of living with a focus on:
  - √ The growth of smart urban and rural areas.
  - √ Transforming Kochi into a global city to take it onto A.T. Kearney's Global Cities Index.

Equitable society

- Reduction in:
  - √ Unemployment rate from 9.9 per cent in 2011−12 to 2 per cent in 2031 (reduce the female unemployment rate from 26.2 per cent to 5 per cent).
  - √ Gini coefficient of economic inequality from around 45 per cent in 2009−10 to 23 per cent in 2031.
  - √ Poverty rate from 7.1 per cent in 2011−12 to 1 per cent in 2031.
- Maintaining a culturally diverse, safe and just society

Environmental sustainability

- Upgrade ecosystems, biodiversity and resources through sustainable production systems and consumption.
- Protect wetlands.
- Conserve the World Heritage biodiversity of the Western Ghats.
- Increase energy efficiency to save 10 per cent of Kerala's energy and water consumption by 2030.
- Recycle between 60 and 75 per cent of waste generated depending on the type of waste.
- Identify and maximise the use of sustainable resources.

Organisation of the Perspective Plan

The framework for the development of the Kerala Perspective Plan 2030 has been conceived in terms of innovation-embracing entrepreneurs at the centre of the economy, with eight pillars of institutional elements, infrastructure, health and primary education built on the foundational elements of environmental sustainability and social sustainability (See Figure 1). The driving force of the economy is envisioned as the stream of entrepreneurs in all sectors of the economy, embracing innovation, pushing for new technology and raising productivity to be at the forefront of the global economy. An economy can only be as dynamic as the entrepreneurs and enterprises of the state, as emphatically put by Lazonick (2011[8]) comparing the development experience of industrial Great Britain and post-war Japan with the technology boom in Silicon Valley. As argued by him, the creation and growth of indigenous enterprises was the necessary ingredient for lasting development. While investment in education and foreign direct investment may make important contributions to growth, these are insufficient without entrepreneurial activity within the domestic economy (See Chapter 12 in Volume II for an elaboration of the theme).

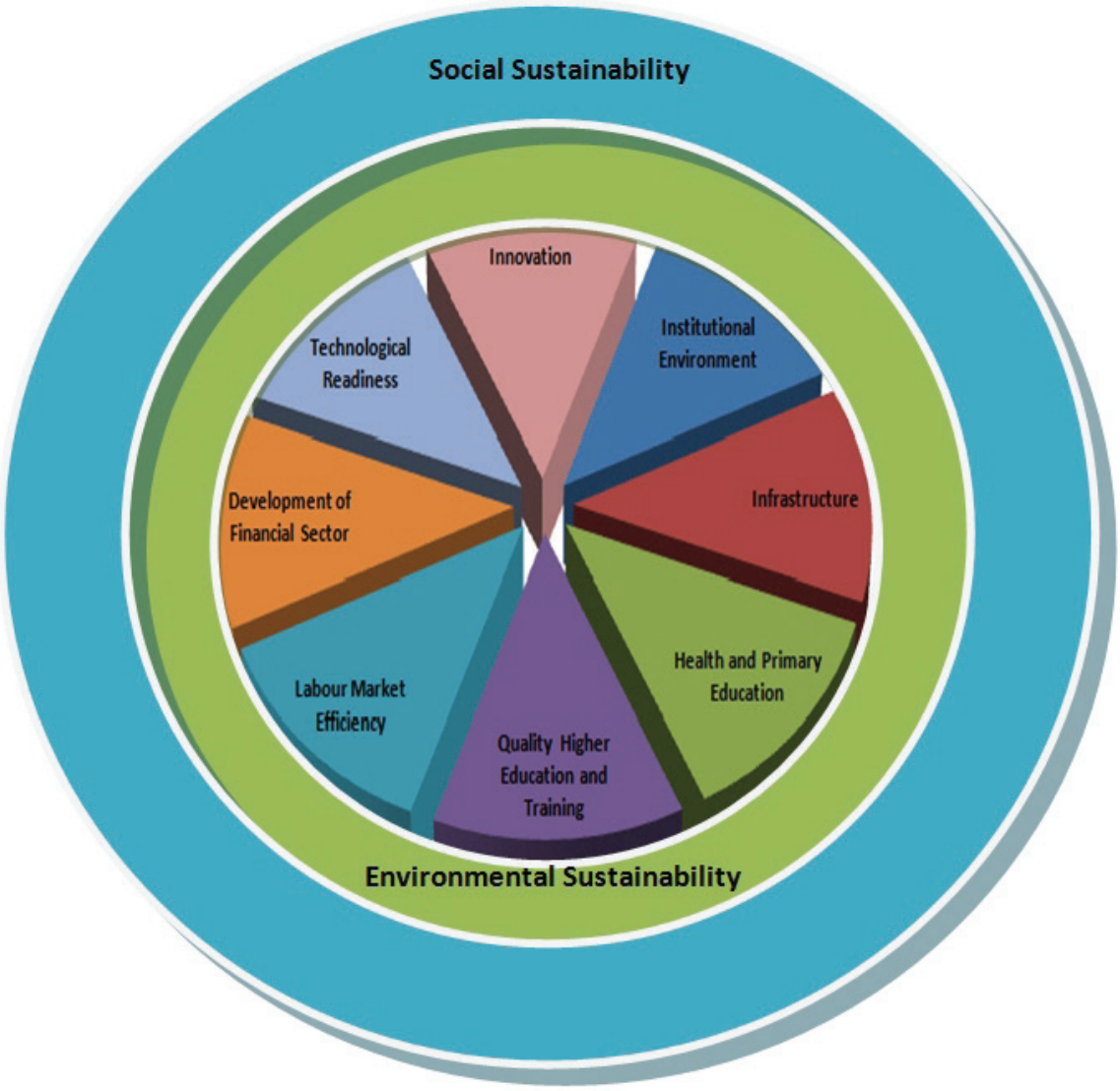


Figure 1. Framework of Kerala Perspective Plan 2030

The approach of KPP 2030 is to build on Kerala's achievements, discuss the challenges faced by the State in a globalising economy and think up strategies to achieve the goals. That is why KPP is organised in four volumes, which elaborate on four interconnected themes that together constitute its central tenet of balancing economic prosperity, social inclusion and environmental stewardship (See Figure 2 for the diagrammatic representation). Volume I begins with an analysis of the growth of the economy, identifies growth drivers and dynamism of enterprises in different sectors and then goes on to discuss strategies needed to spur entrepreneurial initiative. Seven material production sectors are taken up for detailed analysis to ascertain the nature of entrepreneurial activity, the evolution of the policy environment and the challenges faced by them in each of the sectors. Volume II takes up the eight pillars of entrepreneurial activity, except some, such as health, that are more foundational and are taken up in the social sustainability volume (Volume IV) and some such as infrastructure that go into the environmental sustainability volume (Volume III). Thus, each volume has its own merit and adds to overall value.

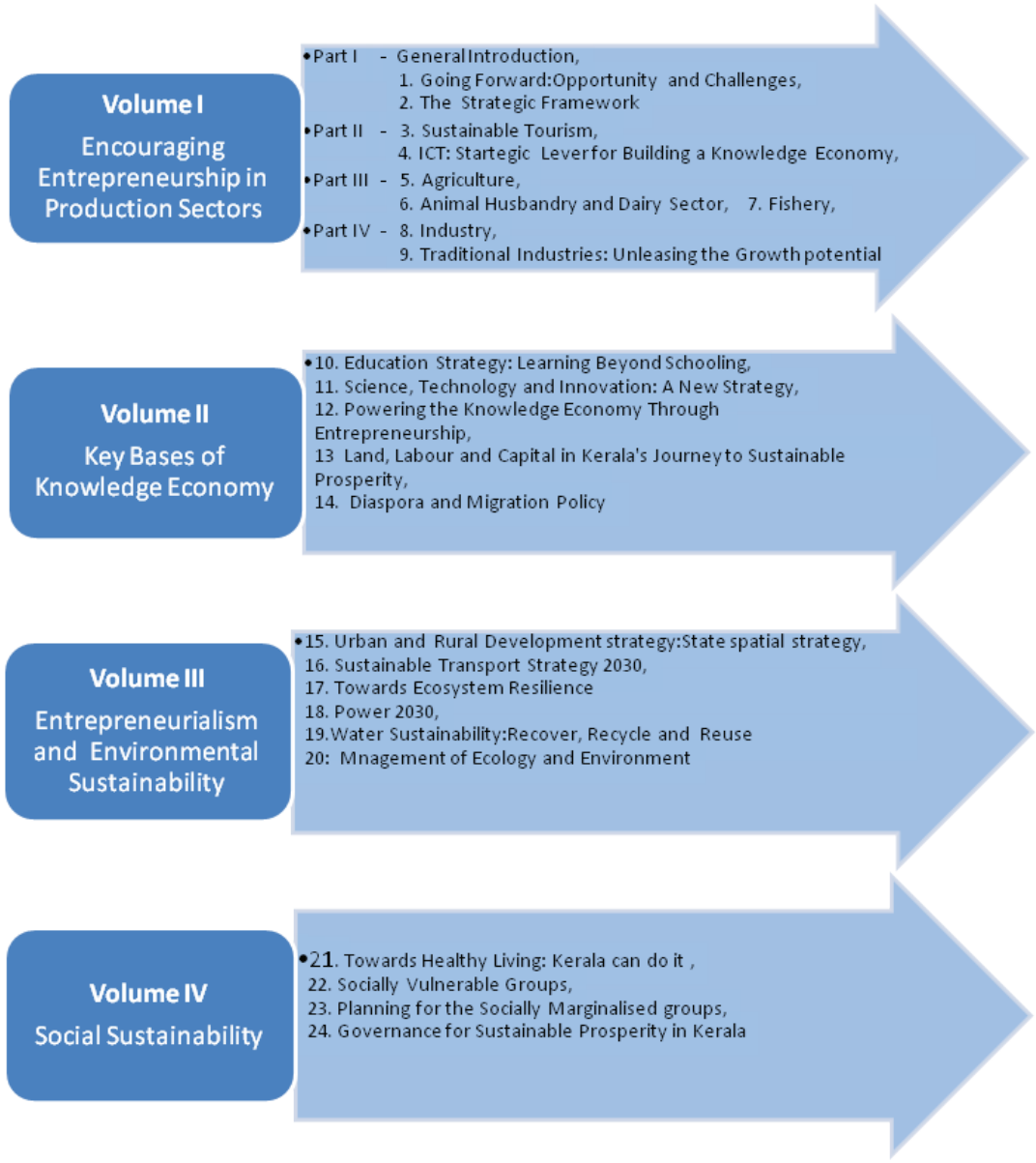


Figure 2. Organisation of Kerala Perspective Plan 2030

Volume I begins with a short introduction and continues in four parts. Part 1 contains Chapters 1 and 2, that discuss the opportunities and challenges, and the strategic framework required for the economy to move forward. Part 2 contains two chapters, one on tourism and the other on ICT, the two sectors that offer great opportunities in a globalising economy. Unconstrained by the market and receiving lots of government support, the two sectors, however, show contrasting performances in Kerala. Tourism zoomed ahead, establishing the Kerala brand across the world and setting benchmarks for other Indian states. ICT on the other hand, despite early advantages, lagged behind and is finding it challenging to make its presence felt in a very competitive market. Part 3 on agriculture, livestock and fisheries analyses these ailing sectors with some sparks of success. Part 4 on industry, including traditional industry, draws attention to the constraints and the major steps needed to take the sector out of decline. Comparing and contrasting the growth experience of the different sectors lays bare the fact that innovation and entrepreneurship go side by side in dynamic sectors such as

tourism and subsectors such as cardamom or natural rubber cultivation. Other sectors lack the two and languish. The centrality of innovative entrepreneurs for growth dynamism of the economy is well brought out.

Volume II is on the Key Bases of the Knowledge Economy. Education, innovation and entrepreneurship are among the factors that foster competitiveness. By responding to the needs of labour markets, educational systems help economies avoid skills gaps and ensure that adequately trained human capital is available. Kerala's education sector, a key base of the knowledge economy, has to be transformed to raise the skill levels of those who pass through it and enter the labour force, as well as of those who enter institutions of higher learning. In short, it needs to become a knowledge-creator of excellence.

Education in the form of dynamic centres of higher learning also supports the growth of entrepreneurship and a culture of ideas and innovation. Entrepreneurs are at the pinnacle of the knowledge economy, creating new products, services, technology or production methods.

Similarly, the creative arts, and the broader humanities stream, can drive, produce, apply and diffuse innovation in different, but equally useful ways compared to the science and technology sector. Consequently, a much broader platform that embraces both science and technology and the arts and humanities needs to be conceived. The ever expanding cycle of innovation is transformed into economic progress when capital and labour shift from failing technologies to those at the cutting edge. These movements of factors of production are greatly affected by factor rigidities, so the move from the sphere of ideas to the market can be greatly eased by loosening the factor rigidities. Institutions, therefore, have to be designed to ease the rigidities of the land, labour and capital markets.

The diaspora too can play an active role in the growth of the knowledge economy by making use of its global exposure to ideas, markets and institutions. This exposure can be then brought home to Kerala in various ways. Transitioning to a knowledge economy, thus, calls for an inclusive strategy that brings together education, science and technology, higher learning, entrepreneurship, land and labour rigidities and the diaspora.

Volume III is on Environmental Sustainability. The fact that economic growth requires extra inputs of natural resources can be attributed to increased urbanisation and changing consumption patterns. Urbanisation leads to substantial use of raw materials for building urban infrastructure such as water supply and sewage systems, roads, buildings and so on. Similarly, rising incomes change consumption patterns, raising the demand for a number of goods, the production of which requires many natural resources. For Kerala, these are issues to consider, as the depletion of natural resources will affect the Western Ghats, wetlands and coastal regions.

The State also faces new challenges in the context of the Kasturirangan Report and related notifications. Many parts of Kerala come under its purview, thus introducing limitations on economic activity in several regions of the State. At the same time, the notifications are also an opportunity for the State to channelise reverse migration from the hills to its urban centres more systematically, while using areas falling within the Western Ghats for forest regeneration and preservation.

Likewise, the environmental sustainability of Kerala's urban areas has to be in sync with the distinctive patterns of urbanisation in the State. For instance, overall population growth in the State is low and is concentrated in a few urban agglomerations. These urban centres need to have sustainable power, water, sanitation and transportation systems of international standards. Likewise, they need proper green spaces, while the Ramsar sites located around them have to be preserved and the coastal zones have to be conserved.

Volume IV is on Social Sustainability. Social sustainability is achieved when the economy has a fair and equitable health and social security system. It has two parts: one, preserve and protect the health of the population, and two, protect and support the vulnerable — the aged, disabled, disadvantaged and marginalised. The first requires investments in health, which has forward links to economic growth and productivity. Financing, architecture and governance of health of the population to reduce the IMR, CMR, MMR and infectious and lifestyle disease burden is its goal. The burden of lifestyle diseases is aggravated by smoking, consumption of high calorie processed food and consumption of alcohol. Injuries from traffic accidents form an additional burden. Financial protection against catastrophic health expenditure is also part of the healthcare system. The social sustainability pillar of KPP 2030 intends to reduce the difference between Kerala and the developed countries on parameters such as infectious, maternal and child mortality outcomes and lifestyle diseases.

The principle underlying the social security system is solidarity. This is solidarity between various social groups, especially between the employed and unemployed, the young and the old, the healthy and the ill and so on. Social solidarity evolved from simple insurance against social risks to a guarantee of subsistence security. The charter of the socially insured is basically to protect the population through a set of rules to be respected by all social security institutions; the automatic adaptation of social benefits to the evolution of the consumer price index; and electronic governance of social security institutions by reducing the number of forms, reducing the number of times information is asked for and reduction in the time needed for filling forms through the increased use of ICT. By 2030, Kerala's social security system will be comparable to that in any of the Nordic countries.

Governance systems too form the base of social sustainability. It is often said, "A common problem for many governments is that they use yesterday's institutions to meet tomorrow's problems." These are blunt instruments, which have to be replaced. Kerala has already made some progress with decentralisation initiatives following the 73rd and 74th amendments to the Constitution. Local governments are participatory, with their gram/ward sabhas. The aim is to go further with participatory budgeting and transparent project formulation and implementation so that the efficiency of public spending can be enhanced. But other government institutions are archaic and call out for a complete overhaul.

The local government system in Kerala may be characterised as welfarist. The bulk of the funds that flow from the central and state governments go towards meeting social security and welfare activities. This will have to change because urbanisation is taking place at a rapid pace and in an increasingly competitive world, urban governments have to become more entrepreneurial.

Kerala will have to balance the welfarist and pro-growth or urban entrepreneurialism models of governance. Sustainable competitiveness calls for a system of urban governance that creates conditions for higher local economic growth. As the source of such growth is knowledge-intensive business, urban governance should be building a favourable image of the city to attract investment. Urban entrepreneurialism needs to take advantage of the local resource base, location or physical and social infrastructure to push for sustainable competitiveness. Urban governments will, therefore, need to explore all the options before them, with some leveraging their status as tourism or entertainment centres and others growing as centres of higher education or finance. This requires the institutional structure of local government-state government interaction to move in the direction of promoting urban entrepreneurialism, with the state government creating appropriate incentives to facilitate the process.

Some Limitations

Perspective plans such as KPP 2030 detail a vision of where a community wishes to be in 20 or so years. Any vision is a projection, a visualisation of something that does not exist today; it combines what exists with what is possible. The possibilities generated by the imagination are born out of what exists, which in turn is the result of the past that is our history and the evolution of the economy and society to the present. While imagination remains in the realm of the mind, creativity is its result and tangible creation.

This requires a depth of understanding that is multi-layered, with the past and present serving as a continuum as well as a spur to further evolution. Such deep understanding is the result of observation, analysis and introspection. In other words it stems from a critical analysis of the reality around, an analysis that draws from research studies and experience. This is essential if visualisation is to be kept within realistic limits.

This is broadly the perspective with which this document needs to be viewed. Therefore, KPP 2030 can only be as rich as the critical analysis of different sectors that were available during its preparation. Kerala is fortunate to have detailed studies on a number of sectors such as health, education, social vulnerability, governance and marginalisation and so on. Equally, there are few comprehensive studies on a number of sectors such as urbanisation, transportation, the environment and so on. The integral link between the idea of future and the present may be perceived as strong for some sectors and weak for others in the document, depending on availability of data and baseline scenarios. While an effort has been made through various rounds of stakeholder consultations and insightful study of relevant documents and best practices around the world, gaps do remain.

It is possible that some of these issues have been pointed out by experts during the workshops held to review the draft document. But the absence of adequate studies could be a serious challenge to bridging the gap between the reality that is Kerala's society and economy today and a vision of the future. This, therefore, needs to be viewed as a stimulus for further studies rather than a rigid document.

[1] *Alkire, S. and S. Seth (2013), Multidimensional Poverty Reduction in India between 1999 and 2006: Where and How?, OPHI WP 60, 2013.*
[2] *www.doingbusiness.org/India and www.doingbusiness.org*
[3] *businesswireindia.com/news/news-details/states-india-assessed-ranked-according-different-stages-development-ma/38139*
[4] *Liveability Index 2010: The Best Cities in India, A CII–Institute for Competitiveness Report*
[5] *http://www.weforum.org/content/pages/sustainable-competitiveness/ accessed 27 March 2014*
[6] *Klaus Schwab;The Global Competitiveness Report 2012–2013,World economic forum.*
[7] *Purchasing power parities (PPPs) are indicators of price level differences across countries. They indicate how many currency units a particular quantity of goods and services costs in different countries (http://epp.eurostat.ec.europa.eu/portal/page/portal/purchasing_power_parities/introduction).*
[8] *Lazonick,M.(2011) Entrepreneurship and the Developmental State, In W. Naudé (ed), Entrepreneurship and Economic Development (254−270). Palgrave Macmillan*

The Key Bases of the Knowledge Economy

Innovation is a key pillar of the knowledge economy. Sustained gains in productivity over the long term depend on innovation, which is a strong source of market power that entrepreneurs compete with existing firms to build. The introduction of innovation is responsible for both the progress and instabilities of the capitalist economic system. While innovation leads to growth in productivity, it also results in instabilities through 'creative destruction', a process by which new technology, new products, new methods of production and new methods of distribution make old ones obsolete. Joseph Schumpeter saw 'creative destruction' as renewing, through innovation, society's dynamism, leading to higher levels of economic development.

Entrepreneurs are at the centre of 'creative destruction', developing new products, technology or methods of production and providing an impetus for change. Those positioned at the top of the knowledge economy excel at ideating and taking these ideas to the market. Ideation requires powerful higher education initiatives provided by dynamic centres of learning and university-industry linkages. Similarly, the creative arts and the broader humanities stream can drive, produce, apply and diffuse innovation in different, but equally useful ways compared to the science and technology sector. Therefore, a broad platform that embraces both science and technology and the arts and humanities needs to be built — that is the fount of knowledge creation.

The ever expanding cycle of innovation is transformed into economic progress when capital and labour shift from failing technologies to those at the cutting edge. These movements of factors of production are greatly affected by factor rigidities, so the move from the sphere of ideas to the market can be greatly eased by loosening the factor rigidities. Therefore, institutions have to be designed to ease the rigidities of the land, labour and capital markets.

One of the key bases of the knowledge economy is education. Kerala's education sector has to be transformed to raise the skill levels of those who pass through it and enter the labour force, and also of those who enter institutions of higher learning. Education, in the form of dynamic centres of higher learning, also supports the growth of entrepreneurship and a culture of ideas and innovation.

Kerala's diaspora can also play an active role in the growth of the knowledge economy by making use of its global exposure to ideas, markets and institutions. This exposure can be then brought home to Kerala in various ways. Transitioning to a knowledge economy, thus, calls for an inclusive strategy that brings together education, science and technology, higher learning, entrepreneurship, land and labour rigidities and the diaspora.

Volume II contains five chapters that discuss these issues, with all their interconnections. Kerala's achievements, challenges and strategies for each sector are considered in these chapters, which also simultaneously explore the interconnections.

The volume opens with the chapter **Education Strategy: Learning beyond Schooling**. One of the key foundations of the knowledge economy is the education sector. Kerala has been acclaimed for achieving almost universal access to pre-schooling, schooling and literacy. Over the past few years,

the State has also been meeting the burgeoning demand for technical and professional education. The devolution of schools and pre-schools to local governments has meant responsive governance, filling of infrastructural gaps and better administration of human resources. The evolution of Integrated Child Development Services (ICDS), at the pre-school level, has managed the health and nutritional needs of children below six years and also those of pregnant and lactating mothers. Schooling has become almost universal, with enrollment rates crossing 100 per cent for almost all population groups. Progression to the plus-two level has reached 50 per cent. The gaps in meeting the demand for technical and professional education have been filled. The realisation has also dawned that science and technology institutions have to be strengthened and need to be turned into knowledge creating centres that encourage entrepreneurship, thus driving the knowledge economy.

In order to transform Kerala's education sector into the foundation of the new knowledge economy, a few key strategies have to be adopted: First, pre-schools have to be transformed from being health and nutrition programme centres to early childhood education centres. The State's future is secure when its children develop their cognitive and non-cognitive or socio-psychological abilities to the fullest by the time they enter the school system. Kerala's schools have to become learning centres rather than knowledge dissemination centres. Vocational education has to impart a whole set of new skills that are in great demand in the knowledge economy. Likewise, institutions of higher education, which have taken baby steps, need to move faster to become centres of excellence in knowledge creation.

The chapter **Science, Technology and Innovation: A New Strategy** examines how Kerala's science and technology (S&T) sector can be spurred to build a more competitive and sustainable knowledge economy. The State's support system for S&T appears a little lopsided and too general to make a substantive impact. Likewise, Kerala has few focused programmes that support innovation. The mission, therefore, is to mobilise S&T to work to Kerala's advantage.

In a knowledge-based economy, innovation contributes to knowledge production and acquisition, knowledge transmission and knowledge dissemination, besides providing knowledge inputs for problem solving. This chapter proposes a sustainable innovation strategy to help steer Kerala out of the economic, social and environmental challenges the State faces. As part of this process, institutions of higher learning will have to forge bonds with industry to power the new knowledge economy. Similarly, the S&T sector will have to create an environment for innovation by bringing together various disciplines and arranging for experts from across the world to interact with young people in the State.

Innovation policy is, however, more than just a science and technology policy. For the knowledge economy has many non-technological innovations that transform business. Overlooking these means squandering opportunities to make the productivity gains that Kerala needs to maintain its prosperity. In this context, the 'false dichotomy' between arts and sciences, which implies that creativity is the preserve of the arts while innovation applies only to technology or design, needs to be put to rest. Thus, the policy framework for innovation should be about putting good ideas to work, creating the conditions necessary for innovation and the circumstances for innovations to successfully establish themselves in the marketplace.

The chapter titled **Powering the Knowledge Economy through Entrepreneurship** is on entrepreneurial activity, the cornerstone of innovation. The entrepreneur is the key organiser and agent within the innovation system, and operates within a social environment. It is envisioned that Kerala will be a knowledge economy by 2030. To facilitate this, the government needs to remove structural bottlenecks, thereby promoting entrepreneurship. In order to target, design and implement entrepreneurial initiatives that achieve optimum effect, the government needs to build an 'Entrepreneurial Ecosystem'. Such an ecosystem will include all the elements that entrepreneurs

need to thrive — personal enablers; financial enablers; business enablers; professional enablers; economic enablers (economic policies and performance); and social enablers. This chapter presents the experiences of different countries in developing an entrepreneurial ecosystem and the strategies that Kerala can adopt.

Transition to a knowledge economy depends on the reallocation of factors of production — land, labour and capital — in a manner that enables Kerala to produce at its maximum potential, thus achieving economic, human, environmental and social prosperity. The chapter **Land, Labour and Capital in Kerala's Journey to Sustainable Prosperity** deals with this issue. Kerala operates far below its full potential as the State is characterised by high unemployment, especially educated unemployment. The State has to move towards an educational system that produces an employable labour force with skills that are wanted in the market and a mechanism to re-allocate labour from low value-adding activities to high value-adding activities. It is proposed that the State formulates a comprehensive 'growth-oriented labour welfare policy' with the following objectives: increasing employability by matching demand with the supply of labour; increasing employment opportunities; ensuring a social security net; and re-training the labour force. Life-long learning, vocational education and a better higher education system in general will create people with employable skills, entrepreneurs and knowledge creators.

Kerala is a relatively small state with a high population density and a north-south axis. The shortage of land is a severe impediment to economic growth. A spatial strategy needs to be adopted with zoning, where uninhabited, environmentally sensitive land, forests and wetlands are protected and no conversion of land allowed. Resettlement and rehabilitation have to form significant components of any strategy for inhabited land. Mixed zoning is the strategy recommended to build compact cities and villages, with land acquisition policies that are sustainable and inclusive. In the case of capital, the diaspora will be the most important source of Kerala's resource mobilisation efforts. The State needs to introduce financial instruments that will mobilise the savings of its residents for positive economic growth and development.

The chapter titled **Diaspora and Migration Policy** argues that integrating the diaspora with Kerala's economy can, to a great extent, absorb the instabilities that arise from the 'creative destruction' that is part of the new and dynamic economic environment. The proposed strategy is to mainstream the three categories of migrants — non-resident Keralites, return emigrants and in-migrants — in the development agenda. The plan is to do this by creating an enabling environment into which migrants are effectively integrated and, thus, able to make a significant contribution to the State's development. The main thrust, therefore, is to harness the diaspora (including return migrants) and in-migrants as a resource for development. The diaspora could also play an active part in boosting the knowledge economy by bringing to Kerala the ideas, markets and institutions they have been exposed to across the world.

Chapter 10

EDUCATION STRATEGY: LEARNING BEYOND SCHOOLING

Chapter 10

Education Strategy: Learning Beyond Schooling

10.1 The Setting

10.1.1. Knowledge-driven growth requires education systems that develop the highly skilled, flexible human capital needed to compete in global markets. The conventional approach to education is from a social welfare perspective, in which education is directly linked to human well being and social development. It facilitates individuals' access to productive employment and enables them to live a respectable life contributing substantially to the welfare of society. It eliminates inequities and poverty and fosters peace. Kerala — having made a mark globally for its better demographic, educational and health outcomes — is a vivid example of the social benefits that accrue to an educated society. Improvements in education have played an important role in creating a vibrant society in Kerala.

10.1.2 The concept of a knowledge economy is based on the view that education is at the core of economic prosperity. Knowledge, in this paradigm, has superseded physical factors as the fundamental source of production. The education landscape in this economy is dominated by higher education, life-long learning and scientific knowledge.

- Higher education: Three particular aspects of learning are — professional, vocational and workplace learning. These forms of learning are central to the transformation of the economy in a way that primary and secondary education is not. According to Sundać and Krympotić (2011),[1] a unit increase in the share of tertiary enrolment would, on average, increase GDP per capita from US$95.8 to US$146.
- Life-long learning: There has been rapid proliferation of scientific and practical knowledge due to continuous production of new knowledge. This requires continuous upgrading of knowledge. Knowledge-driven growth, therefore, requires education systems that ensure life-long learning, particularly by the workforce.
- Scientific knowledge: Technological change and innovation drive the development of the knowledge-based economy through their effects on production methods, consumption patterns and the structure of economies. Scientific knowledge, thus, determines the economic competitiveness of a knowledge economy.

10.1.3 The Education Perspective Plan has been developed against this backdrop. Kerala's education has seen exceptional development from the early 19th Century, moving from a system that was confined to the social elite to one with widespread participation. The present education strategy is framed against a range of new challenges that the State is likely to face in the process of building a knowledge-based economy. Higher education will need to take a quantum leap to enhance its quality and relevance and connect better with the wider needs of society and the economy, while operating in a more competitive globalised environment.

10.2 Education in Kerala: An Overview

10.2.1 A historical perspective

10.2.1.1 Kerala has been internationally acclaimed for achieving various educational indicators. Its success in education is an outcome of a mix of historical, social and political factors. Historically, it was aided by:

- Progressive outlook of the governments of the princely states.
- The presence of the church and missionary institutions.
- Emergence of powerful social and religious reform movements.
- Commercialisation of agriculture, which increased incomes and, hence, the demand for education.

10.2.1.2 Historical evidence[2] suggests that public support for collective welfare served as an important impetus for the introduction of a range of education and healthcare policies in the renaissance period of the late 19thcentury and early 20th century. The Travancore government's expenditure on education and health increased sharply.[3] The number of state educational institutions also increased steadily from the late 19thcentury onwards. In contrast to the primarily elitist state initiatives of the 19th century, mass education and health programmes were introduced, beginning in the early 20th century. In 1904, the government of Travancore accepted, in principle, that the education of all children in the princely state, irrespective of caste, creed or race, was its responsibility and declared that it would defray the entire cost of primary education in the state. In 1911, restrictions on the admission of children from the so-called untouchable communities to departmental schools in Travancore were removed. Through the 1920s and 1930s, the princely states introduced a range of affirmative action policies for lower castes, such as fee concessions and scholarships. It is widely acknowledged that the State had progressed far in the field of education decades before the attainment of national independence. Social and political factors (including land reforms) in the post–1956 period reinforced these patterns.

10.2.2 Education: After Kerala's formation in 1956

10.2.2.1 After the formation of the State in 1956, successive governments continued to support education directly by spending heavily on creating and supporting infrastructure, and indirectly by introducing reforms and encouraging private initiatives in the sector. By the 1980s, Kerala was spending more than 6 per cent of its GSDP on education,[4] the only state to meet the norm recommended by the Education Commission (1964–65). Kerala's expenditure on education ranged from 30 per cent to 40 per cent of its total revenue receipts.

10.2.2.2 Social organisations such as Nair Service Society (NSS), Sree Narayana Dharma Paripalana Yogam (SNDP), Christian denominations and the Muslim Education Society also made notable contributions to the implementation of government policies in education by setting up a chain of educational institutions, at all levels, throughout the State. After the 1990s, while the share of education in total government expenditure has declined continuously due to the fiscal crisis, private sector investment has ensured the expansion of this sector.

Expansion in school education

10.2.2.3 It is well-known that the Government of India adopted an inverted education paradigm after independence, where education expenditure was targeted toward secondary or higher education. In marked contrast, successive state governments in Kerala have focused their attention overwhelmingly on the provision of primary education. Several initiatives have been taken to continuously improve the educational accomplishments of the State's population, to reduce disparity across different

socioeconomic groups and to reorient the educational curriculum with the changing needs of the time. In the 1980s, Kerala was among the first states to implement the 'midday meal' programme with a view to enhance enrollment, retention and attendance and also improve the nutritional status of primary school children. Among other major schemes, the District Primary Education Programme and Sarva Shiksha Abhiyan have made a significant contribution to the spread of education in the State.

10.2.2.4 Further, the equitable provisioning of services in the State played a major role in the achievement of education. For instance, the departments of Scheduled Caste Development and Scheduled Tribe Development have initiated various schemes for children belonging to the scheduled castes and scheduled tribes. These departments:

- Run schools, hostels and training centres.
- Offer scholarships and grants to students at all levels of education and subsidies for travel, boarding and lodging and school uniforms.
- Make special arrangements to assist/train students from these social classes who have failed in exams.

10.2.2.5 These efforts are further supplemented by the Department of Social Welfare. It also runs a scheme — Integrated Education of Disabled Children (IEDC) — to take care of the requirements of children with disabilities and special needs. It has been in operation since 1974–75. In 1998, the scheme was merged with the District Primary Education Programme.

10.2.2.6 On the demand side, factors such as improved physical accessibility to schools, redistributive policies, remittances from abroad and public-private partnerships in education contributed significantly to the expansion in demand for school education in Kerala.

Expansion in higher education

10.2.2.7 In the initial years after Kerala's formation, school education was the focus of educationists and policymakers. The expansion in college education in Kerala began in the 1960s when, in response to organised demands from various constituencies of the State, the government began to build, or sanction the establishment of, colleges. Since the 1990s, higher education in Kerala has been subject to significant policy shifts. At least four sets of policy moves altered the higher education scenario in the State.

- First, the opening of doors to self-financing colleges initiated full-fledged private participation in the sector. Previously, private participation had been through private-aided colleges, which received public funds but were managed by private establishments, mostly organised as voluntary or charitable trusts. In 2000, the government decided to "grant 'no objection certificates' to any private agency that approached it for permission to start an unaided professional college." This decision evidently evoked a huge response.[5] Privatisation of higher education has given a major thrust to professional and technical education in the State.
- Second, since 1998 the pre-degree courses have been delinked from universities and are now under higher secondary schools as 10+2 courses, a process that was completed in 2001. It narrowed the social base of arts and science colleges.
- Third, in 2007, the Kerala State Higher Education Council (KSHEC) was constituted to initiate reforms in higher education, including an overhaul of existing structures and practices. The Council has proposed several reforms pertaining to infrastructure, connectivity, research, faculty recruitment and training, industry linkages, accreditation and autonomy. Initiatives have been taken to reform post-graduate programmes, teachers' training and teaching methods and to review University Acts.

- Fourth, several new institutions, including central universities, Indian Institute of Management, Indian Institute of Science Education and Research (IISER), Indian Institute of Science & Technology (IIST) and Indian Institute of Technology, are either planned or have been set up. Besides, allocations to universities have been substantially increased to raise the quality of education to global standards.

10.3 Achievements in Education

10.3.1 School education

Good school infrastructure

10.3.1.1 The State Development Report (2005) says that almost 100 per cent of the schools in the State are housed in *pucca*[6] buildings with drinking water and sanitation facilities. The availability of infrastructure — both physical and human ¬— in schools is relatively better in Kerala, at least in quantitative terms. The latest report of the District Information System for Education (DISE, 2010–11)[7] and Annual Status of Education Report (ASER, 2012) confirm this observation.[8]

10.3.1.2 Table 10.1 shows the average number of teachers per school and pupil-teacher ratio in the State for 2007–08, besides providing a similar profile for India. On an average there were 6, 15, and 34 teachers respectively for each primary, middle, and high school in the State. These numbers are much better than the national average. Kerala also performs better than the whole of India in terms of the number of pupils per teacher at all levels of school education (Table 10.1).

Table 10.1
Average Number of Teachers per School and Pupil-Teacher Ratio: 2007–08

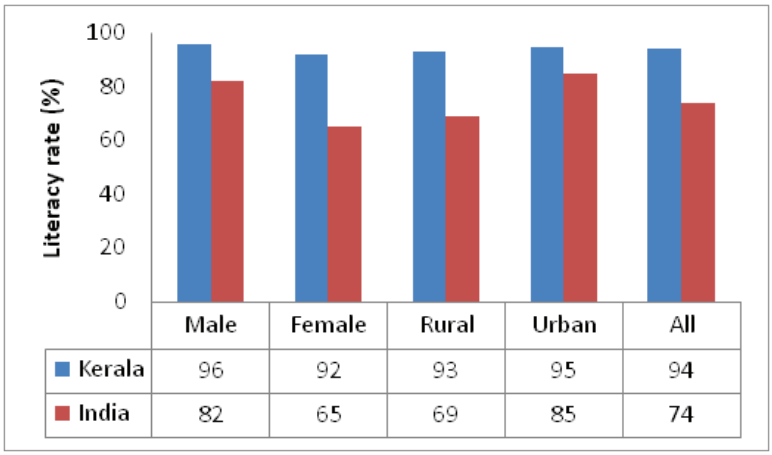
Education level	Teachers per school		Pupil-teacher ratio	
	Kerala	India	Kerala	India
Primary (I–V)	6.02	2.94	27.65	46.56
Middle (VI–VIII)	15.1	5.47	25.02	34.91
High School (IX–X)	33.76	10.32	23.71	32.67
Higher Secondary (XI–XII)	13.03	16.09	27.32	37.18

Source : Author's computations based on Government of India (2011[9])

High literacy

10.3.1.3 In literacy, the State has achieved spectacular success. Since the pre-independence years, Kerala has had a literacy rate much above the national level. In 1901, the literacy rate in Kerala stood at 11.1 per cent compared to 5.4 per cent in India.[10] The progress continued after independence, and since 1991 Kerala has been recognised as a totally literate state.

Figure 10.1
Literacy Rate by Gender and Residence: 2011



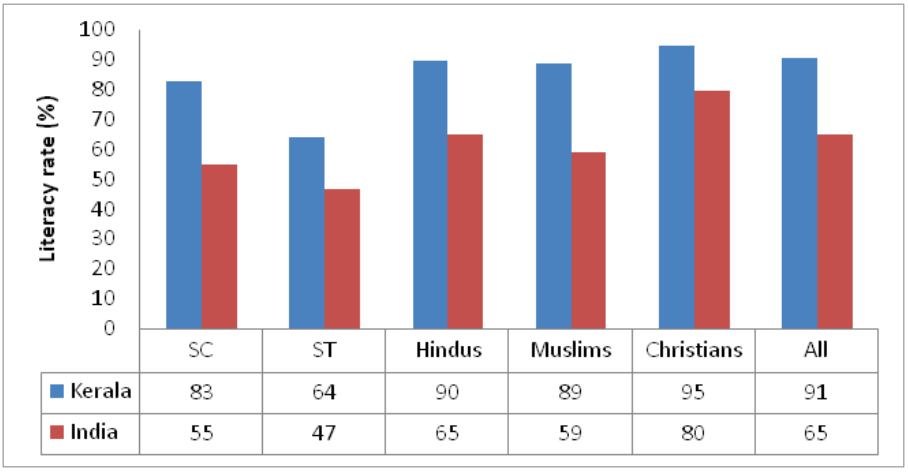
	Male	Female	Rural	Urban	All
Kerala	96	92	93	95	94
India	82	65	69	85	74

Source: Government of India. 2011 Census of India 2011, Provisional Population Totals, Paper 1 of 2011, Series 33 Kerala. Directorate of Census Operations Kerala

10.3.1.4 According to the 2011 Census, the literacy rate in the State is 94 per cent, which is 20 percentage points higher than the national average. As Figure 10.1 depicts, the gap between the literacy rates of males and females and between rural and urban areas is only marginal.

10.3.1.5 Figure 10.2 shows that the literacy level does not differ perceptibly across the major religious groups.[11] However, there are gaps in the level of literacy across social groups. While both the Scheduled Caste (SCs) and Scheduled Tribe (STs) groups in Kerala have done better than their counterparts in the country, the same cannot be said about their performance vis-à-vis other social and religious groups in the State (Figure 10.2).[12] In particular, STs in the State significantly lag behind other social groups in literacy (Figure 10.2). As regards the variation across districts, Palakkad, Wayanad and Idukki, located in Kerala's hinterland, have literacy levels lower than the State average (Figure 10.3).

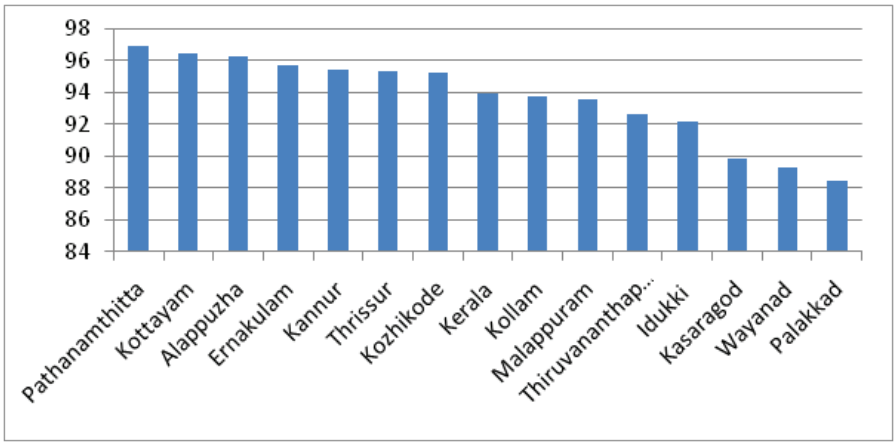
Figure 10.2
Literacy Rate by Social and Religious Group: 2001



	SC	ST	Hindus	Muslims	Christians	All
Kerala	83	64	90	89	95	91
India	55	47	65	59	80	65

Source: Census 2001.http://www.censusindia.gov.in/default.aspx

Figure 10.3
Literacy Rate (in %) by District: 2011



Note: Districts are arranged in descending order of the literacy rate.

Source: Government of India. 2011 Census of India 2011, Provisional Population Totals, Paper 1 of 2011, Series 33 Kerala. Directorate of Census Operations Kerala

High enrollment ratios

10.3.1.6 The enrollment ratio is also high in Kerala. According to statistics on school education 2010–11, the gross enrollment ratio (GER) in the State was 91.5 for class 1 to 5; 103.9 for class 6 to 8; 100.6 in class 9; and 68 in classes 11 and 12. Overall, the GER for classes 1 to 12 in 2010–11 was 92.2 in Kerala. This is higher than most other states in the country.[13]

Low drop-out rates

10.3.1.7 The drop-out rate for classes (standards) 1 to 10 was close to zero in Kerala, whereas the nationwide figure was 57 per cent (Table 10.2). The problem of drop-outs is noticed only at the secondary school stage in Kerala. Further, there is low gender disparity in the State and, in fact, girls have lower drop-out rates than boys (Government of Kerala 2006).[14] However, the drop-out rate for the ST group in Kerala is 39, which is a matter of concern.

Table 10.2
Dropout Rates by Standard and Population Sub-group: 2007–08 (%)

Population sub-group	Standard		
	I–V	I–VIII	I–X
Kerala			
All	0	0	0
Scheduled Castes	0	0	9
Scheduled Tribes	3	0	39
India			
All	25	43	57
Scheduled Castes	30	52	68
Scheduled Tribes	31	62	77

Source: Statistics of School Education(2007–08), Government of India. http://mhrd.gov.in/sites/upload_files/mhrd/files/SES-School-2007–08.pdf

Differentials in Cohorts Entering Higher Secondary School

10.3.1.8 Enrollment at the high school level in Kerala showed hardly any variation across social groups. But schooling cohorts entering higher secondary schools showed wide variation. It varied from 29.2 per cent for other backward classes (OBC) Muslims, 36.1 per cent for Scheduled Castes, 64.4 per cent for forward class (FC) Hindus and 67.9 per cent for FC Christians to 71.3 per cent for OBC Hindus and 79.1 per cent for OBC Christians (Dilip, 2010). As entry to higher secondary schools is based on high school scores, the large deficits in school achievements across social groups probably has to be traced to deficits at the pre-school level. These then build up through the school system, resulting in wide variations in entry to the higher secondary level.

10.3.1.9 Kerala has achieved remarkable progress in schooling, which, in no small measure, is due to the better all-round access to schooling. A high school within an 8 km radius for all, no fees, mid day meals, free books and free uniforms together have made access to schooling almost universal. The result is the universal enrolment in schools: "During 1946-56, just about a fifth entered high school, which steeply increased to 91 per cent by 1996-2006." (Dilip, 2010: p.16) And the increase has been uniform across castes/religions. But such a uniform increase has not occurred in the case of entry to higher secondary school. An overall increase from 6 per cent to 45 per cent implies educational graduation deficits are strong for some social groups.[15]

10.3.2 Higher education

Proliferation of institutions of professional and technical education

10.3.2.1 In response to the government policy of encouraging private participation in education, the number of institutions of higher education, especially technical and professional education, have increased substantially in Kerala. The high growth in technical education is guided by changes in labour market conditions and increasing preference for technical courses. The number of self-financing colleges in the State increased from 33 in 1996 to 186 in 2003. Similarly, the number of institutes offering technical education has grown steadily. For instance, the number of engineering colleges increased from 16 in 1995 to 142 in 2011.[16] Technical institutes outnumber medical institutes in Kerala as per the Kerala State Development Report.[17] A sharp increase in availability (per 10 lakh population) of engineering/technical institutes between 1998-99 and 2004-05 is due to the government's liberal approach towards opening new institutes by the private sector.[18] But, the increase in the number of seats is largely confined to bachelors and masters level courses, almost neglecting doctoral students. As a result, while the supply of engineers does not seem to be a matter of concern in the State, that of doctoral students to fill faculty positions is a concern. Nevertheless, the number of arts, commerce and general science institutions is much lower in Kerala vis-à-vis India. Their growth between 1998–99 and 2004–05 has been lower in Kerala compared to India. This is also true of universities.

Table 10.3
Institutions of Higher Education (per 10 lakh population)

Type of educational institution	1998–99		2004–05	
	Kerala	India	Kerala	India
Universities	0.28	0.31	0.25	0.36
Research Institutions	NA	NA	0.03	0.12
Arts, Commerce and Science	5.7	7.46	5.73	9.45
Engineering/ Technical	0.77	0.54	2.03	1.19
Medical	0.64	0.75	1.23	0.74
Polytechnics	NA	NA	1.73	1.07

Notes: 'NA' indicates not available. Population for 2004–05 has been arrived at by interpolation using the growth rate between 2001 and 2011

Source: Tilak (2001)[19] for 1998–99 and computations based on Government of India (2007, 2011, nd1)[20]

10.3.2.2 Zachariah (2010) shows that in 1991 there was only one private unaided ayurveda college, and every college was either public or aided. By 2007−08, this situation had changed with the share of the private in the total number of institutes increasing in all sectors as reflected in the following numbers[21]:

- √ Arts and Science colleges: 44.1 per cent
- √ Polytechnics: 15.5 per cent
- √ Engineering colleges: 83.7 per cent
- √ Medical colleges: 61.5 per cent
- √ Ayurveda colleges: 61.5 per cent
- √ Dental colleges: 66.7 per cent
- √ Homeopathy colleges: 0 per cent
- √ Nursing colleges: 89.4 per cent
- √ Pharmacy colleges: 89.5 per cent

10.3.2.3 Further, the Directorate of Collegiate Education gives the break-up of students enrolled in various types of colleges. It is seen that only 18.6 per cent of students are enrolled in government colleges.[22]

Vocational education

10.3.2.4 Vocational education was formally introduced in Kerala in 1983–84 at the higher secondary level.[23] In 2010-11, there were 389 Vocational Higher Secondary Schools and 593 Industrial Training Institutes (ITIs)/Industrial Training Centres (ITCs) in the State (Table 10.4). The population served per ITI/ITC in Kerala was about 1.24 lakh in 1991, which reduced to 56,000 in 2010 (Table 10.4). These figures are much lower than the corresponding national averages, 6.66 and 1.75 lakh respectively, for 1991 and 2010. This suggests that vocational education infrastructure is better in Kerala than at the national level. But according to the Kerala State Development Report 2008,[24] the performance of students has been poor. The failure rate is as high as 50 per cent in many of the courses.

Table 10.4
Number of ITI/ITCs and Population per ITI/ITC

Year	No of ITI/ITCs		Population per ITI/ITC	
	Kerala	India	Kerala	India
1991	233	1,259	1,24,886	6,66,059
1996	381	3,083	79,892	3,01,264
2001	535	4,499	59,516	2,28,659
2006	549	5,114	59,390	2,18,182
2011*	593	6,906	56,303	1,75,238

*Note: *The data on number of ITI/ITCs in the year 2011 corresponds to the year 2009 for India and 2010 for Kerala.*

Source: Annual Report, Ministry of Labour and Employment (various issues) and computations there from

Relatively higher gross enrolment ratio in higher education

10.3.2.5 GER is estimated based on data from three sources: Data collected by the University Grants Commission (UGC) from educational institutions and published as the Selected Education Statistics (SES); data from the National Sample Survey (NSS); population census data. There are differences in the figures obtained from each of these sources. According to the UGC report, 'Higher Education in India' published in 2008, the NSS being a household survey covers all public and private institutions as well as distance education, and also includes certificate and diploma holders and is most reliable.

According to this data, GER in Kerala was around 25 per cent in 2004–05 compared with the national average of 13.6 per cent. Clearly, Kerala is much ahead of the all India average. According to the latest data, for 2010–11, the GER at the all India level has increased to over 17 per cent, but it still remains below the Kerala level of 2004–05. However, Kerala lags far behind the developed countries. In the Nordic countries, for instance, it is as high as 94 per cent in Finland and 74 per cent in Denmark, Sweden and Norway.

10.4 Overall Educational Accomplishments

High average years of schooling (AYS)

10.4.1. Table 10.5 shows the estimates for average years of schooling in Delhi, Kerala and India during the last two decades. Delhi is included in the table because it has the highest AYS in India followed by Kerala. Kerala is well ahead of the national average though. In 2009–10, an individual in Kerala had, on an average, 7.7 years of schooling, whereas the figures for Delhi and India were 9.3 and 5.6 years respectively. While Kerala's performance is better than the average for the developing countries, it falls far short of advanced economies. According to a study, in 2010 the AYS was about seven years for developing countries and about 11 for the advanced economies.

Table 10.5
Average Years of Schooling

	1993–94	1999–2000	2004–05	2009–10
Total				
Delhi	7.6	8.3	8.5	9.3
Kerala	6.0	6.3	6.8	7.7
India	3.7	4.2	4.7	5.6
Rural				
Delhi	5.9	6.3	7.3	7
Kerala	5.8	6.02	6.5	7.4
India	2.8	3.3	3.7	4.6
Urban				
Delhi	7.8	8.8	8.6	9.4
Kerala	6.8	7.2	7.8	8.5
India	6.3	6.9	7.3	8.1

Note: The above figures correspond to the population aged 15 years and above.

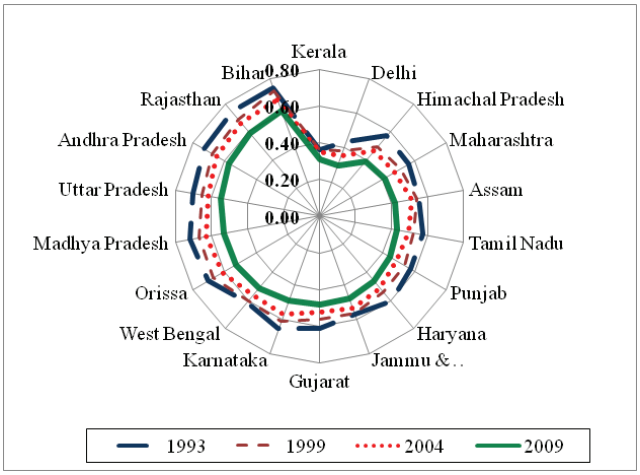
Source: Agrawal (2012a)[25]

10.4.2. If we examine the AYS separately for rural and urban areas, the rural-urban disparity is very low in Kerala. In fact, Kerala is ranked best among the Indian states if only rural areas are considered. However, in urban areas Kerala is behind many states and is close to the national average. Further, the gain over the fifteen years is relatively low in Kerala.

Low inequality in attainment of education

10.4.3. Inequality in distribution of educational attainment (that is years of education) across individuals can be measured using the Education Gini Index. The Education Gini Index is one of the best measures of inequality in education. Figure 10.4 shows the radar plot for estimates of the Education Gini Index for major Indian states since 1993–94. Until 2004–05, Kerala had the lowest inequality among the major Indian states. But Delhi toppled it in 2009–10. In 2009–10 the value of the Education Gini Index was 0.29 for Delhi, 0.31 for Kerala and 0.51 for India as a whole.

Figure 10.4
Inequality in Educational Attainment: Radar Plot



Source: Agrawal (2012a)[26]

10.4.4 Further, Kerala has the lowest rural-urban differential in terms of the Education Gini Index. While for Kerala the values of the Education Gini Index were 0.31 and 0.29 respectively for rural and urban areas in 2009–10, the corresponding values were 0.55 and 0.39 for India.

Returns to education

10.4.5. Usefulness of the estimates of returns to education lie in the fact that they are an important yardstick in determining the decision of individuals to continue education beyond a certain level or to enter the labour market.[27] Returns also indicate the productivity of education. Table 10.6 provides estimates of the returns to education for Kerala and India.[28] These are based on one of the most recent nationally representative household data studies, the 66th round of the Survey on Employment and Unemployment, conducted by the National Sample Survey Organisation in 2009–10. The following two features emerge from the table. First, while the average returns peak at the higher secondary education level in the country as a whole, the same is not true of Kerala where it is observed that the returns increase with the increase in education levels.

Table 10.6
Returns to Education (%): 2009–10

Education level	Kerala	India
Primary	2.63	5.35
Middle	2.97	4.96
Secondary	4.03	11.65
Higher secondary	9.42	16.1
Graduation & above	19.11	13.71

Source: Author's computations

10.4.6 Two, the average returns up to the higher secondary level is higher in the country as a whole than in Kerala; this is not true in the case of graduation and higher levels of education. This simply reflects the fact that a larger proportion of students go for higher studies. In other words, the GER is higher in higher education in Kerala vis-à-vis the rest of India. It also means that only those who enroll for higher education[29] are able to get high-paying jobs in Kerala.

10.5 Challenges

10.5.1 While Kerala's educational attainments in terms of numbers is impressive, the deterioration in the quality of education being imparted at various levels in the State is a concern.

Deteriorating quality of school education

10.5.2 The quality of education appears to be on the decline in both government and private schools. A comparative analysis of annual surveys of education in rural areas by the NGO Pratham in 2009 and 2012 reveals the following[30]:

- The percentage of children in Standard (Std) V who 'can read' Std II-level text declined from above 60 to below 60 in government schools and from 80 to 70 in private schools between 2009 and 2012. The results are not very different for children in Std III who 'can read' Std I-level text. The percentage of children in Std III who 'can do subtraction or more' declined from 57 to 42 in government schools and 70 to 60 in private schools over the same period.
- The percentage of children in Std V who 'can do division' remained almost at 35 in government schools, while it declined from 57 to 52 in private schools.

10.5.3 Two things need to be observed: One, the quality of education is better in private schools; two, the quality of education in private schools has also been deteriorating over time. However, considering that the quality of private schools is better than that of their government counterparts, there has been a shift from government to private schools. Between 1990–91 and 2002–03, the enrolment (standards I–X) in government and aided schools fell by 26 per cent, whereas that of private unaided schools increased by 79 per cent (Government of Kerala 2006). Kerala and Manipur are the only two states where 60 per cent of the students are enrolled in private schools. The national average is 40 per cent.[31] Also, 26.4 per cent of children aged 6−14 attended paid private tuition classes in 2013 as per ASER 2014[32].

10.5.4 This competition between private unaided schools and other schools in the State, together with declining fertility has rendered many government and private aided schools economically unviable. The Kerala Education Rules stipulate a minimum average strength of 25 per batch for lower primary, upper primary and high schools. Schools with average batch size below 25 have been termed 'uneconomic'. The number of uneconomic schools in Kerala is increasing over time. In 1990 there were 964 such schools, but this number gradually increased to 2,244 by 2000 and to 4,280 by 2010.[33] Most of the uneconomic schools are at the lower primary (class I–IV) level.

10.5.5 Several initiatives have been taken to improve the quality of education. These include:

- The scheme 'Improvement of Science Education in Schools', which has been running since 1987–88 with the objective of promoting scientific temper among children.
- In 2001, Kerala created an IT policy for schools (Box 4.1). It ranges from e-governance programmes and delivering broadband to schools, to developing free educational software and delivering it to schools. IT education is compulsory from Class 8 onwards. Data supports Kerala's initiatives in inducting computer education in schools. The evidence of the success of the project can be seen in DISE statistics, which show that 90.3 per cent of all schools in Kerala have computers.[34] Only Lakshadweep (97.7 per cent) and Puducherry (97.7 per cent) have better statistics. The project won the 'National e–governance Award for the Best Project' in 2008.

- The Kerala Right of Children to Free and Compulsory Education Rules, 2010 provide for constitution of a management committee in all government and aided schools and preparation of a school development plan by each committee, and discusses the accountability and responsibilities of various stakeholders.[35] In 2011, the state government approved a comprehensive general education reform package for the schools. But the outcome seems to be elusive and poor quality remains a serious challenge.

Poor pre-school education

10.5.6 The poor outcomes at the school level might have a lot to do with early childhood development. Recent research has shown that the "gaps in the abilities that play an important role in determining diverse adult labour market and health outcomes open up very early across socioeconomic groups. Gaps in ability emerge early and persist. Most of the gaps at age 18 that help to explain gaps in adult outcomes are present at age five. Schooling plays a minor role in creating or perpetuating gaps," (Heckman, 2008, p.12).[36] Thus, pre-school education plays an important part in later school, and life, outcomes.

10.5.7 In the Indian context, the importance of pre-school education in providing the child a sound foundation for life and the attainment of primary education goals has been highlighted by the Working Group on Elementary Education and Literacy of the 12th Five Year Plan: "There is now adequate empirical evidence from research in neuroscience, economics… to prove that participation in pre-school education not only has life-long impact, but also in more immediate terms, has positive effect on children's retention, attendance and performance at the primary stage," (Government of India, 2011, p.77).[37] The same report also highlights the inadequate priority accorded to pre-school education in ICDS, resulting in its perception, universally, as a nutrition programme.

10.5.8 The situation in Kerala is one where ICDS is perceived as a nutrition programme. The scheme targets the most vulnerable groups of the population, including children up to 6 years of age, pregnant women and nursing mothers belonging to the poorest of the poor families and living in disadvantaged areas including backward rural areas, tribal areas and urban slums. The identification of beneficiaries is done by surveying the community and identifying families living below the poverty line. For children below 36 months, the services provided include early detection of childhood disabilities and referral, early childhood stimulation, growth monitoring, food supplementation, immunisation, periodic health check up, treatment of minor and common ailments and so on. The picture is not very different for children in the 37-72 months age group. The services provided include early childhood education, early childhood stimulation, early detection of disabilities and referral, supplementary nutrition, quality growth monitoring and so on.

10.5.9 A recent study indicates that pre-school education seems low on the list of priorities. Out of the 206 centres taken up for survey, it was found that only 11 had taken up storytelling, 57 painting, 122 clay modelling and 31 group play. Overall, poor educational efforts were witnessed in the ICDS centres. The focus was mostly on infrastructure, nutrition and basic amenities. (Seema, 2001)[38]

Poor quality of higher education

10.5.10 The poor quality of higher education institutions across all sectors, public, private aided and self-financing, is a more serious concern. According to a report of the Kerala State Higher Education Council,[39] there are issues pertaining to infrastructure, appointment and availability of teachers, course structures, course content, social inclusion, autonomy and accountability. The State Development Report 2008 says that the difference between the quality of the faculty in universities and private colleges is wide. The result is migration of students to other states and countries for higher studies. This is despite the fact that seats in professional colleges in Kerala are lying vacant (as reported in

the State Development Report).[40] Since 2008, student migrants have become the number one group among the various employment categories among the out-migrants. There were 3.1 lakh students among the out-migrants from the State in 2011. (See Chapter 1) They even outnumbered the job seeker out-migrants.

Large out-of-pocket expenses

10.5.11 Another indicator of the poor quality of education is the presence of so-called 'parallel colleges' operated by private players. These colleges coach the private candidates appearing in university examinations and have witnessed phenomenal growth over the years. While the higher education system in Kerala is characterised by low tuition fees, students end up paying a much larger amount to private tutors. The out-of-pocket expenditure on higher education by students in Kerala is rather high. A survey of 500 college students conducted in Thiruvananthapuram as far back as 1992 revealed that the out-of-pocket expenditure incurred on private tuitions by the students was 18 per cent of total expenditure, compared to 4 per cent on college fees.

Educated unemployment

10.5.12 For many decades, the unemployment rate in Kerala has been among the highest in India. With regard to higher technical education, the Kerala Human Development Report 2005 says that there is a heavy concentration of matriculates (standard X) among the educated unemployed. According to a government report (2006)[41] there were about 100,000 unemployed certificate holders, without any skills acquired, in 2003. This is at the core of the unemployment problem, which has to be addressed and given serious attention.

10.5.13 An unintended consequence of the high level of unemployment and the competition for various examinations in the State is rote learning by students and examination-oriented coaching by teachers because of which co-curricular activities have been neglected.

Dearth of research institutes

10.5.14 On the availability of research institutes, Kerala is far behind India as a whole, and there is scope to increase the number of research centres in the State (See Chapter 11 for details). The Department of Industrial Policy and Promotion's annual report on patents shows that in 2009–10 Kerala ranked 9th out of 20 states in terms of the number of patents. It filed 288 patent claims. These formed 0.01 patents per 1,000 population as compared with 0.02 in Delhi and 0.05 in Maharashtra. Thus, R&D activities are lagging behind in the State. There has been recognition of these difficulties and attempts are being made to remedy the situation. A major initiative in this area is the establishment of an Innovation University (see Box 11.2, Chapter 11).

10.6 Vision, Mission and Goals

Vision 2030

10.6.1 Kerala will be a key node in the global knowledge network by 2030. It will be among the top-ranked countries in terms of efficiency, competitiveness, services and market delivery in education. It will be recognised for academic excellence and innovation.[42]

10.6.2 Students will engage with communities, society and enterprises, which will give learners a sense of pride and identity, and will equip them with the skills needed to make significant contributions to the regional, national and global communities.

10.6.3 Further, higher education institutions will be the engine for new ideas through research, and many of these ideas will sustain innovative enterprises of the future.

10.6.4 Kerala's higher education sector will have a strong international presence, will be attractive to overseas students and will engage in high-quality research that will have a vital impact on regional, national and global needs. Kerala will be a part of the global knowledge hub.

Mission

- To make quality education affordable to all.
- To create a global brand in education by 2030.

Goals

- A major boost to pre-school education to prepare children for school.
- Enrolment in primary schools to be100 per cent.
- By 2015, 95 per cent of all young people to complete general or vocational upper secondary education.
- By 2015, 50 per cent of all young people to complete a higher education programme (GER will be 50 per cent).
- GER of SCs/STs will be comparable with that of the general population.
- Life-long learning for all.
- Kerala to become a knowledge hub by 2030.
- 6 per cent of GSDP to be spent on education, of which 1.5-2 per cent to be set aside for higher education.

10.7. Strategic Framework

10.7.1 A well-qualified labour force is a prerequisite for the shift to a knowledge-based economy. This means that demands for general and vocational skills of the labour force will grow, while the demand for low-skilled labour will decline. Therefore, the skills of the labour force must be increased at all levels. This will require extensive reforms in education and research programmes at all levels.

10.7.2 Kerala's education sector will be required to focus on access, quality and equity in order to achieve sustainable prosperity for the State. These objectives are intertwined. A comprehensive strategy needs to be developed with quality (competitiveness) and social inclusion as key components. In fact, a comprehensive scheme for expansion of facilities, with equitable sharing of opportunities for groups including SCs, STs, OBCs, minorities, the physically challenged, women and the poor is a pre-requisite for quality in this critical sector. Better quality will work as an incentive to attract the disadvantaged to the education system.

10.7.3 Further, the government should showcase Kerala as one of the most attractive places in the world, where everyone has the best opportunity to develop their abilities and create prosperity for themselves and others. This will require creating a dynamic, world-class education system benchmarked against the best countries.

10.7.4 Finally, the constant changes in technology and economic structures creates new demand for skills and adaptability in individuals. From the social perspective, continuing training helps individuals participate actively in the labour market throughout their lives. From the economic perspective, the competitiveness of enterprises and the quality of services is largely dependent on investment in continuing training and competency development. An increased focus on continuing training at all levels, promoting life-long learning and upgrading skills for all is, therefore, necessary for developing Kerala into a leading knowledge society.

10.7.5 Therefore, to create growth and prosperity, accompanied by social equity, in Kerala, the State's education strategy should be based on:

- Creating a world-class education system ensuring improved quality, equity and cohesion in education and training with an emphasis on scientific knowledge in all segments — from pre-schools to higher education and adult education.
- Providing opportunities for life-long learning and up-skilling to all.
- Promoting ICT-enhanced programmes in education.

10.7.1 Creating a world-class education system
Higher Education

10.7.1.1 Higher education is at the centre of a knowledge economy. To realise its aim of becoming a knowledge-driven economy, Kerala needs to benchmark its higher education sector against the world's best. In its draft higher education policy, the State Higher Education Council has recommended a series of wide-ranging reforms. According to the draft policy, "higher education should aim at inculcating in the learner certain core competencies and skills that would promote life-long learning, living together and living productively, both in society and within the self. This in turn would require the cultivation of critical, creative and communicative competence, in short, the creation of qualities that go into the making of a well-rounded personality," (p. 4).[43] It also agrees that society needs not only knowledge workers, but also knowledge creators. It has suggested several measures to achieve these objectives:

- Creating adequate space in higher education for multi-disciplinary and inter-disciplinary exploration.
- Curricular and pedagogical reforms.
- Setting up Internal Quality Assurance Cells (IQAC) to create a balance between three key functions: teaching, research and extension.
- Democratisation at all levels of the governance structures in higher education — from universities to individual institutions — to ensure accountable autonomy.
- A system of academic audit and compulsory disclosures should be put in place through Social Accountability Cells (SAC).
- Regulation of aided and privately funded institutions to ensure a minimum level of infrastructure, well-designed criteria-based admission of students and recruitment of teachers, ceiling on fees and cross-subsidisation of poor students.
- Instituting scholarships in higher education.
- At least 6 per cent of GDP should be spent on education, of which 1.5-2 per cent should be set aside for higher education.
- Reforms in the criteria of central assistance.
- In-service training of teachers at regular intervals.
- Regular teaching evaluations.

10.7.1.2 While building on these basic principles, the Perspective Plan envisages a paradigm shift in the education sector. It proposes a move away from a gradualist approach to a big push to the education sector in terms of structural change, by benchmarking it against the countries with the world's best higher education sectors through the following action plan.

Element 1: International benchmarking

10.7.1.3 Universities 21, a leading global network of research universities, has developed a higher education ranking system as a benchmark for governments, educational institutions and individuals. In its 2012 report, the US, Sweden, Canada, Finland and Denmark are the top five countries. Clearly, the Nordic region dominates the top five ranks. Norway and Iceland are not far behind at 7th and 16th ranks respectively. Government funding of higher education as a percentage of GDP is highest in Finland, Norway and Denmark, but when private expenditure is added, total education funding is highest in the US, South Korea, Canada and Chile. Investment in R&D is highest in Denmark, Sweden and Switzerland. The US dominates the total output of research journal articles, but Sweden is the biggest producer of articles per head of population. The top-ranked education institutions are located in the US and the UK. Kerala's education system needs to move up the ladder to match the standards of these countries.

Element 2: Structural shift in the higher education paradigm

10.7.1.4 The Perspective Plan proposes a shift from a 'knowledge disseminating approach to a knowledge creating approach', which can set the tone for administrative and academic reforms in higher education as proposed by the State Higher Education Council. More specifically, this requires a shift from 'instruction mode' to 'learning mode'.

10.7.1.5 As mentioned earlier, the State Higher Education Council's 'draft education policy' proposes a shift in focus from merely imparting education to creating knowledge in the context of higher education. Achieving this goal will mean a complete transformation of the existing structure of higher education. It will mean shifting to a model where universities are driven to become more enterprising to enhance national competitiveness in innovation, R&D and technological advancement. There will be significant transformation, with a heavy emphasis on R&D, innovation and academic entrepreneurship. In the pursuit of academic entrepreneurship, universities will establish linkages with industry through:

- Licensing activities and contract research
- Consulting services
- Setting up of university spin-off and start-up companies to themselves exploit their innovations

10.7.1.6 Top universities across the world are becoming more proactive in promoting innovation, economic development and academic wealth. Universities' quest for becoming entrepreneurial has inevitably changed the role of the university sector and its relationship with the state, the market and industry. The best-known universities in the world currently are top entrepreneurial universities. They create technology and apply it to real-world solutions.[44] The role of the state is to facilitate the process by creating an appropriate legal framework and giving incentives. In most developed countries, seed funds have been set up to promote university spin-offs and start-ups.

Table 10.7
Structure of Spin-offs and Start-ups

	Spin offs	Start ups
Created by	University	Outside University
Technologies	Owned by University	Licensed by University
Funded by	University	Outside University Funders
Managed by	University Staff	Outside University

Source: http://www.wipo.int/edocs/mdocs/aspac/en/wipo_ip_han_11/wipo_ip_han_11_ref_t7b.pdf

The new approach replaces:

- Knowledge dissemination with knowledge production.
- Commercialisation of education with creating knowledge for developing real-world solutions.
- High tuition fees with self-funding thorough entrepreneurial incomes.

10.7.1.7 This structural shift will not only contribute to knowledge creation through R&D and entrepreneurship, but will generate income for self-financing. Across the world, there has been a change in the university governance structure with increasing privatisation. One way of funding this education is commercialising education itself by charging capitation fees and high tuition fees. That cannot be allowed due to the public good nature of education. This route needs to be replaced by the route of entrepreneurship in universities. Further, merit-based scholarships can be introduced for students from weaker economic sections. Also, students unprepared for college may take up remedial courses in community colleges to prepare them for success in higher education. Scholarships from Kerala's diaspora and educational loans at subsidised rates of interest can also help. Further, since Kerala aspires to be a knowledge hub, students from outside the State can be charged higher fees or fees at market rates while resident Keralites pay subsidised fees. To qualify for government assistance or funds from the diaspora, educational institutes should follow quality norms, which can be regularly monitored.

Element 3: Promote Science, Technology, Engineering and Mathematics (STEM) programmes

10.7.1.8 Kerala must provide students with a strong education in science, technology, engineering and mathematics (STEM), and prepare them to succeed in the global economy and ensure the culture of knowledge creation. The state government must initiate STEM education programmes across selected institutions, with high quality delivery, impact and visibility. These programmes need to be fully funded and highly competitive.

10.7.1.9 Alternatively, a state STEM teachers' corps may be created by identifying the best teachers. A STEM Virtual Learning Network (STEM-VLN) may be created for imparting education primarily, but not exclusively, online. This will enable STEM educators to share innovative STEM content, benefitting a larger segment of students.

10.7.1.10 Emphasis on STEM does not mean that other subjects will be ignored. Writing, communication, history, civics, geography, languages, philosophy, arts, theatre, music and so on are important elements in creating good citizens. A student should be able to achieve undergraduate degrees in dual topics as disparate as mathematics and history if they wish. The Indian Institutes of Technology are evolving on these lines. It should almost be required for students to take subjects from four or five disparate fields before specialising in STEMs to evolve as knowledge creators. For example, John Hopkins University offers online science-medical writing courses. For a medical practitioner in Kerala, a writing and verbal communications course can significantly improve the quality of the international centres of excellence in health that the State wants to create over the next twenty years.[45]

Element 4: Improve quality

- National and international accreditation systems will be adopted to ensure the quality of general education. This can be achieved by allowing flexibility in the choice of subjects (multi-disciplinary education and training) and periodically updating the curriculum. In the US, it is common for even small public colleges to update the curriculum on a regular basis. Essentially,

if the goal is to develop global citizens, it is then necessary that students take at least four subjects that are global in nature. Faculty can develop 'independent study' programmes that allow degree candidates to step outside regular course offerings and explore a specialised area of study in a challenging new environment.

- ICT will be harnessed to improve the quality of training in institutions of higher education. Further, ICT may be used to provide online education and could help in bringing faculty from all over the world to classrooms in Kerala. Teaching methods have to be changed to make lectures come alive with clickers in classes to answer questions, especially in large classes, and use of software (such as Blackboard) to upload grades and lecture notes, give tests, provide evaluations and so on.
- Initiatives will have to be taken to improve infrastructure, content, training and capacity building. At the higher level, only faculty with doctorates or students in the latter part of their doctoral programmes may be allowed to teach. Teaching evaluations should become a part of the process, with both student and peer reviews. The idea is to track the progress of faculty. If those teaching evaluations are made public, especially to students, learners can make informed choices. Anyway, students now have other means like www.ratemyprofessor.com to know the quality of their faculty.

College faculty need to adopt attitudes that inspire students to learn. Introducing teaching evaluations as a part of the review process should change the incentives for faculty. Faculty advisors for undergraduate and graduate students, faculty office hours, faculty availability on campus, the ability to ask faculty questions when off campus, are all elements that should be part of the process. Faculty advisors can double up as career counsellors. Career counselling should also exist independently in educational institutes. A flexible education system means that a student may change their mind about pursuing a degree in a certain area after a certain period. The role of faculty advisors is crucial in that phase.

Increasingly, student evaluations across the world are being done by a variety of means including examinations, project work, papers and so on. Both the admissions process and evaluations within college can adopt a variety of means instead of only the examinations route.

Element 5: Internationalise Higher Education

10.7.1.11 More and more countries are making higher education more international, affordable and accessible by creating global education hubs. Competition among countries to create such education hubs is fierce, and Asia seems to be leading the movement. Despite a long tradition of education (Kodungalloor *gurukulam*, Takshila and Nalanda universities), India's absence in this area is conspicuous. However, Kerala is positioned to take the lead on this aspect because of the following factors:

- Kerala is relatively better-positioned vis-à-vis other states in terms of educational attainment and can possibly be an example for the other states.
- As early as 1984, a high level Committee on Education and Employment also advocated setting up autonomous 'centres of excellence' in the arts and sciences (Government of Kerala, 1984).[46]
- The State Higher Education Council has already proposed establishing clusters of colleges. The principle underlying these clusters is that of sharing and cooperation as opposed to exclusion and competition. The plan is for neighbouring institutions to come together on the basis of a Memorandum of Understanding (MoU). The governance of such clusters can be entrusted to bodies with representatives drawn from all the institutions in the cluster, representatives of the university and the local government body concerned. The programmes that will be offered will vary from cluster to cluster, depending on the needs and facilities available or proposed to be

set up. It has been proposed by the Council that the State may set up as many viable clusters as possible within the next few years. Networking is an important element of knowledge hubs and a similar principle underlies Kerala's proposed knowledge hubs. As discussed in Chapter 2, these cities will be closely-knit networks of organisations. A first step has already been taken with the Innovation University.

- Finally, Kerala has already established itself as a favourite tourist destination. This can be turned into an important locational advantage for the State to attract international students.

10.7.1.12 Against this backdrop, Kerala is likely to promote these global hubs more successfully than other Indian states. The proposed concept is much broader and global, and will take the 'college clusters' idea to the next level.

10.7.1.13 International colleges and universities have been collaborating with Indian educational institutions since the early 1990s. These collaborations have enabled foreign institutes to market their programmes in India through a local partner, participate in student and faculty exchanges, as well as lend their expertise. Collaborations ranged from twinning agreements and faculty and staff exchange programmes to supporting curriculum design and pedagogy. The objective was to contribute to world-class education in India, while creating opportunities for foreign faculty and students to work with local faculty and students in India. Kerala will need to be more proactive to promote such collaborations.

Element 6: Adopt a Hub-and-spoke Model

10.7.1.14 KPP 2030 proposes developing five global knowledge cities in Kerala over the next 20 years. These will be in Kozhikode, Thrissur, Thiruvananthapuram, Palakkad and Malappuram. The locations are recommended based on three criteria:

- Thiruvananthapuram, Thrissur and Kozhikode already have clusters of educational institutions.
- Palakkad may get an IIT during the 12th Plan period. This will provide a platform for a technical hub.
- A health city is being planned in Malappuram, creating a base for medical education.

10.7.1.15 These designated regions are intended to build a global reputation by providing access to high-quality education and training for both international and domestic students. While existing institutions will be upgraded to international standards, new domestic/international institutions, partnerships and branch campuses will also be developed. These will be centres of excellence. Some of the characteristics of this model are outlined below.

10.7.1.16 **Hub-and spoke model:** The global education cities will be connected with knowledge spokes in each district based on its competitive advantages in a specialised branch of knowledge and activity. For instance, Wayanad may be developed for veterinary sciences; Alappuzha for ayurvedic preparations; Kannur for textiles sciences; and Ernakulam for industrial training and research (as suggested in Chapter 2). Alternatively, centres of excellence in each district can be identified and a network of institutions created around them and connected with the proposed global cities. The Innovation University is a first step in this direction (See Box 11.2).

10.7.1.17 **Institutional framework:** These hubs will be developed as integrated townships on the lines of National Investment and Manufacturing Zones (NIMZs). While NIMZs are for manufacturing sectors only, these knowledge cities will be for knowledge producing and exporting, and use institutions including enterprises, start-ups and spin-offs. These will be governed by a Special Overriding Act. An inter-departmental committee will be constituted, with participation from national and international advisors, local governments and the private sector, to implement the projects. The

development of these cities will essentially be the responsibility of a Special Purpose Vehicle (SPV) with representation from the government and the private sector.

10.7.1.18 **Service providers:** The service providers will be from the public, private and foreign sectors. Institutions of higher education sponsored by industrial houses are another possibility. All the facilities will be internationally and nationally accredited. Efforts will be made to promote newer branches of knowledge and modernisation of traditional knowledge.

10.7.1.19 **Benchmarking:** These hubs will seek to rival Hong Kong, Korea and Singapore as Asia's centres of international education. They will have a world-class educational environment for both local and foreign students (children of expatriates and other foreign nationals) through international partnerships and a high-end learning environment with state-of-the-art facilities.

Box No 10.1

Dubai Knowledge Village/Dubai International Academic City (built by a private developer)

Launched in 2003, Dubai Knowledge Village (DKV) is owned by TECOM Investments, a subsidiary of Dubai Holding. This education hub is set up to complement TECOM's other business parks including Dubai Internet City and Dubai Media City. DKV has attracted 15 international universities from Australia, India, Pakistan, Iran, Russia, Belgium, UK, Ireland and Canada. It is also home to approximately 150 training institutes and learning centres, HR development centres, professional training institutes, R&D organisations and e-learning companies. To meet the need for more campus facilities due to the rapid expansion of higher education in DKV, TECOM created Dubai International Academic City (DIAC). Approximately one square mile in area, DIAC is located in Dubai Academic City, and is setup as a free zone for higher education. Currently home to over 20 international universities, including Cambridge College International Dubai, University of Phoenix Dubai and University of Exeter among others, DIAC caters to over 4,000 students.

Songdo Education City, Incheon, South Korea

The Songdo city is part of the Incheon Free Economic Zone. It has attracted branches of several international universities and R&D centres from Gent, Belgium; the Lawrence-Berkeley National Laboratory, the US; St. Petersburg, Russia; and Plymouth, the UK. It has business centres, financial services, residences, schools, hospitals and shopping and entertainment centres. To provide better living conditions for the foreign workforce in the international business district, the Incheon metropolitan government introduced the concept of a Smart City. Under the plan, the city is building an urban space with all that its residents require. All activities of inhabitants take place within a five-minute drive, and all buildings are accredited by the US Green Building Council's Leadership in Energy and Environment (LEED) ratings.

Source: http://www.tecom.ae/dubai-knowledge-village/; http://www.fez.go.kr/en/incheon-fez.jsp

Element 7: Evaluation and Monitoring of Higher Education

10.7.1.20 Regular independent review of departments and programmes is a must. In the US, assessment programmes are popular. Learning outcomes are established by departments, and assessment offices in universities and colleges help develop and implement collection, analysis and internal and external reporting of data related to each department's unique student learning and/or student service objectives. Plus, there is a need to build a reliable database on higher education in Kerala, which has been pointed out by several studies. The recently launched All India Survey on Higher Education is a welcome step in this direction. The State has to ensure candid and timely collection of data. While designing the policy, it is important to monitor its outcome through annual evaluation using the criteria outlined in Table 10.8.

Table 10.8
Criteria and Indicators of the Performance of Higher Education

Criteria	Indicators
Resources	R1: Government expenditure on tertiary education institutions as a percentage of GDP. R2: Total expenditure on tertiary education institutions as a percentage of GDP. R3: Annual expenditure per student (full-time equivalent) by tertiary education institutions. R4: Expenditure in tertiary education institutions for research and development as a percentage of GDP. R5: Expenditure in tertiary education institutions for research and development per head of population.
Connectivity	O1: Number of scholarly publications produced by higher education institutions. O2: Total articles produced by higher education institutions per head of population. O4: A measure of the depth of good universities in a country. O5: A measure of the research excellence of a nation's best universities. O6: Enrolments in tertiary education as a percentage of the eligible population, defined as the five-year age group following on from secondary education. O7: Percentage of the population aged over 24 with a tertiary qualification. O8: Number of researchers (full-time equivalent) in the nation per head of population.
Environment	E1: Proportion of female students in tertiary education. E2: Proportion of academic staff in tertiary institutions who are female. E3: A rating for data quality. E4: Qualitative measure of the policy and regulatory environment.
Connectivity	C1: Proportion of international students in tertiary education. C2: Proportion of articles co-authored with international collaborators. C3: Export revenue for different modes of education.

Note: The measure can be thought of as a rough indicator of the probability of a person in a country attending a university ranked among the top 500 in the world.

Source: Universities Network website: http://www.universitas21.com/article/collaborations/details/105/measure-4-output

10.7.2 Vocational Education: Development of a 'Kerala System of Vocational Education'

10.7.2.1 In Kerala, workforce participation rates are rather low. It is expected to decline further with a deceleration in the population growth rate and ageing. In this scenario, the aim of promoting vocational training will be:

- To raise productivity by increasing skills and avoiding future skills shortages.
- To increase the workforce participation rate to 69 per cent by 2025 to provide the required workforce and improve social cohesion.

10.7.2.2 Vocational education in India is fraught with problems such as poor quality, poor academic performance of students and unemployment and Kerala is no exception. To strengthen vocational education in the State, the Department of Education will develop a 'Kerala System of Vocational Education' with several elements:

Element 1: A Legislative Framework

10.7.2.3 An Act on vocational education: The proposed Act will be developed within the National Vocational Education Qualifications Framework (NVEQF), which the Ministry of Human Resource Development (HRD) plans to introduce across the country from 2014. The central government's National Skill Development Mission aims at creating a 50 crore-strong skilled workforce by 2022. It will cover quality assurance, accountability and improving outcomes; new methodologies and building bridges to higher education; and pedagogical developments. This system draws on those followed in Australia, the UK and New Zealand. Kerala can seize this opportunity to develop its own

legislation on vocational education within the overall national framework.

10.7.2.4 An administrative framework: There will be a provision for a separate 'board for vocational studies', on the lines of the State Higher Education Council, which will be accountable for the reforms proposed in vocational education.

Element 2: Create a Well-developed Structure of Education

10.7.2.5 **Matching skill formation with future skill needs:** There has been a serious mismatch between the skills being imparted in vocational institutes and the skills demanded by industry. This is likely to increase with the emergence of new economic activities. The planned Council for Vocational Education will identify the relevant courses and drop obsolete ones. The course structure will be revised annually according to changes in work life and feedback obtained from the world of business. Matching skills formation with future skill needs and complementing this with improved skills utilisation are key strategies for growth. In Finland, there are 358 qualifications included in the structure. Kerala may draw on Finland's experience and identify newer skills.

10.7.2.6 **Participating institutions:** The system will relate to all three education sectors: schools, training institutions and higher education. More specifically, the participating institutions will be schools, polytechnics, universities and colleges for seamless vertical pathways. The NVEQF provides a 10-level structure of competency-based courses, which will have equivalence to certification by the school boards as well as diplomas, degrees and doctorates offered by universities. All these layers may be included within the proposed system.

Element 3: Create Strong Links Between Vocational and Higher Education

10.7.2.7 One of the problems faced by vocationally-trained graduates is that they are unable to continue their education because vocational courses are not recognised by the general education system. Therefore, to bring them into the mainstream, options must be explored to properly certify vocational courses. The vocational upper secondary education system will give eligibility to university studies as well. Also, the way into tertiary education will be totally open to veterinary students. To improve the labour market outcomes of vocational graduates, career counselling can be provided to them. Classes taken in vocational institutes may be transferrable, in part or whole, to higher education. This means upgrading the standards of vocational education. Here too, sufficient attention must be given to maintaining quality.

Element 4: Partnership with Industry

10.7.2.8 MoUs may be signed with relevant industries for exposure, placement opportunities and scholarships. Eminent persons from industry could be appointed to the advisory bodies of the vocational education institutes. Similarly, options should be explored to include teachers and administrators from these institutes in suitable positions in industry so as to enable better industry-institute interface. This will help in addressing the demand-supply mismatch, continuous updating of the curriculum, placements and reducing (or avoiding) the need for in-service training by industries. Vocational education systems in Germany and Finland are among the most successful in the world. In Germany, the training is in partnership with industry and is directly imparted by expert workers and instructors to students, which leads to a reduction in on-the-job training. Further, the certificate is valid for a lot of occupational categories. In Finland, on the other hand, vocational education is organised independently; the scope of vocational training is quite wide, and training is imparted even in areas like air traffic control.
The number of places that offer practical training to those in vocational education will be increased in both private and public enterprises through, among other things, a national campaign to collaborate with businesses and other organisations.

Element 5: Mainstreaming Vocational Education: An Alternative Approach

10.7.2.9 In most developed countries, however, there has been a shift away from the competency-based system to the inclusion of components of vocational training in higher education. Boundaries are blurring between vocational and higher education, with a single authority overseeing both. Mainstreaming with university education will be the way forward for promoting vocational education in Kerala. It will meet the demands of skilled knowledge workers and ultimately increase the number of college graduates. The US model of community colleges is under consideration by the central Ministry of Human Resources. In the US, community colleges are a link between high school and university education. They offer classes to prepare students for college-level mathematics and English, career training to enter the workforce quickly and affordably and complete lower division courses that are transferable to a college or university. Vocational training is provided in hundreds of areas. Community college is also a good option for those who are unemployed or under-employed and want to be retrained to work in emerging and in-demand industries such as healthcare and green jobs. India has now broadly accepted this mezzanine level in higher education — between high schools and universities — similar to the US community college model.

Box No 10.2

Community Colleges in India: Past experience

The Community College scheme was launched by the Ministry of HRD in 1995. The community colleges in this scheme were to be established by not-for-profit, non-commercial and community-based organisations to provide training to the economically and socially disadvantaged groups of the population. However, the scheme could not pick up due to the lack of recognition by the ministry itself. The lack of good infrastructure, rigour in curriculum and weak financial viability also affected its performance. In 2009, the scheme was institutionalised after IGNOU launched it following tie-ups with colleges and institutes all over the country. Under the scheme, these community colleges provide a two-year associate degree in various skill-based fields after which students can join the formal degree course. Community colleges also provide diploma and certificate courses in various fields. In a community college, students can choose from multiple vocational and technical fields of study, which will be an enabling mechanism for them to join a regular college or university and complete a three-year degree. The only university that recognised these courses is IGNOU. There are 500 community colleges operating in India with 150,000 students. Kerala has 57 such community colleges. However, in 2012, IGNOU suspended all activity and decided that the community college scheme be subjected to a thorough time-bound review before any further action.

Sources: 'The impact and prospects of the community college system in India', a report submitted to the Planning Commission by the Madras Research Centre for Community Education, August 2003 and India Education Review. Com. 2012. IGNOU suspends Community College Scheme; 150,000 students in lurch.
Source:http://www.indiaeducationreview.com/news/ignou-suspends-community-college-scheme-colleges-plan-legal-action29 June.

Element 6: Popularising Vocational Studies: Service Producers' Companies

10.7.2.10 Vocational education will be popularised by improving its reputation and social status. This can be done by encouraging 'service producers' companies' in the country. In 2002, through an amendment to the Indian Companies Act 1956, the government enacted the Producer Companies Act by incorporating Chapter IXA in the Indian Companies Act. The objective was to formulate a legislation that would enable incorporation of cooperatives as companies and conversion of the existing ones. As an organisation, a producer company provides an appropriate framework for producers to own the company themselves. Similarly, 'service producers' companies' can be promoted to enhance the social status of vocational training. Convenience-craving consumers are always looking for a way to do things better, faster and cheaper. Often, that means turning to a speciality-services entrepreneur who knows how to get the job done right. This means huge opportunities for promoting 'service

producers' companies'. Currently, labour agencies have occupied this space, and will be replaced by direct service producers' companies managed by the 'tech-voc' graduates. This will require provision of entrepreneurship skills and support for self-employment in any skill development programme.

10.7.3 Schooling

10.7.3.1 Primary and secondary school enrolment ratios are rather high in Kerala and the drop-out rate is almost zero at this level. However, a major challenge is that quality appears to be deteriorating and school fees going up due to increasing privatisation of education. It will be the government's aim to ensure that all pupils have excellent academic skills and knowledge at an affordable price. The term quality entails:

- Conditions for quality, including infrastructure, resources, teacher supply and, of course, access, enrolment and retention.
- Pedagogy, learning, classroom processes and evaluation systems.

10.7.3.2 While the former does not pose much of a challenge for Kerala, the latter needs a review. The issue of quality in terms of content and pedagogical methods is becoming increasingly important (Box 10.3). A plethora of claims have emerged about what constitutes 'best practice' in teaching and learning (teacher-centred or student-centred) and about the virtues of different pedagogical nostrum — group work, activity methods, joyful learning, child-centred teaching, teaching-learning materials, personalised learning and interactive teaching. The National Curriculum Framework 2005 is centred on the idea that human knowledge and learning is actively constructed by the learner, not passively received from the environment. It is based on the belief that learners are capable of constructing knowledge themselves. Teachers are not containers of knowledge. Their role is to support the process of learning and encourage knowledge formation not merely by transferring information, but by promoting creativity, knowledge and development of relevant skills through interactive teaching. This will require far-reaching reforms in the education system as outlined in the following sections.

Element 1: International Benchmarking

10.7.3.3 School education in Kerala will be benchmarked against that of Finland. Finland is an international leader in school education. Over the past decade, it has consistently ranked in the very top tier of countries in the Programme for International Schooling Assessment (PISA) and its performance has been especially notable for its remarkable consistency across schools. Finnish schools seem to serve all students well, regardless of family background or socio-economic status. It has been observed that educators and policymakers from different parts of the world travel to Finland to understand its system of school education.

Box No 10.3

Outcome-based Learning

KPP 2030 desires that Kerala produce global citizens who think globally and locally. The process of inculcating a curious attitude, a desire to learn, an attitude of inventing and innovating and entrepreneurship has to start early, from the very beginning — in school, that is, perhaps even primary school.

Finland is a world leader in school education. A unified comprehensive school system was introduced with the best talent being brought into teaching because of higher salaries. Top-down regulation was eliminated in phases. "The national curriculum was distilled into broad guidelines. National math goals for grades one through nine, for example, were reduced to a neat ten pages. Sifting and sorting children into so-called ability groupings was eliminated. All children — clever or less so — were to be taught in the same classrooms, with lots of special teacher help available to make sure no child really would be left behind. The inspectorate closed its doors in the early 1990s, turning accountability and inspection over to teachers and principals," (Hancock, 2011). 'Whatever it takes' is the attitude that drives Finland's school educators. These are professionals who are selected from the top 10 per cent of the nation's graduates to earn a required masters degree in education (Hancock, 2011). Multi-cultural classrooms have been set up for immigrants. This model has worked to make sure that all 'learn'.

Closer home, Banerji (2014) examined the various models that have been adopted in India in its search of the silver bullet that may change learning outcomes. Among the theories of change and consequent implementation strategies the study outlines are — get inputs in place and then things will be fine; if only everyone did their work, will everything improve; if people had information and a 'voice', schools would deliver better services; if teachers had the right incentives, they would teach better; teachers are not capable; misaligned pedagogy; and factors outside the education sector such as poverty, malnutrition, family background, opportunity costs of children's time, need for skills and so on.

Banerji (2014) concludes that there is no silver bullet and argues for balance.

Since school learning is so important that it virtually forms the foundation stone for future citizens, a multi-pronged, flexible approach is clearly needed. Tamil Nadu is trying an activity-based model of learning. Teaching assistants is another idea that has been proposed. In sum, Kerala needs to adopt the Finnish attitude of 'whatever it takes' to inspire students to learn. It has to be a continuously evolving and flexible approach.

Sources: Banerji, R. 2014. Searching for the 'silver bullet': What works in improving children's learning outcomes? Ideas for India blog. January 6 and Hanley, L. 2011. Why are Finland's Schools so Successful? Smithsonian Magazine. September.

Element 2: Participation in PISA

10.7.3.4 Programme for International Student Assessment (PISA) is a venture of the Organisation for Economic Cooperation and Development (OECD), an inter-governmental organisation of industrialised countries. It is conducted by the National Centre for Education Statistics (NCES) in the US Department of Education and its contractor. It compares national progress against international standards and identifies strengths and weaknesses in the regions' education systems. In 2009, two Indian states, Himachal Pradesh and Tamil Nadu, participated in PISA and were ranked at the bottom (72 and 73 out of 74 countries) in mathematical and reading abilities. Thus, participating schools can

use the results to benchmark their performance against schools across the world. Participation in this programme will be a leap towards ensuring international standards in Kerala's school education.

Element 3: A Common, Comprehensive School System

10.7.3.5 Perhaps the best option to reform the standard of school education is to merge parallel sets of schools, government, private aided and private schools, into a unified system known as the Common School System (CSS). This is the most important reform, which laid the foundation for higher schooling standards in Finland. Most other developed countries practise similar systems. Following their experience, the Kothari Commission had recommended a Common School System of Public Education (CSS) as the basis of building the National System of Education, in the mid–1960s. However, this system could not be implemented. The system is based on the principle that students from different social and economic classes and with different abilities will study in the same schools, which will be a significant leap towards achieving social equity. More important, this will create social capital and a better learning environment for all to contribute to economic prosperity. Resistance to such a system is bound to exist and in Finland also, it took a while to implement. The system can be introduced in Kerala in a phased manner through consensus.

10.7.3.6 It must be clarified here that CSS does not mean that privately-managed schools will not be permitted. On the contrary, CSS implies that all schools — irrespective of the type of management, sources of income or affiliating boards of examinations — will participate and fulfil their responsibility as part of the National System of Education. This means that it will be the responsibility of private players to participate in the government programme of 'free and compulsory education'. It means equitable (not uniform) quality of education for all types of schools, be they government, government-aided, local body or private schools, at an affordable price. Parliament has expressed its commitment to CSS twice, in its resolutions on the National Policy on Education, in 1986 and 1992 respectively. Yet, the concept could not be translated into practice. Kerala can take the lead in this initiative using a two-pronged policy:

- Raise the quality of education in government schools in terms of minimum physical infrastructure, professional quality of teachers, teacher-student ratio, curriculum and pedagogy for holistic, child-friendly and liberal education. An incentive structure based on PISA scores could be the guiding force.
- Bring private schools into the ambit of CSS through a carefully constructed programme of incentives, disincentives, persuasion and, eventually, legislation. It may include grants for children from low-income groups, computed at the rate of allocation per child in government schools, so that all children have access to this education; while disincentives may include gradual withdrawal of all hidden subsidies to private schools such as cheap land, tax-free income and exemption from income tax on donations, teachers trained at public cost and so on.

Element 4: Introduction of Unified Curricula

10.7.3.7 A unified curriculum with emphasis on the importance of mathematics, science and technology will be introduced. It will be designed to promote creativity, problem-solving, teamwork and cross-curricular projects in schools. This school education will lay the foundation for skilled workers in a knowledge economy who can think differently or create original ideas. In Finland, linkages have been forged between schools and industry. Finnish industry sends very strong signals to schools about the kinds of knowledge, skills and dispositions young people need in order to be successful in the new economy. They also promote the idea of teamwork.

The new curriculum will draw on the National Curriculum Framework 2005 to introduce a shift away from traditional, teacher-directed syllabus-driven classroom contexts to learning and knowledge creation in classrooms. Schools will promote creativity and independence and prepare students for further education.

Element 5: Teachers' Training

10.7.3.8 The new approach will require 'individualised attention' to be given to all children, and an emphasis on mathematical, logical and scientific skills and teamwork. To implement this approach, the professional development of teacher educators/trainers is a critical enabling condition. It requires the investment of substantial efforts and resources in increasing the knowledge and practical skills of administrators and teachers in educational institutions (personnel) and operators of educational institutions to make it work. A new teacher training education programme will be developed to ensure better quality and increased opportunities for specialisation. Similarly, a targeted effort in continuing education for teachers and school managers will be created. Entrance to the training programme will be through a prestigious, State-wide recruitment test. Further, special comprehensive and compulsory in-service training programmes for all teachers will be instituted to ensure life-long learning. Campus recruitment of teachers will add to the prestige of the course. Interestingly, in Finland primary school teaching is now the most popular profession among the youth, attracting the top quartile of high school graduates into its highly competitive teacher training programmes. This strengthens the foundation of their education system, for education imparted in the early years has a lasting impact on children's future. The 12th Five Year Plan (2012–17) places a strong emphasis on the quality of education in the early years.

Element 6: Arrangement for Special Services

10.7.3.9 Schools will offer more than education. These will be full-service schools providing health services, mid day meals, guidance and psychological counselling, and access to a broader array of mental health and other services for students and families in need. Mainstreaming of students with different abilities will add to the objective of social inclusion. It will also provide these students with better opportunities to grow and greater acceptability in society. Schools may also have special counsellors for these students and develop infrastructure that meets their requirements.

Element 7: Expansion of Infrastructure in Backward Areas

10.7.3.10 With enrolment at the primary and secondary levels of education on the decline in the absolute terms, the State might consider strengthening existing elementary schools rather than building the new ones. Nevertheless, some expansion may be needed in tribal-dominated areas where accessibility still appears to be a problem. Partnering with organisations that work for adivasis and fishermen will not only help understand better the problems of these deprived groups, but will also help to take them into confidence. The Nadakkavu school development project (Box 14.2 in Chapter 14) is an example of developing infrastructure with private participation.

10.7.4 Early Childhood Education

10.7.4.1 The importance of Early Childhood Education (ECE) needs to be seen in the context of the emerging global perspective on ECE as a key intervention for school preparedness, as well as a foundation for life. Recent research has established this stage of childhood to be the critical period for the development of the brain and for developing specific cognitive and psychosocial competencies that serve as the foundation for life-long learning. Kerala has made great strides in ICDS by providing proper infrastructure, amenities, health and nutrition, especially after the decentralisation of

governance. But the pre-school education aspect of ICDS does not seem to have received sufficient attention. It is, therefore, time to take a major new step in pre-school education.

10.7.4.2 Recent policy initiatives have recognised the importance of ECE. The Right of Children to Free and Compulsory Education Act 2009 states in Section 11, "With a view to prepare children above the age of three years for elementary education and to provide early childhood care and education to all children until they complete the age of six years, the appropriate governments may make necessary arrangement for providing free pre-school education for such children." The Ministry of Human Resource Development has set up a Central Advisory Board of Education sub-committee to study the feasibility of making pre-school education an integral part of the Right to Education Act. The Ministry of Women and Child Development, the nodal ministry for ECE, has also prepared a draft policy on ECE. In preparation for the 12th Five Year Plan, two working groups have submitted reports on it.

10.7.4.3 In its section on education, the 12th Five Year Plan has a segment on pre-primary education where it is clearly stated that the concept of 'early learning units' will be introduced to bring together the pre-primary and early primary grades into an integrated unit. Every primary school would be helped to have a pre-primary section to provide pre-primary education with school readiness programmes for children in the age group of four to six years. Kerala should take the lead in implementing such a programme so that students get a head start.

10.7.4.4 The integration of pre-primary education with early primary grades calls for the development of necessary infrastructure in every school. Currently there is an overlap with ICDS as far as pre-primary education is concerned. A strategy needs to be worked out for the gradual shift of the pre-primary year from the purview of ICDS to primary schools. The nutrition component has to be addressed through the mid day meal scheme.

10.7.4.5 Pre-primary education in the integrated school system would call for pre-service training of teachers in the area of ECE. Selected universities and institutes must be specifically encouraged to run rigorous Early Childhood Teacher Education Programmes. The severe dearth of specialists in this area, such as developmental psychologists, curriculum developers for early childhood education and so on have to be addressed. Short-term programmes may also be designed for in-service anganwadi teachers. The integration would also call for research and monitoring on a continuing basis to ensure good results.

10.7.4.6 The creation of the third tier of government following the 73rd and 74th amendments to the Constitution and the devolution of primary schools to the local self-government bodies calls-for their full involvement in the integration of pre-primary with primary schooling. This calls for sensitisation of the local bodies in a big way. Their full participation at all levels of integration and ownership of the new system may be crucial for its success.

10.7.4.7 Private players have an important role to play in pre-primary education. But they cannot have a carte blanche as curriculum, teaching and learning material and teacher qualifications will have to be governed by proper regulations. Their contracts may be renewed only upon the satisfaction of specified conditions. Transparency will be maintained by developing quantitative criteria of performance and through constant monitoring and evaluation.

10.8 Life-long Learning

10.8.1 In a knowledge economy, continued growth depends on continuous upgrading of learning. A high level of educational accomplishment along with good opportunities for life-long learning are among the most important preconditions for strong competitiveness, and for everyone to be able

to actively participate in achieving sustainable prosperity. Besides, an ageing labour force poses a challenge for Kerala. The skills of the labour force must, therefore, be upgraded at all levels. This requires a well-designed strategy for life-long learning and adult education. Major goals of the strategy will be:

- Everyone shall engage in life-long learning.
- Adult education and continuing training must provide everyone with opportunities to improve competencies and support good jobs.
- Adult education and continuing training must reflect changes in qualification requirements and needs of the labour market.
- Community colleges and public libraries can offer courses for life-long learning.

Key initiatives

10.8.2 A legislative framework will be required to facilitate life-long learning to motivate people to upgrade skills and create demand for such programmes with the following key initiatives:

10.8.3 Guidance and counselling about opportunities in adult education and continuing training for workers and enterprises must be improved. Such guidance will contribute to strengthening the demand from both employees and enterprises.

10.8.4 **Create better opportunities for individuals to update their knowledge:** Stronger training institutions need to be developed. It will be the government's goal to create fewer and stronger institutions with a wide academic breadth and high quality. This will help develop and future-proof education and training, and help strengthen knowledge development and innovation through interactions with research institutes, enterprises and so on.

10.8.5 **Skill development programmes:** The Government must enter into a 'framework agreement' with knowledge partners to ensure high quality and relevant skill development programmes.

10.8.6 **Integrate skills with employment opportunities:** Adult education and continuing training efforts must support good job opportunities for individuals. Promotions in the workplace can be directly linked to skill development.

10.9 Technology Enhanced Education Programmes

10.9.1 Finally, it is proposed that education shifts from imparting a static package of knowledge to a dynamic goal of being able to create knowledge and deploy skills in new situations. Education systems need to be flexible, with a shift in the role of the administrator from being a controller to an enabler so as to liberate the energies and talents of teachers and remove impediments in the way of their work. The education system needs to promote self-driven learning by students and the mode should change from instruction to conversation. The use of technology can play an important role in this process. Education at all levels needs technology that is designed for learning and teaching. Without it, education will languish, locked in an analogue mind-set while the rest of society goes digital. Six broad themes in promoting the use of ICT in education are:

- Exploit the power of ICT to enhance learning.
- Allowing technology to help learners apply their education to the real world.
- Utilise artificial intelligence to personalise teaching and learning.
- Enhance teachers' productivity with new tools for designing teaching and learning.
- Empower the digitally and socially excluded to learn with technology.
- Unleash learners' creativity through building and tinkering.

10.10 Conclusion

10.10.1 The proposed education strategy will help create a world-class education system and have everyone participate in life-long learning. It will help develop Kerala as a leading knowledge society in the globalised world.

Reference

[1] *The sample consisted of 118 countries with the analysis having been done for two years, one in 2007 and another in 2008.*
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[2] *Singh, P. 2011. We-ness and Welfare: A Longitudinal Analysis of Social Development in Kerala, India. World Development.39 (2).282–293.*

[3] *Ramachandran V.K. 1997. On Kerala's Development Achievements in J. Dreze and A. Seneds Indian Development: Selected Regional Perspectives, New York: Oxford University Press.*

[4] *The share of public investment in the education sector has been higher in Kerala than the national average and is remarkable by international standards also.*

[5] *Government of Kerala 2006.Population Projections for India and States 2001–2026, Report of the Technical Group on Population Projections Constituted By the National Commission on Population. Office of the Registrar General & Census Commissioner, India: New Delhi.*

[6] *The Census 2011 defines a pucca building in the following manner: "Pucca building may be treated as one which has its walls and roof made of the following materials : Wall material : Stones (duly packed with lime or cement mortar), G.I/metal/asbestos sheets, Burnt bricks, Cement bricks, Concrete, Roof material : Machine-made tiles, Cement tiles, Burnt bricks, Cement bricks, Stones, Slate, G.I./Metal/Asbestos sheets, Concrete.*

[7] *In 2012−13, 97.8 per cent of all schools had drinking water facility. This corresponding statistics for India, Andhra Pradesh, Karnataka, Tamil Nadu are 94.9, 89.1, 99.6, 99.2 per cent, respectively. Only 68.8 per cent of all schools had a boys' toilet in 2012−13. Within the Southern region, the best state is Karnataka (96.13%). 96 per cent of all schools had girls' toilets in Kerala compared to 99.6 per cent in Karnataka. 79.7 per cent of all schools had boundary walls. Kerala was the best performing state in this category.*
District Information System for Education. 2013. Flash Statistics 2012–13. National University of Educational Planning and Administration (NUEPA), New Delhi.

[8] *The evidence from the latest ASER shows decent performance of rural schools satisfying the RTE (Right to Education) norms in various arenas: Pupil-Teacher Ratio (97.6%), Classroom-teacher Ratio (85%), office/store/office cum store (97.1%), playground (69.7%), boundary wall/ fencing (67.4%), drinking water available (81.8%), Useable toilet (86.8%), separate provision for girls' toilet unlocked and useable (83.5%), library books being used by children on day of visit (87%), kitchen shed for cooking mid-day meal (97.5%) and mid-day meal served in school on day of visit (85.1%).*
ASER. 2014. Annual Status of Education Report (Rural) 2013. ASER Centre, New Delhi

[9] *Government of India. 2011. Selected Educational Statistics 2007–08. Ministry of Human Resources Development: New Delhi.*

[10] *George, K.K., Zachariah, G. and N.A. Kumar. 2002. Grants in Aid Policies and Practices towards Secondary Education in Kerala. Submitted to National Institute of Educational Planning and*

Administration. Centre for Socio-economic and Environmental Studies, Kochi. July.

[11] *The data on religion and social groups is not yet available from the 2011 Census; hence for these groups inferences are based on the 2001 Census.*

[12] *Besides the SC and ST groups, the fishing community in the state too is among the most vulnerable sections of society.*

[13] *The Gross Enrollment Ratio (GER) or Gross Enrollment Index (GEI) is a statistical measure used in the education sector to determine the number of students enrolled in school at several different grade levels (like elementary, middle school and high school), and examine it to analyse the ratio of the number of students who live in that country to those who qualify for the particular grade level.*

The Net Enrolment Ratio (NER) is defined by the UNESCO Institute for Statistics as enrolment of the official age-group for a given level of education expressed as a percentage of the corresponding population.

[14] *Government of Kerala 2006,"Population Projections for India and States 2001–2026, Report of the Technical Group on Population Projections Constituted By the National Commission on Population." Office of the Registrar General & Census Commissioner, India: New Delhi.*

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[16] *Mani, S. and Arun M. 2012.Liberalisation of Technical Education in Kerala: Has a Significant Increase in Enrolment Translated into Increase in Supply of Engineers? CDS Working Paper No. 448. www.cds.edu.*

[17] *In 2004−05, there were 78 Technical Institutions projected versus 24 in Para-Medical Education. Planning Commission, Government of India.2008. Kerala Development Report. www.planningcommission.nic.in.*

[18] *Government of Kerala. 2006. Population Projections for India and States 2001–2026, Report of the Technical Group on Population Projections Constituted By the National Commission on Population. Office of the Registrar General & Census Commissioner, India: New Delhi.*

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[22] *Since the breakup of the students for BBA and Bachelors library across government and privately aided colleges are not given, this number is left out of the analysis. This will not change results as it forms only 0.01 per cent of students enrolled.*

[23] *Government of Kerala. 2012. "Kerala Economic Review 2011." State Planning Board: Thiruvananthapuram.*

[24] *Planning Commission, Government of India.2008. Kerala Development Report. www.*

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[25] Agrawal, T. 2012a. "Educational Inequality in Rural and Urban India." Paper presented at the '4th Development Conference of the GREThA/GRES', University of Bordeaux IV, France

[26] Agrawal, T. 2012a. "Educational Inequality in Rural and Urban India." Paper presented at the '4th Development Conference of the GREThA/GRES', University of Bordeaux IV, France.

[27] An individual would prefer to attend school only if present value of the expected benefits from schooling exceeds that of the expected costs (Becker 1993).

[28] It may be noted that education results in many such benefits as better health and social status that cannot always be quantified in monetary terms. Such non-monetary benefits of education are not accounted for in these estimates.

[29] Indicating that the "the drop-outs [in the higher technical education] come exclusively from the most deprived sections of society", the Kerala Human Development Report 2005 (Government of Kerala. 2006. State Human Development Report 2005. Thiruvananthapuram. Prepared by Centre for Development Studies. , p. 97) mentions, "[o]nly those without family academic support or the benefit of expensive private tuition fail in these examinations. It is common knowledge in Kerala that if you want a 'good' pass, classroom learning is not enough and you have to go for private tuition".

[30] ASER.2013 and previous reports. Annual Status of Education Report (Rural) 2012. ASER Centre, New Delhi.

[31] The Department of Education is in the process of collecting an unique dataset of school students which are linked to their Unique ID (UID). Provisional data from 2013−14 show that the breakup of government, aided and unaided schools in Kerala are 30.4, 60.1 and 9.5 per cent data, respectively. Only systematic data collection over the years will be able to inform about the trends as has been discussed in the earlier paragraph. Maintaining educational quality in schools which match international standards and result in innovative and creative entrepreneurs and thinkers should always remain a top priority of the policymakers.

[32] ASER. 2014. Annual Status of Education Report (Rural) 2013. ASER Centre, New Delhi.

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[40] Planning Commission, Government of India.2008. Kerala Development Report. www.planningcommission.nic.in.

[41] Government of Kerala. 2006. State Human Development Report 2005. Thiruvananthapuram. Prepared by Centre for Development Studies. pp. 94.

[42] The prevalence of liberal arts education in the US system has helped churn out inventions and innovations on a continuous basis for the last 100 years. In a knowledge economy that Kerala aspires to be where we will create knowledge, it is important to create a system of education which produces and encourages citizens to think in an innovative fashion. Liberal arts is a nebulous concept arose in the days of the Classical Greek system. However, the definition of liberal arts education has evolved to a person imbibing a certain set of skills. "They are: (i) Thinking critically or possessing broad analytical skills; (ii) Differentiation and discrimination within a broad range of particular phenomena (especially within the history of Western culture); (iii) Formation of abstract concepts; (iv) Integration of abstract concepts with particular phenomena or concrete instances; making relevant judgments; (v) Evaluation of evidence and revision of abstract concepts and hypotheses, as appropriate; (vi) Articulation and communication of abstract concepts ; (vii) Differentiation and discrimination of abstractions, identification of abstract concepts ; (viii) Comprehension of the logics governing the relationships among abstract concepts; (ix) Learning how to learn; (x) Thinking independently; (xi) Empathizing, recognizing one's own assumptions, and seeing all sides of an issue ; (xii) Exercising self-control for the sake of broader loyalties; (xiii) Showing self-assurance in leadership ability; (xiv) Demonstrating mature social and emotional judgment; personal integration; (xv) Holding equalitarian, liberal, pro-science, and antiauthoritarian values and beliefs; and (xvi) Participating in and enjoying cultural experience" (Winter, D. G., D. C. McClelland, et al. (1981). A new case for the liberal arts. San Francisco: Jossey-Bass Publishers and Blaich, C., Bost, A., Chan, E., and R. Lynch. Defining Liberal Arts Education.Centre of Inquiry, Wabash College). With this outcome in mind, we are proposing a strategy, which will churn out thinkers, inventors, inventors, teachers etc. and ultimately produce virtuous, articulate and knowledgeable citizens in Kerala. The citizens will have the skills live in a globalised society. – "Think Global, Act Local" is the motto.

[43] The Kerala State Policy on Higher Education: Draft for discussion: The Kerala State Higher Education Council. http://www.kshec.kerala.gov.in/images/reports/spohe_draft.pdf

[44] The process of translating research is into real-world solutions is labelled as commercialisation. "The commercialisation process is a way of developing innovative ideas and innovations and applying them to real-world problems. Commercialisation involves a range of legal and commercial processes and concepts, such as intellectual property, patents and licensing. Patenting, Publication, Marketing and Revenues are essentially the four stages in the process". (Monash University Web site, http://www.monash.edu.au/industry/experts/commercialisation/).

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Chapter 11

SCIENCE, TECHNOLOGY AND INNOVATION: A NEW STRATEGY

Chapter 11

Science, Technology And Innovation: A New Strategy

11.1 The Context

11.1.1 Over the next 20 years, Kerala will transition from a traditional to a knowledge economy. A knowledge-driven economy is not about a large number of high technology industries. Rather, it points to the emergence of knowledge as a new source of competitive advantage that applies to all sectors, all companies and all regions, from agriculture and retailing to software and biotechnology. Knowledge is the most strategic resource in a knowledge economy. A critical element of the success of a knowledge economy is an effective innovation system of firms, research centres, universities, consultants and other organisations that can keep up with the knowledge revolution, tap into the growing stock of global knowledge and assimilate and adapt it to local needs. It will, therefore, be vital for the Kerala government to strengthen its R&D strategies and initiatives to ensure that the State is scientifically, technologically and economically equipped to meet the challenges in the process of transition.

11.2 The Current Scenario

11.2.1 Administrative Infrastructure

11.2.1.1 The Kerala State Council for Science, Technology and Environment (KSCSTE) was constituted in November 2002 as an autonomous body to encourage and promote science and technology-related activities in the State by restructuring the erstwhile State Committee for Science, Technology and Environment (STEC), which was established in 1972 in concurrence with the Science Policy of the Government of India. This is Kerala's apex body for planning, formulating and implementing science and technology promotions and other related research and development programmes. There are several R&D centres (and more planned) under the Council, which have been assigned specific domains for their R&D work:

- The Centre for Earth Science Studies (CESS) was established to promote modern scientific and technological research and development studies in earth sciences (problems related to land, sea and the atmosphere). (Following its recent transfer, CESS now comes under the Central Government.)
- The Centre for Water Resources Development and Management (CWRDM) focuses on the field of water management.
- The Kerala Forest Research Institute (KFRI) undertakes research in areas such as forestry, biodiversity and so on.
- National Transportation Planning and Research Centre (NATPAC) undertakes research and consultancy in the fields of traffic engineering and transportation planning, highway engineering, public transport systems, inland water transport, tourism planning, rural roads, environmental impact assessment and transport energy.
- The Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) works in the conservation and sustainable utilisation of plant biodiversity.

- The Kerala School for Mathematics (KSoM) has been set up as a joint venture of KSCSTE and the National Board of Higher Mathematics to promote mathematical research in the country, particularly in Kerala.
- The Srinivasa Ramanujan Institute for Basic Sciences (SRIBS) is a capacity-building initiative of KSCSTE in basic sciences.

11.2.2 Current Schemes and Programmes

There are four types of R&D support schemes:

11.2.2.1 Funding Schemes for Science and Technology (S&T)

11.2.2.1.1 These schemes focus on funding scientists and technologists (Science Research Scheme, Emeritus Scientist Scheme, Engineering and Technology Scheme, Rural Technology, Technology Development Adaptation Programme, research fellowship programmes); departments and colleges for scientific research/academic work (SARD); and autonomous institutions (grants-in-aid). Further, the Kerala Biotechnology Board and Kerala Biotechnology Commission provide research support to young scientists to pursue their ideas in emerging and frontline areas of research in biotechnology.

11.2.2.2 Promotion of Science Education

11.2.2.2.1 These programmes aim at inspiring interest in science at the school level (Sastraposhini Scheme, Scheme for Promoting Young Talent in Science, Rural Agriculture Work, Women Scientists Cell); at the university level (Student Project Scheme, Young Scientist Programme); and at the managerial level (training facility for S&T management). Support is provided for seminars, symposia, workshops and National Science Day and National Technology Day celebrations. Kerala Sasthrapurashkaram award is conferred to recognise the lifetime contributions of scientists and their achievements in S&T. A Technology Festival (TECHFEST) and the Kerala Science Congress are organised every year by KSCSTE with the aim of stimulating interest and proficiency in science. A science city is coming up in Kottayam with the objective of promoting interest in science. The fourth of its kind in India, after Kolkata, Jalandhar and Ahmedabad, the project is visualised as one of the largest science cities in Asia. It will have science galleries, science parks, an open-air auditorium and a planetarium.

11.2.2.3 Encouraging Innovation at the Grassroots Level

11.2.2.3.1 A scheme titled 'Grassroots Innovation Augmentation Networking' (GIAN) is being implemented in collaboration with the National Innovation Foundation, to promote grassroots level innovation and to take these innovations to the enterprise level. Further, the Patent Information Centre facilitates the filing of patent applications from the State by conducting 'prior art' patent database searches free of cost.

11.2.2.4 Encouraging S&T in Environment and Ecology

11.2.2.4.1 The environment and ecology programme provides assistance in the form of grants to scientists and technologists for scientific/research work on environmental problems and issues. Short-term courses for professionals and others including NGO workers, teachers, students and the general public are organised on subjects such as environment management. The Kerala Coastal Zone Management Authority provides protection to oceans, seas and coastal areas and contributes to the protection, rational use and development of their living resources. Green technology centres are to be established to encourage research and adoption of energy efficient *chulhas*, organic

farming, afforestation, vermi-composting, biogas and the use of Compact Fluorescent Lamps (CFL) and Light-emitting diodes (LED) in place of incandescent bulbs. Finally, initiatives are being taken up for the conservation of wetlands in the State.

11.3 Challenges

11.3.1 The S&T support system in Kerala appears a little too general to make any substantive impact. There are no focused programmes to support innovation, and most initiatives concentrate on supporting science and technology. Kerala faces economic, social and environmental challenges that require a new level of R&D effort and success. The economy is stuck in low productivity cycles and to transit to a knowledge economy, it must improve productivity and competitiveness through innovation and improving human capital. From the societal perspective, availability of basic utilities including water and energy and basic services such as sanitation, solid and liquid waste management, transport and health pose serious challenges. Finally, there are environmental challenges in terms of land, water and air pollution, biodiversity loss and vanishing wetlands. Thus, Kerala requires a new S&T strategy that helps it leapfrog to the level of the advanced economies using science and technology to develop practical applications to address various challenges.

11.3.2 As discussed in this document, there has been a worldwide technology explosion impacting almost every aspect of human activity. To succeed in an increasingly competitive global arena, Kerala must be at the leading edge of important developments that generate health, environmental, social and economic benefits. Now that Kerala has built a strong research foundation, it must strive for excellence in science and technology.

11.4 A New Innovation Strategy

11.4.1 KPP 2030 proposes a sustainable innovation strategy to steer Kerala's economy out of the economic, social and environmental challenges it faces. The new, focused policy will create a platform that encourages the private sector to compete on the basis of its innovative products, services and technologies. This policy will also lay out a framework to guide strategic investment of public funds. The government will need to be more strategic, more efficient, more effective and more accountable for delivering results that make a difference in people's lives, which is the ultimate objective of the policy.

11.4.2 The National Innovation Council defines innovation as: "Innovation today is increasingly going beyond the confines of formal R&D to redefine everything. Today innovation can mean new and unique applications of old technologies, using design to develop new products and services, new processes and structures to improve performance in diverse areas, organisational creativity and public sector initiatives to enhance delivery of services. Innovation is being seen as a means of creating sustainable and cost effective solutions for people at the bottom of the pyramid, and is being viewed as an important strategy for inclusive growth in developing economies."[1]

11.4.3 In the knowledge-based economy, the innovation system contributes to the key functions of:

i) Knowledge production and knowledge acquisition — developing new knowledge.
ii) Knowledge transmission — educating and developing human resources.
iii) Knowledge dissemination — providing knowledge inputs to problem solving.

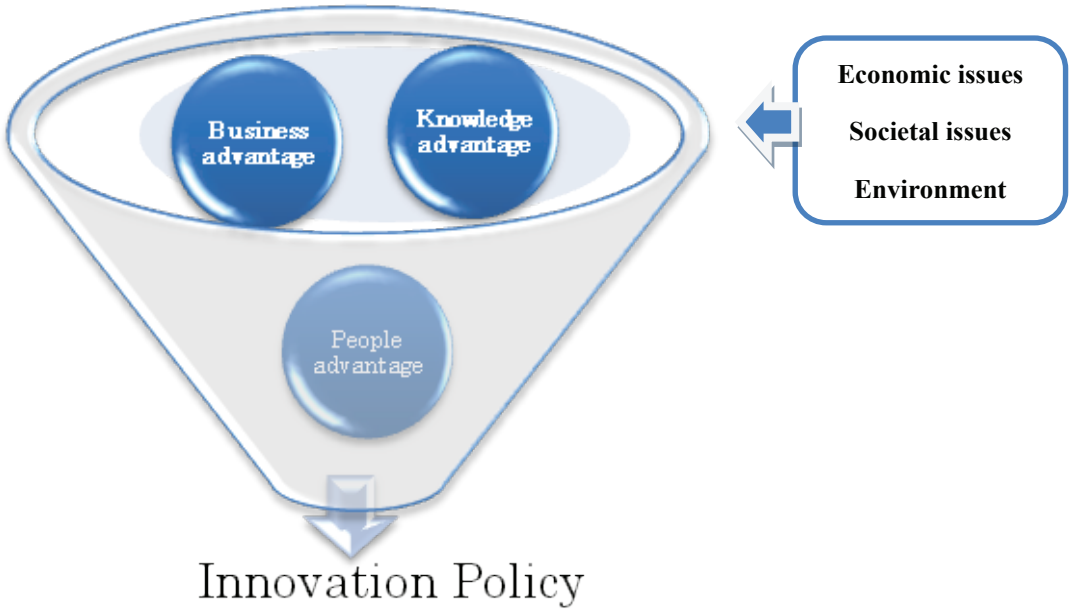
11.4.4 While knowledge production and acquisition will serve as the basis of a knowledge advantage, knowledge transmission will help create a people advantage. Finally, knowledge dissemination will help create a business advantage. The proposed S&T strategy needs to be built on these three pillars.

11.4.5 KPP 2030 proposes a new 'innovation policy' to create an 'innovation ecosystem', incorporating the three sub-systems in interactive learning:

- The regional production structure or knowledge exploitation sub-system, which consists mainly of firms, especially where these tend to form clusters.
- The regional supportive infrastructure or research sub-system, which consists of public and private research laboratories, technology transfer agencies and research consultants.
- The academic sub-system consisting of universities and colleges, vocational training organisations and so on.

11.4.6 The proposed innovation policy is shown in figure 11.1

Figure 11.1
A New Innovation Strategy



Source: Conceptualised by NCAER

11.4.7 The proposed 'innovation ecosystem' will be a concrete tool for policymakers to systemically enhance localised learning processes to secure regional innovativeness in practice. This can be achieved if industrial, education and health clusters are supported by a high density of research labs and other aspects of R&D in the vicinity. To achieve this objective, it will provide the rules required to ensure accountability. What follows is a comprehensive action plan to strengthen each of the three dimensions of the innovation ecosystem.

11.4.7.1 Pillar 1: Creating a knowledge advantage through the research sub-system

11.4.7.1.1 The Kerala government will focus strategically on research in areas that address regional interests from a social, environment and economic perspective and promote creation and acquisition of knowledge.

a) Promotion of scientific knowledge and R&D

(i) Science is the fundamental knowledge base, which is generic to technological development. It is new knowledge, created largely through basic research at universities and government laboratories.[2] This new knowledge has traditionally been distinguished from the knowledge generated by more applied or commercial research, which is closer to the market and at the 'technology' end of the spectrum. Because of this, much of science is considered a 'public good', a good in which all those who wish can, and should, share if social welfare is to be maximised. The public good character of science means that the private sector may under-invest in its creation since it is unable to appropriate and profit adequately from its outcomes. The government should, therefore, play an important role in ensuring and subsidising science. Currently, the S&T Council has several programmes to fund research proposals. However, a more direct and proactive approach will be required to promote research. The Government of Kerala will play an important role in supporting basic research across a broad spectrum of sciences through the following:

- Encouraging partnerships: The Government will support S&T collaborations involving the business, academic and public sectors, at home and abroad. Partnerships are essential to accelerate the pace of discovery and commercialisation in Kerala.[3] Through partnerships, the unique capabilities, interests and resources of various and varied stakeholders can be brought together to deliver better outcomes.
- Focusing on strategic areas of research: There is a need to identify priority research areas and initiate projects. The priority areas may be identified by the respective government departments on a yearly basis and communicated to the KSCSTE. These projects should be outcome-oriented with world-class infrastructure created for them.

(ii) The proposed knowledge cities (Kozhikode (education), Thrissur (education), Thiruvanthapuram (education), Palakkad (technical education), Malappuram (health) and Kochi (global city) will establish the right conditions to attract, retain and develop the talent and ingenuity that Kerala needs. The quality of higher education will be world-class in these hubs. This will attract talent from all over the country and abroad, creating an environment that is conducive for new ideas.

b) Facilitating R&D by private actors

(i) There is growing recognition that in a knowledge economy, ideas for innovation can stem from many sources, including new manufacturing capabilities and recognition of market needs. Innovation can assume many forms, including incremental improvements to existing products, application of technology to new markets and use of new technology to serve an existing market. Innovation requires considerable communication between different actors — firms, laboratories, academic institutions and consumers — as well as feedback from the science, engineering, product development, manufacturing and marketing domains. To capture this dynamism, the government will focus on interaction between all possible sources of scientific knowledge. It will promote interaction between knowledge and production networks by undertaking the following programmes:

- Research alliances with national and international agencies: Annual technology development programmes will be established based on the strategic issues identified by government departments (as mentioned earlier). Further, alliances will be formed and executed annually with public and private research organisations, technology research associations, specialised production technology research centres, universities, government-funded research organisations, international agencies and so on, and funding for these projects will be facilitated. Their outcomes will be evaluated from time to time.

  At present, Kerala has over 24 research institutes that are funded by either the Government of India or the State Government (Box 11.1). Many of them carry out cutting edge scientific research.

Box No 11.1

Science and Technology Research Institutes in Kerala

1. National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram (formerly Regional Research Laboratory)
2. Jawaharlal Nehru Tropical Botanic Garden and Research Institute, Thiruvananthapuram
3. Center for Earth Science Studies, Thiruvananthapuram
4. Rajeev Gandhi Center for Biotechnology, Thiruvananthapuram
5. Sree Chithra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram
6. Indian Institute of Information Technology and Management-Kerala, Thiruvananthapuram
7. Cochin University of Science and Technology, Ernakulam
8. Kerala Forest Research Institute, Peechi
9. Kerala Agricultural University, Vellayani
10. Centre for Development Studies, Thiruvananthapuram
11. Center for Water Resources Development and Management, Kozhikode
12. Vikram Sarabhai Space Centre, Thiruvananthapuram
13. Central Plantation Crops Research Institute, Kasargod
14. Central Tuber Crops Research Institute, Thiruvananthapuram
15. Central Institute of Fisheries Technology, Ernakulam
16. Central Coir Research Institute, Alappuzha
17. Rubber Research Institute of India, Kottayam
18. Regional Cancer Centre, Thiruvananthapuram
19. Indian Institute of Spices Research, Kozhikode
20. Central Marine Fisheries Research Institute, Ernakulam
21. National Research Centre for Oil Palm (Regional Centre), Thiruvananthapuram
22. Indian Cardamom Research Institute, Idukki
23. Indian Institute of Space Science and Technology (IIST), Thiruvananthapuram
24. Indian Institute of Science Education and Research (IISER), Thiruvananthapuram

- Incentives: The R&D tax incentive applies to expenditure incurred on R&D. Most countries offer such incentives to private firms to undertake these efforts. Since Kerala is a regional economy, it benefits from the R&D tax incentive offered by the central government. However, its strategy for the future will require identifying and offering incentives at the state level too. These incentives will have to be based on research outcomes rather than expenditure.

(ii) The future will require the evolution of public innovation support systems along with stronger institutional and organisational support from the private sector.

c) Linkages between the academic and research sub-systems

(i) Many developed countries have promoted strong links between universities and industry as a means of publicising and strengthening their contributions to innovation and economic growth. Government departments in these countries allocate annual funds to universities to facilitate research and its commercialisation. In recent years, these links have been strengthened through the commercialisation of higher education. This enhances opportunities to increase the relevance of the university's educational mission and to stimulate new research directions. This will also generate more interest among young people in pursuing S&T studies and careers, encouraging a virtuous circle of talent generation and mobilisation. However, there are also concerns:

- An increasing share of the resources allocated to university research will be derived from contracts with industry, thus making universities more and more dependent on the private sector for funding, and steering overall research activity in a more commercial direction.
- As university-industry collaboration becomes the norm in many areas of basic research, the traditional contribution of academia to the production of scientific knowledge may weaken.
- There are also concerns that university-industry collaboration may tend to consolidate excellent researchers in a handful of universities or research centres.

(ii) While designing the policy, these concerns will be addressed.

d) Promotion of regional innovation systems and the proposed knowledge hubs: Business advantage

(i) Regional innovation systems involve systematic engagement of two sub-systems in interactive learning:

- The regional production structure or knowledge exploitation sub-system, which consists mainly of firms, especially in areas where they tend to form clusters.
- The regional supportive infrastructure or knowledge generation sub-system, which consists of public and private research laboratories, universities and colleges, technology transfer agencies, vocational training organisations and so on.

(ii) Regional innovation systems are a concrete tool for policymakers to systemically enhance localised learning processes to secure regional innovativeness in practice. This can be achieved if industrial, education and health clusters are supported by a high density of research labs and other aspects of R&D in the vicinity. The KSCSTE will synchronise its efforts with the KPP 2030 'coordinating committee' (proposed in Chapter 2), to ensure a well-developed regional innovation system in the proposed hubs (see Chapters 2, 10, 21).

(iii) Setting up Innovation Universities: The University Grants Commission has started a scheme for setting up Innovation Universities (See Box 11.2).[4] The basic objective is to promote

Box No 11.2

Innovation University

The idea of Innovation Universities was mooted during the 11th Plan. It fills the urgent need to integrate cross-cutting research by different institutions operating in the State. A dozen research institutions have been identified and their faculty brought together to create a state-of-the-art university that embraces all these institutions. It follows a 'hub and spokes' model to enhance the quality and quantity of science and technology human resources and capacity building in the State. The vision of the Innovation University is to nurture a research-propelled, development-oriented, industry-linked and technology-enabled innovation platform, and attain a seamless integration of intellectual capabilities to boost research efforts in futuristic science and technology. The university is expected to be at the centre of Kerala's transformation into a global knowledge hub, and also establish benchmarks for other institutions of higher learning through path-breaking research and by promoting synergies between teaching and research. The KSCSTE will be the university's 'hub' and the participating research institutions its 'spokes'. The government order constituting the university was issued in October 2013. Kerala is the second state in the country to constitute such a university, with Orissa being the first.

innovative ways of learning, sharing and collectively growing. The scheme is meant to support bold and big ideas that require substantial support and flexibility, ideas that usually do not fit into any of the existing patterns of funding and do not, therefore, see the light of day. This basic mandate of the scheme will be interpreted flexibly. The proposal may or may not cover all the three areas outlined here; it may or may not relate to all the departments or activities of the universities. The three areas are — innovative teaching/educational programmes; innovative research programmes; and organisational innovation for financial support during the 12th Five Year Plan. The scheme will recognise and support localised as well as general innovations. In developed countries, innovation and entrepreneurship are inextricably linked to each other. Box 11.3 highlights one such example from the University of Michigan, Ann Arbor in the US.

e) Facilitating knowledge acquisition

(i) The characteristics of technological development differ across developed and developing countries. While major (radical) innovations occur in the advanced industrial countries through internally driven R&D processes, firms in developing countries acquire those innovations that are useful or appropriate through technology imports from developed country firms, particularly from transnational corporations. But that does not mean that they can apply them successfully here. Absorption of these technologies and building technological capabilities requires gaining mastery over technology or adapting it to local conditions. This is because technology is tacit. Unlike in the developed countries, innovation in developing countries is often the result of adapting knowledge developed elsewhere and is mainly of an incremental nature. Building technological capabilities, thus, requires technology acquisition and then gaining mastery over it through absorption and adaptation. Technology acquisition by firms in developing countries

Box No 11.3

Innovation and Entrepreneurship

A University of Michigan course that brings together students of business, engineering and art and design led to the development of a mini business, manufacturing coasters, for a non-profit in Detroit. Called Integrated Product Development (IPD), the class worked closely with Cass Community Social Services' Green Industries to brainstorm and set up the business. They employ homeless men for cutting the recycled glass.

IPD, now in its 18th year, historically has been a product development course. Lately though, there has been a transformation, with the programme challenging students to start mini businesses. The coasters emerged as the first product to be commercialised out of six mini business ideas that the students developed for Cass to consider adding to its Green Industries set of micro businesses.

In IPD, the students were challenged to use materials that would otherwise enter the waste stream. So they took tours of vacant lots in Detroit and found rubber, glass and wood in good quantities. There was very little metal because that's being salvaged. They then brainstormed on what they could design with the materials. Working under faculty drawn from different disciplines, the students explored various options before settling on the glass coasters, which sell for about $20 for a set of four.

Source: University of Michigan Web site.
http://www.ns.umich.edu/new/multimedia/videos/21580-u-m-s-entrepreneurial-spirit-creates-mini-business-for-detroit-nonprofit

can either be embodied or disembodied and takes place either through market-based mechanisms or non-market mechanisms such as licensing and import of capital goods. The State can play an important role in identifying appropriate technology and promoting its transfer, absorption and adaptation.

- Centre for International Technology Transfer: It is proposed to create an agency within the S&T Council, called the Centre for International Technology Transfer, to identify the latest technologies available worldwide in the economic, social and environment sectors; create an inventory of these; and help procure them on behalf of the relevant department or industrial unit. It will also be responsible for the absorption and possible adaptation of these technologies and for international collaborations in technology development.
- Promotion of Foreign Direct Investment (FDI): FDI is believed to be a carrier of the latest technology to the host economy. It is, therefore, important to create conditions for its inflows. However, FDI may not result in technology transfers if the economy has no absorptive capacity. Thus, the transition of the economy to a knowledge economy may be combined with FDI inflows. It may be mutually reinforcing and will benefit the economy.

(ii) Acquisition of knowledge is important in view of the fact that there has been an explosion of technology in every sector including the primary sector. The knowledge and acquisition of these technologies may be vital for addressing the challenges Kerala faces. Box 11.4 offers four illustrative examples to emphasise the importance of the state's role in technology acquisition.

Box No 11.4

Illustrations of Technological Advancement

Illustration 1: Hydroponic Farming

The term hydroponics, which is derived from 'hydro' for water and 'ponics' that means 'working with', is also known as soilless gardening. This technique allows plants to grow without soil, both indoors and outdoors. The roots of plants are partially or totally sprayed with a nutrient solution mixed with water. These roots are then exposed to the air inside the hydroponic growth enclosure, so that the roots can get all the oxygen in a high humidity environment. This technique was further promoted by the Singapore based Aero-Green Technology Pvt Ltd. The main purpose of promoting vertical aeroponic growing techniques was to use them on the rooftops of buildings. This system can produce crop yields as much as 20 per cent higher than yields from traditional farming techniques and saves 70 to 95 per cent water, which can be used to grow an equivalent crop yield conventionally (Despommier, 2010). In 2009, more land for hydroponic farming was announced as the Singapore government wanted to reduce its dependence on food imports. Also, given the soaring food prices all over the world, this technique is considered a major step towards achieving self sufficiency in food grains.

The advantage of this technique is that not only will the agriculture sector become 'agri-preneurial', but it will also help promote the accessories market for hydroponic instruments. Currently, in Singapore, in order to make hydroponic farming feasible and user friendly, many accessories like hydro-light timers, hydro-net pots, hydro-reservoirs, hydro-sounds, hydro-water, hydro-aeration, hydro-drip, hydro-germination, hydro-vertical gardens and so on are available. Various kinds of lights such as LED systems, light movers, light stands, instruments capturing solar power to provide adequate light for plants and so on have revolutionised the market. Vegetables such as tomato, cucumber, beans, peas, pepper, sprouts, broccoli, cauliflower and so on have extensively been grown in Singapore and can be replicated in Kerala. Since Kerala also faces water and land shortage, and imports a major portion of its food grains, hydroponic farming may usher in a new revolution in Kerala's agriculture sector.

Source: Compiled from various sources and Despommier, D. 2010. The Vertical Farm: Feeding the World in the 21st Century. Thomas Dunne Books; First Edition

Illustration 2: Aquaponic Farming

Aquaponic farming is a combination of aquaculture and hydroponics. In aquaponics, water from fish tanks is circulated through a 'grow bed' where plants are grown. Further, nitrifying bacteria converts fish waste into nutrients for plants. Plants use these nutrients as their main nutrient supply; at the same time, this process benefits the fish by providing them with clean water to live in, as the plants filter the water. Natural chemicals and fish food are the only additives in the aquaponic system. There are three main styles of aquaponic systems — media based, deep flow/raft, NFT (nutrient film technique). Media based is useful in backyard systems, deep flow/raft is used for commercial systems and NFT is used for both backyard and commercial systems. In aquaponics, plants like green leafy vegetables, vine plants, fruit and fruit trees, flowers and fodder can be grown. Some of the main components in successful aquaponics systems are: fish tanks, grow beds, water pumps, aeration pumps, bio filtration and mechanical filtration, plumbing for irrigation and drainage, fish, plants and, of course, water.

Some of the major advantages of aquaponics include reduced water, chemical and pesticide use (when set up in a greenhouse); reduced soil erosion; reduced running cost; ability to produce fish and plants for consumption; and reduced pollution of waterways.

In the world of global warming, with water shortages, problems with labour, depleted soil, increase in genetically modified foods, rising prices and world conflicts, soilless cultivation can be a way forward. Aquaponics is practised in Bangalore, Jaipur, Kolkata and several other cities in India.

Source: Green Acre Aquaponics' Web site: www.greenacreaquaponics.com

Illustration 3: Hay Dairies – Innovative Vacuum Milking system

Hay Dairies is the only goat farm in Singapore. The main product is goat milk, and goats are milked using a high-tech vacuum milking system in which up to 12 goats can be milked at the same time. After milking, quality checks make sure that the milk is healthy for consumption. High-tech methods of extracting milk are time saving and ensure hygienic conditions as well. Goat milk is beneficial for people with various diseases and can be consumed by lactose intolerant individuals too. Hay Dairies accepts telephone orders and makes home deliveries. Due to the different flavours of goat milk it sells and exceptional hygiene, the dairy is also a famous educational tourism spot in Singapore.

Source: Travel Guide Web site
http://www.streetdirectory.com/travel_guide/singapore/local_guide/812 /hay_dairies_goats_galore.php

Illustration 4: Why use one source of renewable energy, when all of them can be used in a decentralised manner to achieve energy efficiency — A German energy model

The German 'combined renewable energy plant' is one of the classic examples of using different renewable energies at the same time. It uses 36 wind, solar, biomass and hydraulic plants that are spread throughout Germany. This ensures that power is supplied to all individuals, with many smaller plants in close proximity to consumers. This is also achievable in Kerala, where land is scarce and availability of big pieces of land an issue. Small plots of land used to generate power in a clean and green manner can, thus, be the way out. How much energy is generated by wind turbines and solar heating systems depends on how much wind and sunlight is available, and at the same time biogas and hydraulic turbines can be used to supply energy at peak times. In this way, the entire demand for energy can be met with the help of renewable sources.

Source: Energy Efficiency Made in Germany, Report by Federal Ministry of Economics & Technology, 2008.

f) World-class research

World-class research can be promoted in the State by:

- Building a public-private partnership model to deliver a sustainable, world-class research system across the humanities and physical and social sciences.
- Delivering quality by increasing the number of research teams led by internationally competitive principal investigators.
- Upgrading existing infrastructure and developing new facilities to support research.
- Enhancing post-graduate skills through a strong 'graduate schools' mechanism.
- Developing sustainable career paths for researchers.
- Enhancing the mobility and freedom of researchers to innovate.

11.4.7.2 **Pillar 2: Strengthening Human Resources Advantage by Upgrading the Academic Sub-system**

11.4.7.2.1 Talented, skilled and creative people are the most critical element of a successful economy in the long term. Kerala must develop the world's best-educated, skilled and most flexible workforce if it is to build an advantage in the knowledge economy.

a) Attract students to science and mathematics

(i) The State Council of Education Research and Training (SCERT) needs to review the implementation of the primary science curriculum to ensure that the new curriculum and teaching methodologies are stimulating interest in and awareness of science at a very young age.

(ii) Make science and awareness of scientific issues a core area of study for student teachers in Colleges of Education.

(iii) Reform the maths and science curricula, starting with an emphasis on hands-on investigative approaches and the completion and assessment of practical coursework.

(iv) Invest in professional development of teachers in collaboration with secondary level education boards and higher education institutions, as appropriate.

(v) Develop promotional and guidance material and resources, and launch awareness initiatives in the transition year in collaboration with the Science and Engineering programme, and effectively link this with school guidance services.

(vi) Support the development of teachers' networks, which will focus on improving teaching and learning, including continuing professional development of teachers.

(vii) Further, develop the full range of awareness-raising activities under the Science and Engineering programme.

(viii) Most developed countries are working on strategies to attract students to science and maths education. Kerala can draw on the examples of other countries. Box 11.5 provides a case study of PRISM, an initiative in the US to attract students to science and maths.

Box No 11.5

Promoting Regional Improvement in Science and Math (PRISM): Attracting Students to Science and Technology in the US

PRISM is an inter-disciplinary programme to promote interest in mathematics, physics, biology and the sciences among college and high-school students. The goal is to engage students in discovery and research that leads to research co-op positions and further opportunities for undergraduate research with faculty. The programme is supported by the National Science Foundation and is run jointly by the faculties of mathematics, physics and biology. PRISM offers bi-weekly seminars and social events throughout the Fall semester (August/ September to December) for students interested in science or mathematics, a free one-credit research-based course in the Spring semester (open to all students in their first two years), and an intensive 4-week programme in May (by application, with a stipend) exploring topics in math, physics and biology, leading to opportunities for research co-ops and internships. PRISM provides opportunities for student exploration. It allows students to work together on challenging projects in science and maths outside the normal classroom environment, makes them think creatively and utilise critical problem-solving skills necessary for careers in emerging science fields.

Source: The PRISM Project: Promoting Regional Improvement in Science and Maths Web site. www.theprismproject.org

b) Improving education standards: A major concern is the quality of education, an issue discussed in the Strategic Education Policy in Chapter 10.

c) Special grants for science education: The S&T Council has programmes to fund higher education in science. However, schools and colleges can institute special grants for students opting for science and maths education. These may be created through donations and sponsorship from companies.

11.4.7.3 **Pillar 3: Business Advantage through the Knowledge Diffusion Sub-system**

11.4.7.3.1 Knowledge must be converted into commercial applications to create a business advantage, which generates wealth and supports a better quality of life. In the proposed strategy, the state will play an important role in transferring and disseminating knowledge throughout the economy. One of the hallmarks of a knowledge-based economy is the recognition that the diffusion of knowledge is just as significant as its creation, leading to increased attention to knowledge distribution and production networks. The distribution networks are the agents and structures that support the advancement and use of knowledge in the economy and the linkages between them. They influence the capacity of a region to diffuse innovation and absorb and maximise the contribution of technology to production processes and product development. This requires developing links between the science system and the private sector in order to speed up knowledge diffusion.

a) Promotion of start-ups: This new, focused strategy proposes that Kerala creates an environment that supports start-ups. It recognises that the government's most important role in this area is to ensure a competitive marketplace and create an investment climate that encourages young people to compete in providing innovative products, services and technology. Kerala must maximise the freedom given to scientists to investigate and entrepreneurs to innovate. The chapter on Entrepreneurship provides further details on the strategic direction for promoting start-ups.

Box No 11.6

Startup Village

Startup Village, the incubator in Kochi, was started in 2012 in a 15,000 square feet campus in the Kinfra High Tech Park in Kalamassery with an investment of Rs 100 crore. It is India's first public-private partnership telecom business incubator. The Startup Village is a joint venture between the Science and Technology Department, Government of India; Technopark, Trivandrum; and MobME Wireless. The incubator received around 1,000 applications within two months of starting operations. "We expected to receive 1,000 applications within 10 years. But surprisingly we received more than 900 applications in the initial two months itself. After scrutiny, we have so far accepted 324 companies to our system," Sanjay Vijayakumar, Chairman of the Village said.

There are around 5,000 start-up incubators across the world, of which 2,000 are in the US and 1,000 in China. India has only 65 such facilities and the Government of India is trying to enhance the number to 1,000. The Startup Village focuses on the Internet and telecom sectors, though it has received a variety of proposals ranging from mobile applications to those related to robotic technology. 'Production companies' will gain prominence in India in the coming years and so the Startup Village decided to support such companies. The chairman's reasoning was as follows: "In Silicon Valley, there are only 'production companies'. But a majority of big companies in India are service companies like Wipro and HCL. The next revolution which is set to happen in the country will be the mass arrival of production companies."

Unlike service companies, production companies will take at least three years to yield results. Though India has quality manpower and human capital, the country is many years behind Silicon Valley in terms of infrastructure and an ecosystem for innovation. "People in Silicon Valley may have the same intelligence as we have. Though we have human capital, we do not have adequate infrastructure. Our ecosystem is also wrong. We have to bridge this gap," he said. But it is fast moving in that direction: Kerala's Startup Village has become the second place in the world after the US's Kansas City to introduce 1Gbps (gigabits per second) connectivity.

Source: http://www.emerging.kerala.gov.in/latest-news.php?d=1 accessed February 24, 2014

Box No 11.7

Incubation Centre

Technopark Technology Business Incubator (T-TBI) is a joint venture between Technopark, Trivandrum and the Department of Science and Technology, Government of India. The primary focus of Technopark TBI is to develop ICT opportunities for building global enterprises. T-TBI aims to spot and attract potential entrepreneurs through intensive training programmes undertaken on a regular basis. It has a full time management team that has extensive experience in entrepreneurship, product development and marketing, securing venture capital funding and organisational development. In addition to this, an expert panel called the Technology Angels, consisting of eminent academicians and expert professionals from diverse industries, guides incubatees.

In the form of a business centre, Technopark TBI provides incubatees with an initial place of operation equipped with voice/high speed data connectivity, a supportive environment with services such as assistance in technology, hands-on management, mentoring, marketing, support in business plan development, assistance in recruiting human resources, access to academic and research laboratories and exposure to both domestic and international capital funds to grow their business.

TBI was set up to achieve the following objectives:

- Undertake R&D and build a workable model of technology-based entrepreneurship in Kerala.
- Address the technology-based entrepreneurship development requirements of Kerala's traditional sectors.
- Identify entrepreneurial talent.
- Identify market niches for technology products and services to be addressed by entrepreneurs.
- Build appropriate training programmes suitable for Kerala's socio-economic culture.
- Train entrepreneurs in technology and business management.
- Assist entrepreneurs to build technology-based enterprises.
- Introduce the students of technical institutions to entrepreneurial skills.
- Promote an entrepreneurial culture in Kerala.

Its thrust areas are ICT including computer software, computer hardware, computer-based services, information technology, IT enabled services and bio- informatics.
TBI Trivandrum can claim to be the cradle of incubation activity in the country. It has been successful in nurturing a number of innovators, helping them evolve into successful global organisations. MobME, a company floated by seven engineering students and incubated in TBI, was recognised by NASSCOM as one of the Top 100 Innovator Companies in India. Commencing in a small way, MobME is now valued at over US$3 million and is helping other start-ups in Kerala through the Startup Village. Establishment of T-TBI has enabled Technopark to admit technology development companies to the incubation programme.

Source: http://www.technoparktbi.org/success.htm accessed February 24, 2014

b) Promotion of specialised institutions

(i) Private consultancies: These firms will have to be promoted to act as a link between the knowledge creating and knowledge using actors. This will promote entrepreneurship and ensure higher returns from science education for the younger generation. The issue of patents and copyrights will need to be sorted out.

(ii) Government-sponsored knowledge diffusion centre: Korea is a case in point. In 2000, Korea Technology Transfer Centre (KTTC) was established to promote technology transfer and commercialisation following the enactment of the Technology Transfer Promotion Act. In 2005, 256 cases of technology transfer transactions and commercialisation consulting were completed under the supervision of KTTC. To encourage the transfer and commercialisation of R&D under government funding, the Act encourages universities and private and public research institutes to have technology transfer offices within their respective institutions. The Ministry of Information and Communications sponsors this agency. It provides commercialisation support to small and medium businesses, start-up companies and so on. New technology is procured and transferred to organisations as a solution to their problems.

c) R&D for enterprise, innovation and growth

There will be no incentive to engage in R&D if there is weak demand for these skills from the private sector. Businesses and other organisations need to make better use of the skills, talent and knowledge of Kerala's graduates. This requires promotion of technology adoption by all sectors. It calls for a government strategy with the following elements:

(i) Promote competition in each sector by creating a favourable investment climate.
(ii) Establish 'Technology Kerala' as a virtual entity and mobilise the practical structures required to make it work.
(iii) Launch a new 'Enterprise Kerala' awareness campaign, including seminars and direct engagement with client firms.
(iv) Increase absorptive capacity by strengthening technology skills in firms that are new to R&D.
(v) Rationalise and simplify enterprise R&D grant structures to make them more accessible.
(vi) Promote the formation and advancement of inter-company networks.
(vii) Strengthen measures to assist firms with technology licensing.
(viii) Strengthen measures to increase interaction between firms and higher education institutions, regionally.
(ix) Develop additional competency centres in strategically important technologies, with significant expansion of industry linkages.
(x) Examine the operationalisation of the Forum on Small Business' recommendations on innovation vouchers and knowledge acquisition grants.

d) Capturing, protecting and commercialising ideas and knowhow

(i) Ensure that the government departments concerned embrace Intellectual Property (IP) management and commercialisation as a central part of their mission; one as important as teaching and research.
(ii) Strengthen institutional competence among researchers.
(iii) Establish competitive funds administered by the Department of Science and Technology to support strengthening of the IP management function.

11.5: Initiate Kerala's SBIR programme: A proposal

11.5.1 The Small Business Innovation Research (SBIR) programme was pioneered by the US to increase the participation of small, high-technology firms in its R&D endeavour. Box 11.8 presents a case study of the SBIR Programme in the US. This programme is a successful example of knowledge diffusion and has significantly contributed to the expansion of Silicon Valley.

Box No 11.8

Small Business Innovation Research (SBIR) Programme of the US

The Small Business Innovation Research (SBIR) programme is designed to encourage small businesses to develop new processes and products and to provide support in their early stages, as they translate these ideas into innovative products and services for the market. It is one of the largest public-private partnership programmes in the US. In 1982, the Small Business Innovation Development Act was passed to award federal research grants to small businesses. In this programme, federal departments with large R&D budgets set aside a small fraction of their funding for competition among small businesses only. Small businesses that win awards in these programmes keep the rights to any technology developed and are encouraged to commercialise the technology. The programme has three main objectives:

- Spur technological innovation in the small business sector.
- Meet the research and development needs of the federal government.
- Commercialise federally funded investments.

The SBIR programme is structured in three phases. Only small businesses in the US are eligible to participate in the programme. The 11 participating federal agencies set aside 2.5−3.5 per cent of their extramural R&D budgets. Since 1983, all SBIR awarding agencies have funded a total of 130,856 projects amounting to US$32.3 billion at current prices and US$19.9 billion at 1983 prices. On an average, 4,362 projects were funded on an annual basis during 1983−2012, with annual grants of over $1 billion (at current prices). The success of the SBIR programme, with its focus on innovation and commercialisation, is unparalleled among federal R&D programmes.

Source: An official Web site of the US Government. www.sbir.gov/

11.5.2 Governments around the world are increasingly adopting SBIR-type programmes to encourage the creation and growth of innovative firms in their economies. In Europe, Sweden, Russia, the UK, Finland and the Netherlands have adopted SBIR-type programmes. In Asia, Japan, Korea and Taiwan have adopted the SBIR concept as part of their respective national innovation strategy. The Government of India's Department of Biotechnology (DBT) built a programme, Small Business Innovation Research Initiative (SBIRI), on the same pillar for funding biotechnology innovation by Indian-owned small to medium enterprises (SMEs). The programme was launched in 2005. Over the years, SBIRI has screened 1,000 projects and funded 121, of which 60 have been completed. The support was in the form of both loans and grants to industry. They have worked under the overall guidance of the Apex Committee and Technical Screening Committee. For the 121 projects sanctioned till August 2011, DBT's commitment has been Rs 192.84 crore (Rs 27.28 crore as grants and Rs 165.56 crore as soft loans).

11.5.3 The SBIRI experience has led to the initiation of the Biotechnology Industry Partnership Programme (BIPP), with the mandate of conducting large-scale operations. The Biotech Ignition Grant (BIG) supports innovation at the grassroots level, together with the Biotechnology Industry Research Assistance Programme (BIRAP) and the Biotechnology Industry Research Council (BIRAC).

11.5.4 It is proposed that KSCSTE introduce this programme by making provisions in the proposed R&D budget of government department. The programme will be implemented by the KSCSTE with the support of the government departments.

11.6 Implementation

11.6.1 A more streamlined management system, with a broad and clear mandate, is required to ensure the effective implementation of the S&T strategy. In order to achieve these objectives, the government will consolidate the roles and responsibilities of the S&T Council by:

a) Organisation restructuring: Reorganise the Council into four organs, each looking after the economic, human development, social and environmental aspects. This will ensure a more balanced approach in targets and achievements. Each organ will adopt strategies for building knowledge, people and business advantages; formulate programmes and schemes and benchmark Kerala's S&T performance against international standards of excellence.

b) Creation of a funding agency for technology and innovation:

   (i) It is proposed that the Government of Kerala set up a funding agency to finance development of innovation that facilitates growth and new business operations. As part of its strategy, the agency will specify focus areas on all the dimensions of sustainable development: economic, social and environmental. Within the ambit of the programmes and initiatives of the agency, businesses and public research units can develop new knowhow, build networks and create an impact on the development of their domain. The objective of the agency will be to grant funds towards innovative projects aimed at generating new knowhow and new kinds of products, processes and services or business concepts. The focus will be on developing technology to meet the needs of public sector bodies and government departments. The departments may inform the agency about the technology areas in which they want projects funded. The agency may then call for R&D proposals from public research bodies and businesses to address these issues. Awards may be given based on an open competition among projects. Universities will also be given the opportunity to participate in the competition. Grants will be sanctioned for the best R&D proposal. The projects will be time bound and subject to thorough monitoring over the period of development. This will facilitate addressing the economic, social and environment related problems unique to Kerala with indigenously developed technology. This agency will also be responsible for implementing and governing the SBIRI programme. While granting awards, it will focus on small, young enterprises, and universities.

   (ii) The Nordic region, which tops in terms of R&D, education and the knowledge economy (as mentioned in Chapter 2) has an elaborate system of R&D and innovation. Box 11.9 presents how R&D policy is implemented in three countries: Finland, Sweden and Norway. Important lessons can be learned by studying the systems in these countries. Based on the experience of these countries, Kerala may develop its own research system.

Box No 11.9

R&D Policy implementation systems in select Nordic countries

Finland

Tekes is the agency that funds R&D and innovation activities of companies and research organisations registered in Finland. In 2012, Tekes made funding decisions regarding 1,640 projects, which resulted in a total investment of €570 million. Of this, €353 million was invested in enterprise projects and €217 million in projects carried out by universities, research institutes and polytechnics. Of the total enterprise R&D project funding, 68 per cent was targeted at SMEs (with less than 250 employees) and 76 per cent at enterprises with less than 500 employees.

Source: Official Tekes Web site -www.tekes.fi/en

Sweden

The Swedish governmental agency for innovation systems is VINNOVA. Its mission is to promote sustainable growth by improving conditions for innovation, as well as funding need-driven research. It promotes collaboration between companies, universities, research institutes and the public sector by stimulating greater use of research, by making long-term investments in strong research and innovation milieus and by developing catalytic meeting places. VINNOVA's activities also focus on strengthening international cooperation. In order to increase its impact, it interacts with other research financiers and innovation-promoting organisations.

Every year, VINNOVA invests about Swedish Krona 2 billion in various initiatives. Funding decisions are made with assistance from national and international experts and there is on-going monitoring and evaluation of all initiatives. It carries out regular impact analysis to evaluate and draw lessons from the long-term impacts of its efforts.

Source: Vinnova- Web site - www.vinnova.se/en

Norway

The Research Council of Norway works to promote high-potential research of benefit to society at large. The Council's main strategy 'research expands frontiers' and various other strategy plans provide an important basis for activities designed to meet this objective. It is responsible for the development of various plans and strategies for individual disciplines, subject areas and research topics. It is highly outcome oriented. The underlying principle is that research must generate results that can be applied by the private and public sectors.

Source: Euraxess-The Research Council of Norway
http://www.euraxess.no/prognett-euraxess/Research_system/1246541738840

c) Enhancing accountability: The government will implement stronger governance and reporting practices to demonstrate and deliver results. Accountability is important because it puts the responsibility on those who are supported by public funds to demonstrate to taxpayers that results are being achieved. Kerala needs to establish competitive environments, measure success and hold people and organisations accountable for the results they achieve. The four organs of the Council will be responsible for increasing its accountability to the people of Kerala by improving the way programmes are implemented and their performance evaluated. It will develop R&D indicators for each of its organs and measure and report the results of S&T expenditure. A set of illustrative indicators has been provided in Table 11.1. These can be used to start a database for R&D indicators. Baseline data may be compiled in terms of these indicators and targets may be set for the Perspective Plan. Currently, there is no baseline data that can be used for setting targets.

Table 11.1
An illustrative list of R&D indicators*

Input	R&D intensity of firms R&D expenditure by public and private research agencies R&D expenditure of government departments People employed in R&D in private and public R&D organisations and firms Enrollment of students in tertiary education Percentage of students doing a PhD Technology acquisition from international firms/agencies Number of projects funded Number of collaborations between research institutions and between universities and research institutions
Output	Number of new products launched Number of patents, trademarks, business design registrations Share of high and medium-high tech industries in total industrial value added Share of knowledge intensive services in the services sector value added Share of high and medium-tech products/services in exports Number of new innovation-based start-ups World ranking by environmental performance Publication per thousand researchers Business entry rates

**For an extensive list of indicators visit, http://www.oecd.org/sti/sci-tech/34250656.pdf*

Source: NCAER based on existing international practices

11.7 Conclusion

11.7.1 One of the important lessons learned from the experience of the developed world is the pivotal role of innovation in economic development. The build-up of the capacity for innovation has played a central role in the growth dynamics of successful countries. In developing economies, technological development and the transfer and, when necessary, adaptation of technology from developed countries can contribute significantly to addressing urgent developmental challenges such as improving economic competitiveness, providing access to drinking water, eradicating disease, reducing hunger or promoting green growth.

11.7.2 The Kerala government is committed to addressing the challenges in the areas of health, safety, water, energy, transport, ICT, agriculture, businesses and the environment. It also recognises the need to engage with the community to both increase public understanding of technology and to increase the understanding of technology developers and government agencies of the public's concerns and aspirations. The nature of the challenges requires creation of new networks and a comprehensive State Innovation Policy focusing on a variety of issues and solutions that are unique to the State. A transition in the innovation system from its traditional functions to a newer role as an integral part of a larger network and system — the knowledge-based economy — is required. Kerala's policy will, thus, be developed around four major themes of sustainable development:

- Contribution of innovation to economic growth and well being.
- Inclusive innovation.
- Education, skills and human capital.
- Environment-friendly development.

11.7.3 This, in turn, requires a multi-pillared strategy based on:

- Creating a knowledge advantage: Knowledge creation, acquisition and networking of research organisations, with ICT.

- People advantage: Empowering people through education and skills.
- Business advantage: Extent of knowledge intensive production in the economy.

Reference

[1] *University Grants Commission Web site. http://www.ugc.ac.in/pdfnews/3155745_InnovationUniversity.pdf*

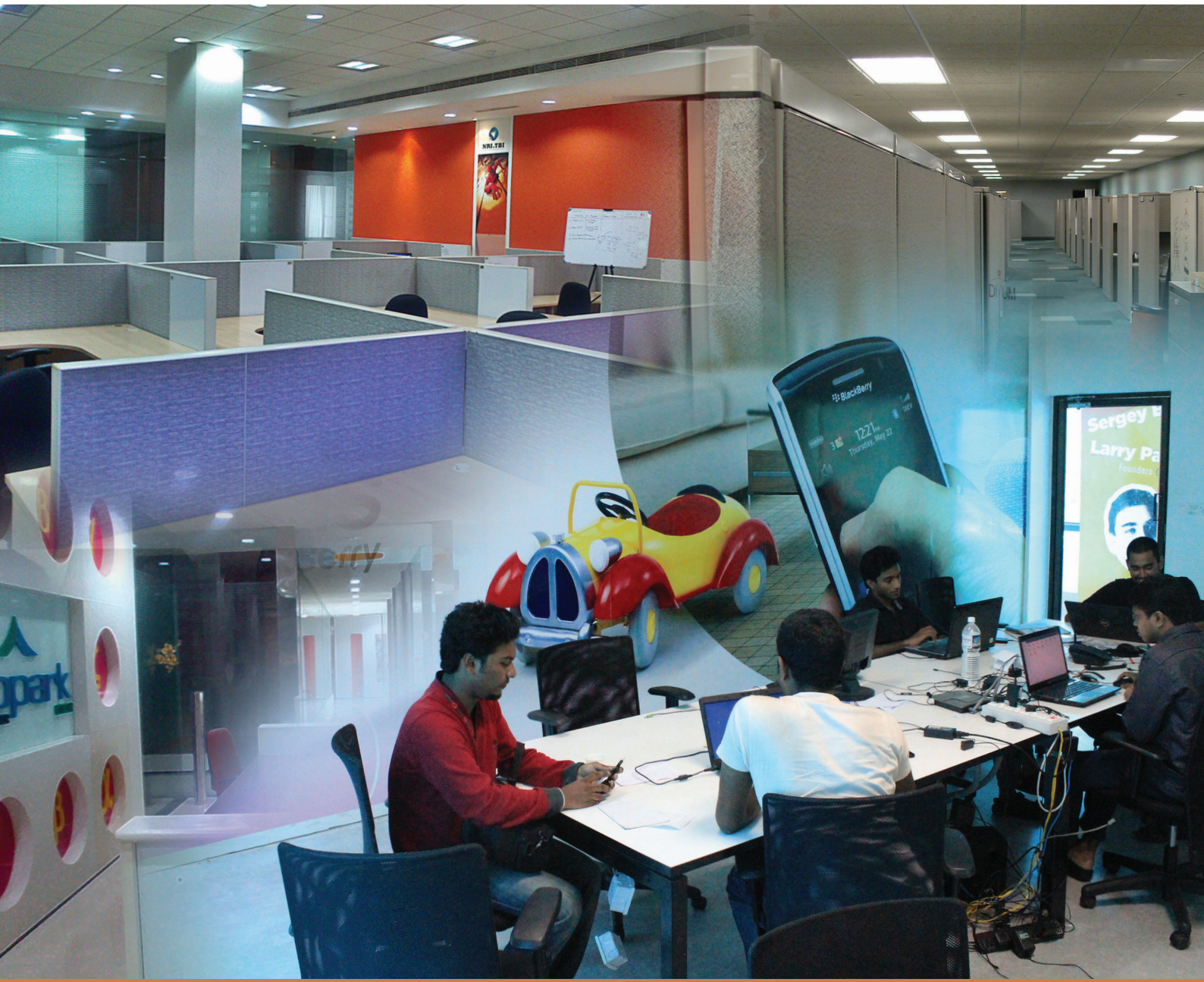
[2] *Innovation and basic research go hand-in-hand. This paper shows that public basic research has a major role to play in technological innovations in bio-technology. (Zhao, Z. and X. Lei. 2013. Empirical Analysis of the Relationship between Technology Innovation and Basic Research. Current Science.104(6).714−720.)In devising an innovation strategy Organisation for Economic Cooperation and Development (OECD) recognizes this – "Public investment in science and basic research plays an important role in developing ICT and other general-purpose technologies and, hence, in enabling further innovation. Many high-technology commercial successes and fundamental innovations with deep and positive social impacts had their roots in public research and came from findings that were impossible to foresee. Fundamental innovations such as the World Wide Web and the Web browser emerged, not from competitive market processes, but largely from government-funded research conducted in universities, industry and government laboratories. Much of the R&D was conducted as part of government programmes, in some cases after the market had abandoned the research" (OECD. 2007. Innovation and Growth: Rationale for an Innovation Strategy.). Therefore public funding of basic research should continue and be increased. However, given the economic, social and environmental problems that exist in the state, capabilities for innovation need to be strengthened too. Therefore the two concepts of innovation and basic research go hand-in-hand.*

[3] *The process of translating research is into real-world solutions is labelled as commercialisation. "The commercialisation process is a way of developing innovative ideas and innovations and applying them to real-world problems. Commercialisation involves a range of legal and commercial processes and concepts, such as intellectual property, patents and licensing. Patenting, Publication, Marketing and Revenues are essentially the four stages in the process". (Monash University Web site: http://www.monash.edu.au/industry/experts/commercialisation/).*

[4] *University Grants Commission Web site. http://www.ugc.ac.in/pdfnews/3155745_Innovation University.pdf.*

Chapter 12

POWERING THE KNOWLEDGE ECONOMY THROUGH ENTREPRENEURSHIP



Chapter 12

Powering The Knowledge Economy Through Entrepreneurship

12.1 The Background

12.1.1 Entrepreneurs and innovation are on the frontlines of the global economic transformation. Nations are entering into dialogues on innovation and social systems are changing rapidly to push the entrepreneur–innovation cart. Governments are moving from the policy framework of production subsidies and trade protection to assisting researchers and entrepreneurs. Promoting private sector development and entrepreneurship, in particular, has thus become a defining feature of development policy in recent years. Lazonick (2011) compares development in industrial Great Britain and post-war Japan with the technology boom in Silicon Valley.[1] In each of these cases, he argues, the creation and growth of indigenous enterprises was the necessary ingredient for lasting development. He suggests that while investment in education and foreign direct investment may make important contributions to growth, these are insufficient without entrepreneurial activity within the domestic economy.

12.1.2 The pivotal crucible of innovation is the entrepreneurial activity of deploying new ideas or inventions within the marketplace. To be successful, the novel product or service must attract the support of customers and end users, and must translate into increased productivity. The entrepreneur is, therefore, the key organiser and agent in the innovation system and operates within a social environment. The entrepreneur depends on the education and research system that accumulates and generates both knowledge and ideas and produces talented and creative people. They also rely on a community of users who are equipped and motivated to think about adopting new products or services. Governments can create environments that offer equal opportunities for learning and experimentation, which drive innovation. The government will need to address structural bottlenecks to change the attitudes, values and perceptions of people, so as to promote entrepreneurship among them. This chapter identifies the concerns and issues relating to entrepreneurship development in Kerala and provides strategic directions for promoting entrepreneurship.

12.2 Entrepreneurship in Kerala: The current Status

12.2.1 The entrepreneurship movement in India began in the 1960s with the establishment of the Small Industry Extension Training Institute, which evolved into the National Institute for Small Industries Extension Training, which was re-christened the National Institute for Micro, Small and Medium Enterprises in 2007. It was the first institution to create an entrepreneurship development programme (EDP) model in India. In addition to this organisation, there are four national enterprise development institutions and 14 other regional institutions[2] that promote and develop entrepreneurship in the country through a variety of programmes, mainly in training and skill development. In addition, entrepreneurship and business development centres are being created through select universities/ colleges/regional engineering colleges and other organisations in India. Small Industries Development Organisation (SIDO), National Bank for Agriculture and Rural Development, Reserve Bank of India and Entrepreneurship Development Institute of India also support entrepreneurship development. Entrepreneurship has long been a subject in post-graduate courses in the Indian Institutes of Management (IIMs), the Indian Institutes of Technology (IITs) and other engineering colleges. Tool

rooms under SIDO, Regional Industrial Training Institutes (ITIs) and polytechnics in the public sector, and NGOs and social entrepreneurs in the private sector impart technical skills to young people and entrepreneurs in India. Several initiatives by industry associations are also directed towards enterprise promotion.

12.2.2 In Kerala, the Kerala Institute for Entrepreneurship Development (KIED) is a public sector training institute for entrepreneurs. Further, under the Student Entrepreneurship Scheme in universities, colleges and polytechnics in Kerala, a 20 per cent relaxation in attendance norms and 4 per cent 'grace' marks are given to students who pursue entrepreneurship and innovation during their studies.

12.2.3 The government is creating a Technology Innovation Zone in about 10 acres of land in Kochi, with an initial investment of Rs100 crore. The zone will house incubators, formed in the public-private partnership model, in areas such as data analytics, animation and gaming, nanotechnology and biotechnology. The government is also providing built-up space of one lakh square feet to Startup Village, one of India's first incubators to be created in the public-private partnership model. The Startup Village aims to incubate 1,000 product start-ups over 10 years and initiate the search for a billion dollar company from a college campus by the turn of this decade. The National Science and Technology Entrepreneurship Development Board (NSTEDB) under the Department of Science and Technology, Government of India has also set up 10 Technology Business Incubators (TBIs) across universities in Kerala. The Bio Innovation Centre (Box 12.1) and Life Sciences Park (Box 12.2) are other similar initiatives.

Box No 12.1

Bio Innovation Centre

The Bio Innovation Centre being set up by the Rajiv Gandhi Centre for Biotechnology (RGCB) on a 20-acre campus in Aakulam, Thiruvananthapuram is expected to give a fillip to research and innovation. The centre is likely to mirror many of the activities that are currently being done at RGCB's main campus. It will do translational research, which transforms discoveries from basic science into practical applications that enhance human health and well being, and also develop diagnostic kits for communicable and non-communicable diseases.

The centre will house an incubator to encourage start-ups and entrepreneurs. It will provide start-ups with the machinery, chemicals, reagents and other material required for research. An expert panel from industry will select candidates for the incubator.

As part of the centre's first phase, a building with 1.5 lakh square feet of space is expected to be commissioned by 2016. Once operational, it will house research laboratories, state-of-the-art instrumentation facilities and animal testing labs. Besides 35 or so scientists and 20 technical support staff, around 200 students and researchers will be based in the new facility.

Source:http://www.yentha.com/news/view/news/bio-innovation-centre-to-give-a-fillip-to-scientific-research accessed 26February 2014 and other sources

Box No 12.2

Life Sciences Park in Thiruvananthapuram

The Kerala State Industrial Development Corporation (KSIDC) proposes to develop a Life Sciences Park in Thiruvananthapuram to be modelled on the Singapore Science Park. Called Bio 360, to symbolise 'three sixty degrees of innovation', the park will be designed to accommodate companies of all sizes. It will be developed as a knowledge centre, focusing on areas like bioinformatics, chemo-informatics, pharmacogenomics, clinical informatics, molecular modelling and so on. The park will be a geographic cluster of industry (biotechnology, nanotechnology and life sciences), research institutions and science and technology academia. The park's highlight will be the Incubation Centre and the Technology Development Centre. The incubation centre will provide critical enabling infrastructure for bio-IT start-ups and also assist them during the initial years to acquire critical mass and become self-sustainable. The park's technology development centre will help small and medium sized IT players, inventors and entrepreneurs in the State start, expand or make their business more competitive in the marketplace.

Six of Kerala's leading research centres will offer scientific assistance to the incubatees. They include Rajiv Gandhi Centre for Biotechnology (RGCB), Regional Cancer Centre (RCC), National Institute for Interdisciplinary Science and Technology (NIST), Sree Chitra Tirunal Institute for Medical Sciences and Technology (SCT-IMST), Central Tuber Crops Research Institute (CTCRI) and Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI).

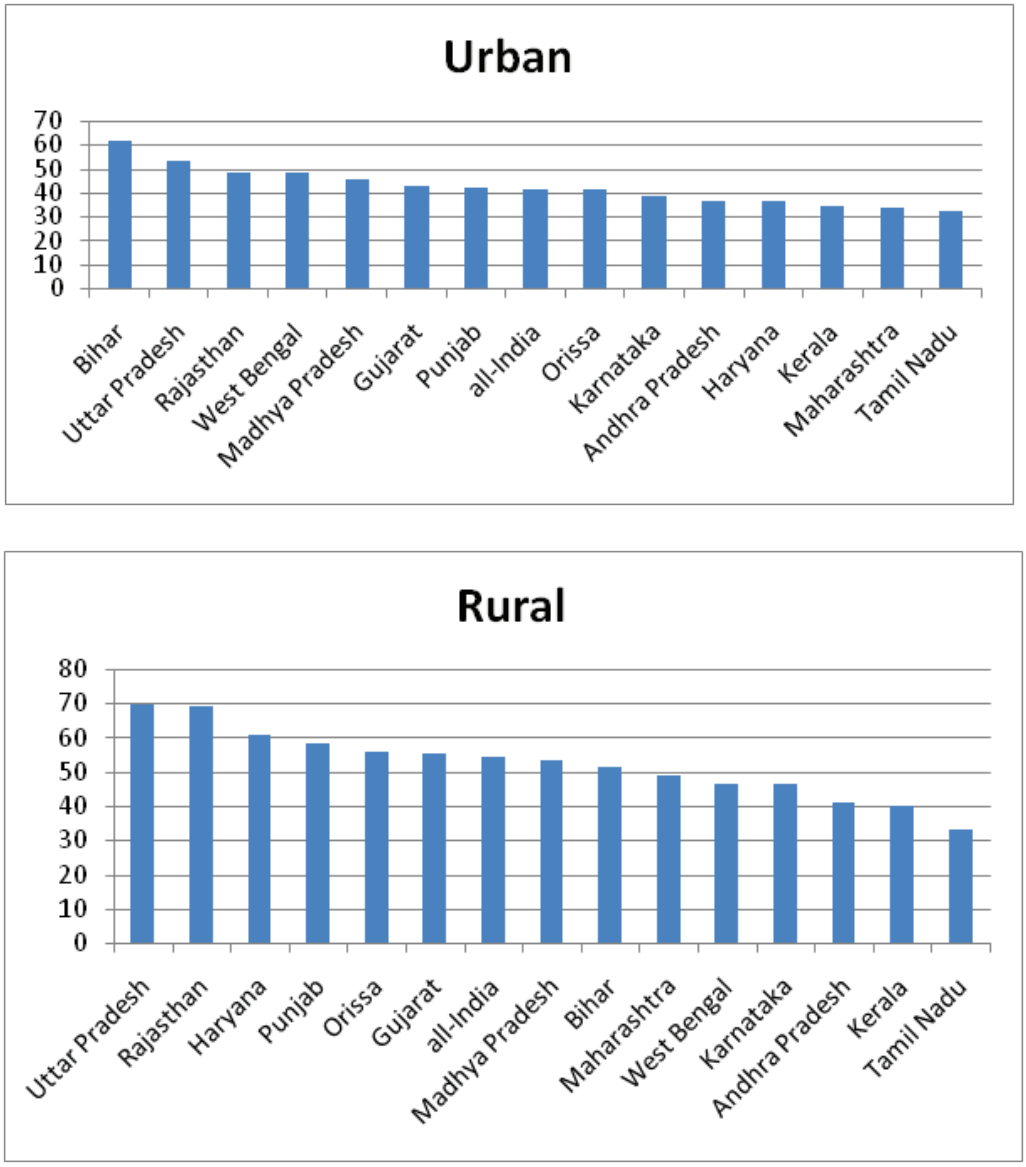
Source:http://news.entecity.com/life-sciences-park-in-trivandrum-to-follow-singapore-science-park-model/ accessed 26 February 2014 and Bio 360 Web site http://bio360.in accessed 4 May 2014

12.2.4 The Kerala State Self Entrepreneurship Development Mission aims at creating entrepreneurial confidence among the youth of the State by selecting persons with aptitude and earnestness, training them rigorously and enabling them to avail of finance on easy terms from banks and financial institutions. These young people will be given entrepreneurial opportunities in the agriculture and IT sectors. Targeted at educated, unemployed youth, the scheme intends to train 10 entrepreneurs in each panchayat and will provide them with soft loans of up to Rs 20 lakh to start an enterprise.
The Kerala Chapter of The Indus Entrepreneurs (TiE), a global not-for-profit organisation, was registered in March 2003. Members of TiE, who typically are successful and experienced entrepreneurs and professionals, provide advice, guidance and assistance to budding entrepreneurs.

12.2.5 These initiatives notwithstanding, there has been little progress in developing an entrepreneurial economy. The Global Entrepreneurship Monitor (GEM) publishes entrepreneurship indices on an annual basis and ranks select countries on entrepreneurship. These indices are based on entrepreneurial attitudes and perceptions in the respective countries. In addition, it also publishes the rates of nascent entrepreneurial activity, early stage entrepreneurial ownership and established business entrepreneurs. These indices are not available for Indian states. Entrepreneurship at the state level is most often measured by the ratio of self-employed persons in the total workforce. This ratio does not distinguish between necessity and opportunity-driven entrepreneurship. In the absence of a comprehensive index, however, it is this ratio that is used in literature to measure entrepreneurship. Figure 12.1 presents the proportion of self-employed workforce to the total workforce for 14 states (excluding the North-East) in India.

12.2.6 In 2009−10, Kerala remains among the bottom three states in terms of self-employment ratio in urban areas (above Maharashtra and Tamil Nadu). In rural areas, Kerala is in the bottom two (above Tamil Nadu) in terms of the share of self-employed in the total workforce. Inter-state patterns of self-employment ratios need to be analysed cautiously. They may sometimes reflect the lack of employment opportunities in urban areas and the predominance of agriculture in rural areas. Low-growth states such as Bihar, Uttar Pradesh (UP), Rajasthan and West Bengal, for instance, are at the top in terms of self-employed workforce in urban areas. In rural areas, on the other hand, agricultural states such as Bihar, UP, Haryana and Punjab are at the top with respect to self-employed workforce. However, the fact that less than 40 per cent of the rural workforce and less than 35 per cent of the urban workforce is self-employed indicates that the preference is skewed in favour of wage-employment in Kerala.

Figure 12.1: Share of Self-employed in Total Workforce for Selected States (%): 2009−10



Source: 66th Round, NSS: 2009-10

12.2.7 Kerala is essentially a wage economy. The youth aspire to government jobs due to the accompanying social status. Unless this is resolved in the education system, these tendencies will continue. Due to the low level of legitimacy, young people with entrepreneurial talents opt for other careers or migrate out of Kerala in search of greater opportunity. This situation needs to change for the economy to make the shift from a traditional to a knowledge economy.

12.2.8 Kudumbashree

12.2.8.1 Kerala's poverty eradication programme Kudumbashree (literally translated as prosperity or *shree* of the family or *kudumbam*)), was launched by the Government of Kerala in 1998.[3] John (2009) describes it as a community-based self-help initiative. The Kudumbashree Web site describes the programme as one of the largest women-empowering projects in the country with 37 lakh members, covering over 50 per cent of the households in Kerala. It is built around three critical components — micro credit, entrepreneurship and empowerment.

12.2.8.2 While women are encouraged to turn entrepreneurs, the focus of entrepreneurship is on micro-enterprises. For they are viewed as a "means for economic empowerment by providing gainful employment to people below the poverty line and thereby improving their income and living standards. For Kudumbashree, micro-enterprises are those which satisfy the following criteria: investment ranging between Rs 5,000 and Rs 2.5 lakh; enterprise should have a potential to generate at least Rs 1,500 per member per month either by way of wage or profit or both together; enterprises fully owned, managed and operated by members themselves, preferably women (from) below poverty line families as entrepreneurs; and minimum turnover of Rs 1 lakh to Rs 5 lakh (or 2−10 times the capital investment)," (John, 2009). As of December 2010 there were 27,995 micro-enterprises under the Urban Self-Employment Programme (USEP) and DWCUA (Development of Women and Children in Urban Areas)/UWSP schemes together. In rural areas there were 14,136 units.[4] The thrust areas under the Kudumbashree programme are food processing, dairy products, IT and biotechnology. However, the Department of Economics and Statistics shows that the top five areas of operation in urban regions are: direct marketing (150 units), IT (93 units), canteens (80 units), Clean Kerala businesses (79 units) and catering services (75 units).[5]

12.2.8.3 The Kudumbashree programme has won several awards, and many studies have evaluated the micro-enterprises run under the programme. The evidence suggests that the enterprises mainly survive because of subsidies and are not necessarily scalable. Lack of access to credit, lack of training and lack of trust between members forming the group enterprise are some of the common problems, which restrict growth or scaling up. Shihabudheen (2013) reports that there has been a fair improvement in various indicators of women's empowerment, but little improvement in income or asset holdings of the respondents.[6]

12.2.8.4 A detailed study carried out by the Gulati Institute of Finance and Taxation taking a sample of 1,246 micro-enterprises came to the conclusion that "the majority of MEs do not have (the) capacity to provide adequate support to the members to earn reasonable livelihood (the avowed goal of the programme) if it is taken as a full time occupation," (Gulati Institute of Finance and taxation, 2013)[7]. The volume of production is low and the products are meant to cater to the needs of a small section of the local population. A large number of the micro-enterprises are not organised on commercial lines and they lack the expertise to select the right products or services. In sum, it seems doubtful if this is an entrepreneurial model that can give Kerala the push it needs.

12.3 Constraints on Entrepreneurship

12.3.1 Economic, political and legal institutions

12.3.1.1 Evidence suggests that entrepreneurship is negatively influenced by economic policies such as over-regulation, licensing procedures, burdensome bureaucracy in business registration and complicated licensing and permit requirements. Unfavourable business conditions such as high costs of doing business, weak enforcement of property rights, poor capital markets, lack of access to credit and under-developed markets also impede entrepreneurship. Further, it has been found that characteristics of the political system, such as instability or corruption, public action politics and delays in approvals may play an important role in impeding successful business endeavours. For example, a CII-World Bank survey in 2004 found that of ten states, Kerala had the highest number of inspections by government officials.[8] Further, 42.6 per cent of the respondents identified corruption and regulations as major impediments to growth

12.3.1.2 The labour scenario in Kerala is perceived to be challenging for entrepreneurs. Strikes (*hartals* and *bandhs*) may not be violent, but they have a financial and psychological impact on entrepreneurs. If labour problems occur during the take-off stage of an enterprise, it harms the enterprise the most. Labour strikes anywhere in Kerala, affect the movement of finished products and raw materials throughout the State. Psychologically, 'flash strikes' declared at short notice affect the morale of entrepreneurs.

12.3.1.3 Transport is identified as a 'major to severe' bottleneck to growth in the CII-World Bank 2004 survey.[9] Though entrepreneurs are generally positive about Kerala's road network, most of them complained about the availability and quality of power, during the survey. Kerala faces frequent electricity failures and gets power without the requisite voltage. This causes wastage of considerable raw material and increased wear and tear of machinery, thereby adding to the overall cost of production.

12.3.1.4 The economic, political and legal institutions that limit the development of entrepreneurship are captured by the Economic Freedom Index. The Economic Freedom of the World (EFW) report is published by the Fraser Institute on an annual basis for select countries of the world.[10] This index is constructed based on 42 variables classified in five broad categories: size of government; legal systems and property rights; sound money; freedom to trade internationally; and regulation. According to the EFW World Report 2012, India is ranked 111 among 144 countries. Using a similar methodology, a group of economists[11] has constructed 'economic freedom' indices for Indian states. In Indian conditions, this index is constructed with the help of three, out of five, sets of variables, as state governments have the power to directly impact conditions and institutions. These three variables include: the size of government, legal structure and security of property rights and regulation of labour and business. According to their estimate, Kerala ranks 10th among 20 states in the overall economic freedom ratings (Table 12.1) Its lower relative ranking has been attributed to social and economic issues — political instability, high budgetary deficits, low standards of higher education, high unemployment, poor infrastructure, deteriorating public hygiene, spiralling cost of real estate and a rapidly growing gap between the rich and the poor.

Table 12.1
Overall Economic Freedom Ratings 2011

States	2005	2005	2009	2009	2011	2011
	Overall	Rank	Overall	Rank	Overall	Rank
Gujarat	0.46	5	0.57	2	0.64	1
Tamil Nadu	0.57	1	0.59	1	0.57	2
Madhya Pradesh	0.49	2	0.42	6	0.56	3
Haryana	0.47	4	0.47	4	0.55	4
Himachal Pradesh	0.48	3	0.43	5	0.52	5
Andhra Pradesh	0.4	7	0.51	3	0.51	6
Jammu & Kashmir	0.34	15	0.38	8	0.46	7
Rajasthan	0.37	12	0.4	7	0.43	8
Karnataka	0.36	13	0.34	13	0.42	9
Kerala	0.38	10	0.36	10	0.42	10
Chhattisgarh	0.33	16	0.33	15	0.41	11
Punjab	0.41	6	0.35	12	0.39	12
Maharashtra	0.4	9	0.36	10	0.39	13
Uttarakhand	0.33	17	0.26	19	0.38	14
Assam	0.3	19	0.29	18	0.36	15
Uttar Pradesh	0.35	14	0.34	13	0.35	16
Orissa	0.37	11	0.31	17	0.34	17
West Bengal	0.31	18	0.33	15	0.32	18
Jharkhand	0.4	8	0.38	8	0.31	19
Bihar	0.25	20	0.23	20	0.29	20

Source: Bhandari, L., Debroy, B., Gulati, A. and S.S. A. Aiyar. 2012 Economic Freedom of the States of India 2012. Academic Foundation, New Delhi

12.3.2 Poor quality of higher education: Entrepreneurship, as it is defined here, is directly related to technical education. However, as discussed in Chapter 10, the quality of education, particularly higher education, is rather low in the State. It encourages passive learning. Students are motivated to learn only to get the grades and degrees required for jobs. There is little in the education system to inspire entrepreneurship.

12.3.3 Organisational structure: A social welfare and livelihood approach underlines the organisation of most economic activities in the State. The share of the public sector is rather large. The public sector can also follow economic principles, but in Kerala this is rarely so. The underlying principle is employment security. This is offered even at the cost of losing out on technological advancements. In such a scenario, there is no motivation for entrepreneurship.

12.3.4 Cultural factors: It is believed that entrepreneurial behaviour is strongly guided by the culture of the people. There are social and cultural factors that discourage people from starting a business. In Kerala's society, high social status is attached to jobs. Most Keralites aspire to high-status government jobs. There is entrepreneurship, but it is necessity-driven and not opportunity-driven. This could also be due to the fact that the economy is stuck in low-productivity vicious circles. Policymakers need to find ways to adjust policy and programmes, which will change attitudes about taking risks and entrepreneurship.

12.4 Strategic Framework

12.4.1 It is envisioned that Kerala will be a knowledge economy by 2030. An economy run on knowledge is characterised by a critical role for knowledge-intensive activity and ICT, rather than tangible capital. Wealth creation increasingly depends on the generation and exploitation of knowledge to create economic value. The pivotal crucible for innovation is the entrepreneurial activity of deploying new ideas or innovation in the marketplace.

12.4.2 The vision for Kerala's new entrepreneurship strategy is:

"Kerala will be a role model for all developing countries in entrepreneurship development."

12.4.3 In order to target, design and implement entrepreneurial initiatives to achieve optimum effect, the entrepreneurship strategy will focus on building an 'entrepreneurial ecosystem'. The strategy will clearly define the term 'entrepreneurs' and provide a major thrust to the target group.

12.4.4 Who are entrepreneurs?

12.4.4.1 Entrepreneurship is a rather broad term. As suggested above, it incorporates all self-employed persons. However, for strategic planning it is important to define the target group. What follows, uses different approaches to define the target group:

12.4.4.2 Motivation- based approach

a) There are two types of entrepreneurs: opportunity-driven and necessity-driven. The former are very different from the latter. Opportunity-driven entrepreneurs are those who introduce new products and processes to the market. They drive economic change through innovative ideas. They choose to start a business because of a promising void they see in the market and engage in the calculation of potential gain presented by this opportunity. On the other hand, necessity-driven-entrepreneurs are passive replicative agents, who start new businesses similar to those they see around them. For them, business is a way of earning a livelihood. Replicative or necessity entrepreneurship is thus driven by the need to avoid unemployment. Without other options for income and without any particularly compelling business idea, these individuals start businesses — almost exclusively replicative — solely intended to produce an income for themselves and their families. While necessity-driven entrepreneurship may lift individuals and families out of poverty, it is opportunity-driven innovative entrepreneurship that is the key to long-term economic growth. In fact, this differentiation between the two categories of entrepreneurs is considered to be important from the policymakers' perspective. Entrepreneurs are defined by their sense of drive and determination, their willingness to fail and then try again and the vision to apply their learning in productive ways. Those also happen to be the characteristics of opportunity-driven entrepreneurship.
b) In developing countries such as India, it is found that necessity entrepreneurs make up a large part of the total set of entrepreneurs. This is relatively less common in developed countries. The Global Entrepreneurship Monitor 2012 shows that the rate of necessity entrepreneurship as a percentage of early-stage entrepreneurship (businesses which are operating for less than 42 months) is 18 for developed countries, against 28 for upper middle income countries and 35 for low income countries.[12] For the Nordic countries, it varies between 6 and 7 per cent of early-stage entrepreneurship in 2012. One reason for the high rates of necessity entrepreneurship in developing countries is the size of the informal sector. To avoid unemployment, workers start low-skill, small-scale, subsistence activities and become entrepreneurs. Entrepreneurship under Kudumbashree would fall in this category. Both these types of entrepreneurs will be covered in this strategy. There is no database available on the type of entrepreneurs at the state-level. However,

it is expected that entrepreneurship is mostly necessity-driven. The new strategy, however, will shift Kerala from passive to opportunity-driven, innovative and dynamic entrepreneurs who choose to be entrepreneurs to drive economic change and not to avoid unemployment. It is recommended that the State maintain some database on these indicators in keeping with the international practice, and target achieving the developed country standards.

12.4.4.3 Scope-based approach

a) Following Lazonick (2011), there are three approaches to define the scope of entrepreneurship[13]:
   (i) The first — a functional approach — is concerned with the dynamic actors that make key decisions on investment, production, innovation, location, research and development. From this perspective, entrepreneurship is a psychological trait referring to dynamism, creativity and originality. This approach also includes managers of multinational firms, state enterprises or non-profit organisations, and a variety of dynamic entrepreneurs within organisations.
   (ii) The second approach focuses on the firm as the key economic actor. The firms included here are owner-operated firms, incorporated joint stock companies, state-owned firms, joint ventures and subsidiaries of multinationals. These firms are the units that make the key decisions on investment, on branching into new activities or sectors or relocating to other countries. There exists a large amount of literature on firm-level behaviour in developing countries, which examines firms' characteristics, including their economic performance, innovative performance, capabilities and business strategies.
   (iii) The third conceptual approach focuses on owner-operated enterprises. Within this approach, the entrepreneur is the person who is both owner and actively involved in running the business. This relates mainly to small and medium-sized enterprises (SMEs), start-ups and the self-employed.
b) From the policymakers' perspective, it is the third conceptual approach, which is relevant in the policy on entrepreneurship.

12.4.4.4 Activity-based approach

Two different types of entrepreneurship are covered here — business entrepreneurship (ownership and/or operation of a business) and social entrepreneurship (directing/managing not-for-profit organisations). The former is related to the creation and operation of a business (business-oriented) and the latter focuses on initiating change and improvement within society.

12.4.4.5 Age-based approach

a) While there are definition challenges, variables such as business entry rates and business density are considered to be good proxies for entrepreneurship. The Global Entrepreneurship Monitor (GEM) project views entrepreneurship as a process comprising different phases from intending to start, to just starting, to running new or established enterprises and even discontinuing a business. It distinguishes between:
   (i) Established businesses: Those that have been in existence for more than three-and-a-half years are termed established businesses.
   (ii) Early-stage entrepreneurship: It comprises two separate categories. Start-up activity is measured as nascent entrepreneurship, and is counted as the proportion of the adult population that is currently engaged in the process of creating a business. New firm activity is measured as baby entrepreneurship, and is counted as the proportion of the adult population that is currently involved in operating a business less than 42 months old.
b) An interesting interpretation of the spread between nascent-corporate entrepreneurship is to treat it as entrepreneurship potential. This reflects the spread between potential formal sector

entrepreneurs and existing formal sector entrepreneurs. Table 12.2 presents entrepreneurship indices of select countries in 2012. It indicates that the nascent-corporate and baby-corporate spread is the highest in India. This means that there is a large entrepreneurship potential in India, which remains un-captured. Most nascent and baby firms do not attain maturity.

Table 12.2
Country-wise classification of Entrepreneurship Indices: 2012

Country	Nascent	Baby	Corporate	Nascent-corporate spread	Baby-corporate spread
Australia	7.32	5.58	6.7	0.62	-1.12
Canada	5.88	3.66	6.35	-0.47	-2.69
Denmark	2.68	2.86	6.04	-3.36	-3.18
France	3.47	1.02	3	0.47	-1.98
Germany	3.16	2.31	0.84	2.32	1.47
Greece	3.92	2.54	0.43	3.49	2.1
Hong Kong	1.61	1.58	10.29	-8.68	-8.71
India	5.42	5.31	0.1	5.32	5.21
Japan	0.96	1.21	3.02	-2.06	-1.81
Mexico	4.59	1.36	6.54	-1.95	-5.18
Norway	4.14	4.11	9.69	-5.55	-5.58
Russia	3.46	1.71	4.69	-1.23	-2.98
Singapore	3.33	2.98	3.03	0.3	-0.05
Spain	2.95	2.97	6.9	-3.95	-3.93
Sweden	1.81	2.37	5.02	-3.21	-2.65
Switzerland	3.49	3.71	2.71	0.78	1
Turkey	2.2	4.01	1.25	0.95	2.76
United Kingdom	3.41	3.07	5.01	-1.6	-1.94
United States	8.12	4.98	2.55	5.57	2.43

Note: Numbers provided are the averages for 2003, 2004 and 2005.

Source: Zoltan, A., Desai,S. and L. Klapper. 2008. What does "entrepreneurship" data really show? Small Business Economics. Springer. 31(3), 265-281. October.

c) Kerala cannot be better, given the business environment in the State. The strategy will cover both sets of entrepreneurs.
d) The focus of the strategy will, thus, be on opportunity-driven individuals who intend to create a business, are engaged in the process of creating a new business or have an established business.

12.5 The Entrepreneurial Ecosystem

12.5.1 The entrepreneurial ecosystem encompasses all the elements that entrepreneurs need to thrive. This ecosystem has six elements (Figure 12.2):

- Personal enablers
- Financial enablers
- Business enablers

- Professional enablers
- Economic enablers (economic policies and performance)
- Social entrepreneurs

Figure 12.2: The Entrepreneurship Ecosystem

Sources: Booz and Co. via Forum of Young Global Leaders and World Economic Forum. 2011. Accelerating Entrepreneurship in the Arab World October.

12.5.2 What follows, outlines in detail what should be done to encourage entrepreneurship in Kerala. Appendix tables provide some of the best government-supported entrepreneurship promotion practices from across the world.

12.5.3 Pillar 1: Personal enablers

12.5.3.1 Formal education: Investing in entrepreneurial education is one of highest return investments possible.

- Build knowledge, skills (business basics, creativity, responsibility, initiative, sense of achievement) and interest in entrepreneurship.
- Involve real-world entrepreneurs.
- Make entrepreneurship education in universities accessible to all students, including those in non-business disciplines.
- Promote an entrepreneurial spirit among trainees in schools and vocational education.
- Ensure that 'entrepreneurship' is embedded in the curricula across primary, secondary, vocational, higher and adult education before the 12th Plan ends.
- Promote entrepreneurial learning in an informal or non-formal learning environment.
- Assess the quality of entrepreneurship education in different regions, nationally and internationally, and learn from successful peers.
- Strengthen competencies and skills by intensifying e-skills actions to improve leadership skills, scientific and creative disciplines, and managerial and entrepreneurial skills to address new technology and markets.

12.5.3.2 It is important to recognise that innovation is more widespread than is often imagined, occurring every day in the way businesses operate. In a globalised knowledge economy, patterns of innovation have evolved beyond the sole gifted inventor or scientist, or the adept researcher and

technologist. They are more diverse and complex. The system should be able to facilitate identifying them as set out in the UK report of 2006 titled 'The Innovation Gap: Why policy needs to reflect the reality of innovation in the UK?' Innovation is all pervasive, frequently found in unlikely places and is rarely based on traditional understanding of linear 'pipeline' research and development.

12.5.3.3 Beyond the transfer of knowledge: Towards involvement in entrepreneurship

a) Effective and practical education and the promotion of commercial thinking in universities and the media help promote a strong entrepreneurial culture.
   - Establish a guidance framework to encourage the development of entrepreneurial schools and VET institutions. Mini-companies run by students in schools deliver realistic insights into the functionality of the economy and stimulate entrepreneurial attitudes.
   - Provide active support for developing university-based entrepreneurial ventures: The incidence of this activity has increased considerably in the last decade, particularly in the developed world. These companies explore applications of knowledge beyond the academic remit, which established firms find commercially uncertain or which conflict with their current activities.
   - Invite the most innovative projects by students and help commercialise them through enterprising universities, particularly through spin-offs. Most reputed universities in the advanced countries see the number of their spin-offs multiplying over the years.
   - Prepare a guidebook for promoting university-based ventures.

b) Boxes 12.3 and 12.4 provide selected case studies from Europe as an example. See Appendix table 12A.1 for more case studies.

Box No 12.3

Experience from the EU

Entrepreneurship out of Science: EXIST

EXIST is a programme of the German Ministry of Economy and Technology, which is co-financed by the European Social Fund. Its main goal is to sensitise university students and scientific assistants to entrepreneurship. Support is provided in the form of consulting, coaching and infrastructural help. Other goals of EXIST are:

- Spreading of entrepreneurial spirit
- Improving the entrepreneurial climate
- Enhancement of formation of technology-orientated and knowledge-based companies

Pillars of EXIST

Source: Thuis, S. 2010. Promoting Entrepreneurial Spirit: Case Studies. Powerpoint Presentation. http://www.rpknis.rs/ictforum2010/PPTprezentacije/English/Nis_Nov2010_Stefan_Thuis.pdf. November

12.5.3.4 Motivation

a) Perhaps the most critical issue is lack of a culture of entrepreneurship. This needs to be changed keeping in view the interests of future generations. Kerala has a limited number of known entrepreneurial success stories. This is due to the fact that entrepreneurship has not been celebrated as a preferred career path.

b) The following are necessary to improve the entrepreneurship culture in the State:
   - Improve communication of entrepreneurs' success stories.
   - Improve perception of business failure.
   - Promote career opportunities offered by entrepreneurship.
   - Increase visibility and emphasise the role of entrepreneurship in creating new jobs.
   - Highlight the role of entrepreneurs in providing innovative products.

c) Despite the fact that entrepreneurs create jobs and power the economy, their successes are not presented as role models in the media. For young people, this makes an entrepreneurial career rank rather low on the list of attractive professions and it is a deterrent to those who might want to become entrepreneurs. An important element to changing the entrepreneurial culture is, thus, a change in how entrepreneurs are perceived. This is to be done through practical and positive communication of the achievements of entrepreneurs, their value to society and the opportunities of new business creation or acquisition as a career destination. To achieve this, their visibility as role models must be stepped up, taking into account the diversity of entrepreneurial profiles and paths to success.

d) Awareness must be raised through an information campaign, by promoting success stories and organising contests and award schemes to sensitise entrepreneurs to the changing business landscape and new business opportunities.

e) An environment for entrepreneurship needs to be created. Start-ups and incubators in colleges and universities may be set up. Student entrepreneurs should be celebrated through awards, and generally by recognising their successes. Entrepreneurs who are alumni of a specific college should be invited as guest/honorary speakers to inspire the present generation of students that anything is possible. In higher classes in college, examinations may be replaced by class projects where students are expected to develop new entrepreneurial ideas. Curriculum changes are required, through which engineers can also take classes in entrepreneurship if they so choose. Inculcating an attitude of invention and innovation leadership should be encouraged right from nursery classrooms by emphasising learning minds. In colleges, entrepreneurship should be transformed into a desirable occupation. Appendix Table 12A.2 describes leading practices in select countries.

Box No 12.4

Estonia — Leveraging the Hype on Skype

Skype, the company behind the famous software application that allows users to make voice and video calls and chat over the Internet, was founded in Estonia in 2003. Estonia's media and government have seized this story, continuously broadcasting and boasting about Skype's success and lionising the founders to the point where they have virtually become national heroes. This hype has inspired a wave of entrepreneurs to create their own ventures in a country where the start-up scene is still in its early stages.

Two of the many organisations supporting these Skype-inspired start-ups are: Tehnopol Science Park and the Estonian Start-up Leaders Club. Tehnopol Science Park is a business incubator that provides facilities and services for start-ups' business development needs, including assistance in drawing up business plans; access to money, partners and clients; mentoring; and business development. The Estonian Start-up Leaders Club allows aspiring entrepreneurs to share experiences and best practices on managing early-stage start-ups, develop and expand their business network and promote entrepreneurship in Estonia by growing the community of start-up founders.

Source: Forum of Young Global Leaders and World Economic Forum. 2011. Accelerating Entrepreneurship in the Arab World. October.

3M: Encouraging Home-Grown Innovation

Since its formation over 100 years ago, 3M has invested billions of dollars in R&D and developed formal policies to encourage employees across the enterprise to pursue innovation. Leaders vocally support innovation and entrepreneurship, create networking opportunities for employees to discuss projects and ideas and allow employees to spend up to 15 per cent of their time working on their own projects. Employees who make breakthroughs are publicly acknowledged and rewarded with vacations and bonuses.

Source: 3M: 2013 Sustainability Report.
http://solutions.3m.com/3MContentRetrievalAPI/BlobServlet?lmd=1370014975000&locale=en_WW&assetType=MMM_Image&assetId=1361618500014&blobAttribute=ImageFile

12.5.5 Pillar 2: Financial enablers: Micro finance, venture capital, institutional loans, government programmes

12.5.5.1 Without adequate funding and liquidity, no business can operate, invest and grow. Access to finance is one of the levers for the growth of SMEs. But entrepreneurs, particularly, have difficulties raising finance in the early stages of their businesses. There is a need to explore innovative mechanisms and routes to fund new entrepreneurs (See Appendix 12A.3 for best government practices in selected countries).

a) Government funding

- Governments can help firms, particularly small and medium-sized, access capital. There is an important funding gap during the exploratory stage (proof of concept) of the development of an innovation, the stage when high risk means that no third party investor is prepared to assist. There is growing global recognition among policymakers that public support to finance SME research is critical. Financial support for testing, demonstrating and piloting new technologies, incubators and loans for high potential SMEs are some of the areas where action is possible.

- Directly fund the most innovative project through competitive bids. The Small Business Innovation Research (SBIR) initiative is perhaps the most successful example of government funding of innovative ventures. As discussed in the previous chapter, this scheme may be instrumental in promoting both innovation as well as entrepreneurship.

  A Competitive Innovation Grants Programme may be introduced to assist innovative firms, with limited access to capital, in the high-risk, proof of concept and development stages. This programme will be targeted at projects addressing identified state priorities for innovation. Successful firms will be required to repay grants from their royalties or earnings from commercial success. The programme will seek to assist a fixed number of innovative firms annually, with a few hundred crore rupees earmarked for the programme each year.
- Promote capital markets, to trade the shares of SMEs.

b) Promotion of venture capital funds and micro finance

- An important component of a successful entrepreneurial ecosystem is an array of early stage investors (venture capitalists and business angels) that provide seed and first round equity investments. Besides funds, these investors also use an extensive network of peers and provide valuable knowledge and support about the market and the development of the venture. These investments may be spurred by fiscal incentives, working with investors in order to increase the flow of venture capital and crowd funding for Web start-ups.
- Kudumbashree can play a role here by expanding its scope to promote high-end women entrepreneurs.

Some of successful examples of entrepreneurial funding are provided in Box 12.5.

Box No 12.5

The US: Small Business Innovation and Research

The Small Business Innovation Research (SBIR) scheme in the US funds the critical start-up and development stages of an enterprise and encourages commercialisation. Since its creation in 1982, as part of the Small Business Innovation Development Act, SBIR has helped thousands of small businesses compete for federal research and development awards and introduce new technology, products and services, which, in turn, stimulated the US economy (Qian and Haynes 2012). This scheme has been instrumental in promoting the high-risk, high-growth dynamics of entrepreneurship.

Source: Qian,H. and K.E. Haynes, 2012. Beyond Innovation: The Small Business Innovation Research Programme as Entrepreneurship Policy. Journal of Technology Transfer. December.

Chile: Paving the way for foreign start-up entrepreneurs

In the 1990s, Chile's entrepreneurial environment was weak, with little foreign participation. But a series of government reforms in the 2000s opened the door to foreigners and welcomed their ideas, jump-starting several key industries. Chile is trying to build on this success with programmes geared specifically towards entrepreneurship. In 2010, the government announced it would pay 10 entrepreneurs US$40,000 and give them free living and office space in Chile for six months while they worked on a business venture. This programme and others have had a snowballing economic effect. In 2011, 110 start-ups from 28 countries were given permission to start-up in the country and 300 more were expected to do so in 2012. Chile now ranks as the most competitive country in South America (and the 30th globally).

Source: The Chilean Economic Development Agency. 2012. Start-Up Chile: Cultivating the Entrepreneurial Spirit on a Global Stage. October 30.

Foras: A VC fund thinking outside the box

In Saudi Arabia, a select group of successful businessmen, with the support of the chamber of commerce and industry, is in the process of launching a multi-purpose venture capital fund called Foras. Created as an independent investment company, Foras will shepherd young companies into the complex business environment. More specifically, it will finance entrepreneurs and support them as they build their start-ups; turn around mismanaged enterprises; fund SMEs with growth potential; and co-invest in medium-to-large capital projects through special purpose funds. The fund is led by prominent Saudi and international businessmen. In addition to financing, Foras will provide facilitation (facilities, equipment, professional services) and planning services (advisory, business planning, feasibility studies).

Source: Forum of Young Global Leaders and World Economic Forum. 2011. Accelerating Entrepreneurship in the Arab World. October.

Commercial Microfinance Bank

In many countries, there has been an evolution in the microfinance framework, and microfinance has been become a part of commercial banking. In Yemen, for instance, Al-Amal Microfinance Bank, the region's first commercial microfinance bank, is a major success in this direction. Traditionally, investors and banks have stayed away from start-ups run by someone under 30 years, deeming their leadership too immature and the venture too risky. But it is precisely this age group that has made Amal Microfinance Bank the fastest growing microfinance bank in the region, propelling job growth along the way.

Source: Forum of Young Global Leaders and World Economic Forum. 2011. Accelerating Entrepreneurship in the Arab World. October.

12.5.6 Pillar 3: Environmental Enablers

12.5.6.1 Improve business freedom: Currently Kerala is ranked 10th among 18 Indian states in terms of business freedom. Critical issues are: a non-operational single window system; long delays in approvals and clearances; frequent strikes; and legal, administrative and tax provisions. Chapter 8 discusses how business environment may be improved. It suggests implementing SMART business regulations and best practices in this regard (See Appendix Tables 12A.4 and 12A.5 for case studies).

12.5.6.2 Business organisational transformation: A necessary condition for promoting entrepreneurship is a systematic, growth-driven process of organisational transformation in Kerala. There is a need for systematic attempts to transform the organisational form of economic activity in the State. The classic cooperative model needs to be carried forward to incorporate elements of corporatisation. The livelihood approach should give way to efficiency and competitiveness. Each sectoral chapter in this report underlines the importance of changing the way in which economic activities are organised and proposes alternative forms of organisation to trigger competition and elements of entrepreneurship. Organisation does not mean ownership; it means the motivation and approach underpinning economic activity.

12.5.6.3 Promote competition: A protected economy offers no incentive for entrepreneurs. It becomes a breeding ground for necessity-driven or replicative entrepreneurs. This affects innovation and knowledge production rather adversely. Clearly, the government needs to promote competition in the economy by lowering entry and exit barriers (See Box 12.6 for the Korean experience).

Box No 12.6

SMEs in Korea: A Case Study

In South Korea, the SME sector, which accounts for 99 per cent of enterprises and 88 per cent of employees, aims at ensuring sustainable growth. The Small and Medium Business Administration (SMBA), founded in 1996, has been a major policy player in promoting the growth of SMEs, and the Korean economy at large. SMBA applies more than 100 SME promotion measures. Recently, there have been noticeable changes in Korea's SME policies. Overall, the policy concept for SMEs has been directed towards creating competitive SMEs and away from protection of the weak. Transforming traditional SMEs into high-growth SMEs — in Korean policy terms 'inno-biz' and 'global stars' — is the new policy focus. Furthermore, a new category of 'mid-sized enterprises' with 300 to 1,000 employees is to be introduced for policy purposes. Korea's SME policies have supported the increase in the SMEs' R&D activity and thus their competitiveness The policies have also supported the growth of the venture business.

Source: SMBA Web site http://eng.smba.go.kr/eng/index.do

12.5.7 Pillar 4: Professional Enablers

12.5.7.1 Professional services: Vital professional services can be provided to increase the success rate of new enterprises. Effective support consists of holistic programmes that integrate essential elements such as management training, R&D coaching and networking with peers, potential suppliers and clients. Entrepreneurs increasingly need advice and support on resource availability and markets for the final products. Many smaller enterprises are also under increasing pressure from their clients to meet new standards and design requirements linked to improved resource efficiency, recyclability or international obligations. There is a need to disseminate information about legal frameworks and policies, and support networking and exchange of information between agencies providing these services. The Rwandan experience sheds light (Box 12.7) in this regard.

Box No 12.7

Rwanda: Building a coffee industry

In 2001, after years of war, coffee production in Rwanda was falling and its coffee was rated below Grade C, the lowest quality level according to international standards. Prices were low, as were farmers' incomes. The government realised that the country was not leveraging its natural resources and strengths correctly, and that something needed to be done. That year, the country's president launched the Rwanda National Innovation and Competitiveness initiative, which, in turn, developed several initiatives including the National Coffee Strategy. Subsequently, the government committed US$70 million to three main areas: product development, marketing and promotion and institutionalisation.

Among the initiatives, was one known as Sustaining Partnerships to Enhance Rural Enterprise and Agribusiness Development (SPREAD). It is an alliance of Rwandan and US universities; US and European industries; Rwandan enterprises and institutions; and US and Rwandan NGOs funded by USAID. It helped establish links with over 40 international buyers and coffee roasters, and Rwanda's coffee is now increasingly regarded as a gourmet product. The result has been dramatic: coffee exports now represent more than one-third of Rwanda's export revenue and are growing fast. The value of coffee exports in 2010 exceeded US$69 million, compared with US$39 million in 2009. Farmers enjoy higher incomes and can now invest more in improving quality and taste. The entrepreneurial success of these farmers has had positive spillover effects in the local economy, spawning new cafes and factories to treat coffee beans.

Source: New Agriculturist Website - www.new-ag.info

12.5.7.2 Professional services through ICT: Professional services delivered through ICT:

- Foster growth in the knowledge base on major market trends and innovative business models, by establishing online market monitoring mechanisms.
- Facilitate networking to support new businesses: This can be achieved by creating a 'Mentors' Network' for training, providing advice and hands-on coaching on how to do business in the digital age, and facilitating 'match-making' events among stakeholders to explore new partnerships.
- Launch specific actions for Web entrepreneurs: These will include a start-up partnership to unlock expertise and provide mentoring, technology and services; fostering Web talent by stimulating the emergence of massive online open courses; and setting up platforms for mentoring and skill building

Box No 12.8

Taiwan: Bringing entrepreneurs back home

The Taiwanese government began a concerted effort to build its entrepreneurship ecosystem in the 1980s. The government organised a series of forums and conferences, invited Taiwanese people working in US technology companies to attend, sought their advice on how to improve the entrepreneurial environment and then launched a series of initiatives based on their collective recommendations. For example, the government created Hsinchu Science Park to convince talent who had set up their companies abroad to return to Taiwan and establish their companies locally. This one park attracted about 350 immigrant Taiwanese per year from the US and as of 20 August 2013 housed more than 485 high-tech companies, representing about 10 per cent of Taiwan's GDP. Overall, the government's attempt to attract the diaspora was dramatically successful. From 1988 to 1998, more than 4,000 Taiwanese engineers returned to the country to start their own businesses, and economic activity surged.

Source: Forum of Young Global Leaders and World Economic Forum. 2011. Accelerating Entrepreneurship in the Arab World. October.

12.5.7.3 Networking Associations

- Bring Web entrepreneurs together and strengthen the Web entrepreneurial culture.
- Promote clusters, business networks and other types of associations of enterprises, which can provide such supportive environments.

12.5.7.4 Incubators

Technology/business incubation is an institutional mechanism to develop an atmosphere for innovation and entrepreneurship; for active interaction between academics and industries; for sharing ideas, knowledge, experience and facilities; and for developing new technology and its rapid transfer to industry by establishing start-ups in emerging technology areas. Both industrialised and industrialising countries are, arguably, poised on the threshold of a major economic transition from manufacturing-based to knowledge-based economies. Business incubators are increasingly being adopted in order to overcome some of the weaknesses in institutional environments to maximise the chances of success. Akçomak sets out eight dimensions of a good incubator policy including[14]:

1. Clarity of mission and purpose.
2. Clear selection, entry and exit criteria.
3. Managerial capacity and incubator management skills.
4. Engagement in constant monitoring and performance evaluation of participating firms.
5. Strategic selection of services.
6. Minimising start up costs and red tape.

7. A focus on intangible services rather than tangible services such as office space or infrastructure.
8. Promotion of networking as a deliberate strategy, and, finally, financial sustainability. Incubators should eventually become financially self-sustaining.

12.5.7.5 New horizons: Reach out to and mobilise untapped entrepreneurial potential among:

- Women
- Senior citizens
- Migrants

12.5.8 Pillar 5: Economic Enablers

12.5.8.1 Economic competencies and their structures are vital for entrepreneurship. The mismatch between economic growth and structural change in the economy is a dampening factor for entrepreneurship. Unless a high return on entrepreneurship is ensured, people will look for employment. The demand-side policies should facilitate the emergence of vital and sustainable market conditions that ensure returns on entrepreneurship by:

- Implementing the proposed knowledge-driven, sustainable development strategy: As the economy makes the transition from a traditional to a knowledge economy, there will be increasing returns on knowledge, ideas, innovation and, in turn, entrepreneurship.
- Offering tax benefits to start-ups: Currently, the government offers tax concessions on the basis of sector or location. It is proposed here that knowledge-based start-ups be offered tax holidays for a specified period of time. This will enable their growth. A ten-year tax holiday was instrumental in promoting IT start-ups in the early 2000s.

12.5.9 Pillar 6: Social Innovation and Entrepreneurship

12.5.9.1 Social entrepreneurship can be defined as entrepreneurship that aims to provide innovative solutions to unsolved social problems. Therefore, it often goes hand in hand with social innovation processes aimed at improving people's lives by promoting social changes. Social entrepreneurs use an entrepreneurial approach in their primary mission to tackle social problems. There has been a proliferation of social entrepreneurs across the world. Yet, their importance is underestimated. Two proposals are made here:

- Scope of entrepreneurs should be extended to include social entrepreneurs: HarVa, for instance, is a for-profit organisation. It stands for 'harnessing value' of rural India. It is a rural start-up that primarily focuses on skill development, BPO, community-based farming and microfinance. Its model focuses on the vast intellectual and infrastructural capital in the interiors, by developing several productive communities that enhance the intrinsic value of villages. It currently works in Haryana and other Northern states.
- Social entrepreneurs need to be developed to supplement the government's initiatives to promote entrepreneurship. Social entrepreneurs are instrumental in designing and implementing innovative programmes to promote entrepreneurship. Some case studies are presented in Box 12.9. The Kerala government may draw on these experiences

Box No 12.9

Wadhwani Foundation

The mission of the foundation, which was set up in 2000 by NRI entrepreneur Romesh Wadhwani, is to accelerate economic development in India and other emerging economies through entrepreneurship and skill development. The foundation focuses on four areas: entrepreneurship, innovation, skills colleges and policy. Today, about half a million students are getting exposed to entrepreneurship through the foundation's programmes and are starting their own companies. In 2010-11, 500 students created 230 companies.

Source: Wadhwani Foundation Web site - www.wadhwani-foundation.org/

INJAZ al-Arab: Educating nearly a million entrepreneurs

INJAZ al-Arab, led by Soraya Salti, provides education and training to Arab youth in work readiness, financial literacy and entrepreneurship. Supported by corporate volunteers and working closely with regional ministries of education, the organisation aims to equip students with practical business-related skills as part of the regular educational curriculum. Since its inception in 2004, INJAZ al-Arab's programmes have reached 900,000 youth. In 2010 alone, it reached 230,000 youth and engaged 14,000 volunteers. A national board of directors leads each INJAZ country operation and includes a total of 250 chief executive officers, with the INJAZ al-Arab regional board being responsible for directing overall strategy and organisational governance. These bodies include the region's top business leaders who share a common ideal for Arab youth.

Source: Forum of Young Global Leaders and World Economic Forum. 2011. Accelerating Entrepreneurship in the Arab World. October.

Wamda: Connecting mentors and entrepreneurs

Wamda was created in 2010 by the private equity group Abraaj Capital and its subsidiary Riyada Enterprise Development. It focuses on fostering early-stage entrepreneurship in the MENA region by inspiring, empowering and investing in local entrepreneurs. It offers four pillars: content relevant to entrepreneurs (breaking news, online videos, webinars, courses, research and surveys); services and tools (a start-up kit as well as access to business development, legal, PR, recruiting and marketing services); funding (seed investments and access to angel investors); and networking (events, mentors and incubators).

The Lebanese entrepreneur Habib Haddad, who now heads Wamda, says that one offering in particular could significantly improve the entrepreneurial ecosystem in the MENA region — Mentor Match, an online platform to connect mentors and mentees and help them build lasting relationships. Given the right environment and alignment of interests, says Haddad, successful entrepreneurs, especially expatriates who have thrived abroad, will enthusiastically support aspiring entrepreneurs in their home countries as a way of giving back.

Source: Forum of Young Global Leaders and World Economic Forum. 2011. Accelerating Entrepreneurship in the Arab World. October

12.5.10 Kudumbashree

12.5.10.1 KPP 2030 envisions a move from necessity-driven entrepreneurship to opportunity-driven entrepreneurship. However, while the State transitions, people with lower skill levels need handholding and attention. The following is, therefore, suggested:

- Microfinance should be restricted to a targeted group. This targeted group should be linked to the strengthened vocational education system so that they are able to acquire marketable skills and, therefore, get absorbed in the wage economy.

- Even in vocational education, training in all areas — technology, finance and business — should be given. This is already happening, but room for improvement always remains.
- Credit constraints: Clearly, businesses are running on subsidies. Essentially, businesses should be given a specific period of time to mature on their own. After five years, if businesses still remain unviable, it may make more sense to invest somewhere else.
- Access to credit, because the nature of micro-credit is going to remain challenging through formal banking. One alternative to the traditional Kudumbashree route is linking micro-entrepreneurs to the diaspora. An alternative is the Kiva model (www.kiva.org). The lender chooses a borrower, makes a loan, gets repaid and repeats the process again. Kudumbashree can be the intermediary in this model too.

12.6 Conclusion

12.6.1 Entrepreneurs have a crucial role in determining the future prosperity of Kerala. The entrepreneur is someone who drives several forces that together stimulate economic growth, such as encouraging innovative technology, offering opportunities to young people, alleviating poverty and making a positive impact on society. While entrepreneurship is a private sector phenomenon, the government can play a crucial role in promoting an entrepreneurial ecosystem that is conducive to growth. This, in turn, requires promotion of an entrepreneurship culture by increasing the visibility and emphasising the role of entrepreneurship in creating new jobs, sparking innovation and reducing poverty; promoting the perception of entrepreneurship as a career option right from primary school onwards; mainstreaming entrepreneurship in university education; providing specialised training assistance; exploring credit guarantees and banking support; strengthening venture capital and angel investors; offering a direct support scheme; designing impactful, stable and multi-model incentives for entrepreneurs; providing single-window services; simplifying taxes and regulations; and providing professional support through incubators.

Appendix Tables: Selection of global leading practices

Table A12.1 EDUCATION AND TRAINING

Small Business Internship Programme (SBIP): Canada
The Small Business Internship Programme (SBIP) provides SMEs with financial support to hire a post-secondary student intern to assist them in their adoption of e-business strategies so as to increase their productivity and competitiveness. In total, the programme assists in hiring about 400 student interns annually, to help with ICT projects.
The Impact Microcredit Competition: Canada
The Impact Microcredit Competition is a unique, action-oriented competition that gives secondary school students across Canada the chance to be entrepreneurs, while raising money for charity. With just one week to do so, teams of three to five attempt to multiply the CAN$100 provided by Impact Microcredit as seed funding, to the maximum possible extent, and donate all the proceeds raised to the team's charity of choice. This is a chance for students to prove themselves and win over CAN$10,000 for themselves and their school.
Yuan1.6 billion fund for college students: China
The Chinese government and universities decided last year to create a Yuan 1.6 billion (US$2.44 million) fund to foster innovation and entrepreneurship among domestic college students.
KAB (Know About Business) Programme: China
The International Labour Organisation (ILO) has developed KAB, which consists of training modules and teaching material for providing entrepreneurial education to university students. In collaboration with the All-China Youth Federation (ACYF), the pilot project was adapted in line with the Chinese National Education Framework. Training of facilitators is an important aspect of the KAB programme. The project aims to introduce KAB in secondary vocational schools in China.
Japan Entrepreneurship Education Network for Higher Education: Japan
The Japan Entrepreneurship Education Network for Higher Education was established in May 2009. The Network implements programmes and events that complement and enhance entrepreneurship education, including a model lecture programme, a visiting lecturers programme, national entrepreneurship education events and visits to attend lectures at leading schools. Most of these programmes and events are targeted at university teachers.
Young Entrepreneurship Programme (YEP): South Africa
This programme gives 25 South African youth graduates or business owners with a strong business plan an opportunity to travel to the US and work with mentors there for six weeks in order to acquire the skills required to set up their own ventures. The one-off fee of R860 is paid by the organisers. The National Youth Development Agency (NYDA) is a prime sponsor of the programme, which provides a cross-cultural learning experience involving both classroom and practical training.

Table A12.2 ENTREPRENEURSHIP CULTURE

Canadian Innovation Commercialisation Programme (CICP): Canada
The Canadian Innovation Commercialisation Programme (CICP) is a CAN$40 million initiative. The targets are SMEs, which are an important component of the Canadian economy. Created to bolster innovation in Canada's business sector, the CICP helps companies bridge the pre–commercialisation gap for their innovative products and services.

The Accelerator Centre: Canada
The Accelerator Centre was established to accelerate the creation, growth and maturation of sustainable new technology companies; to promote commercialisation of research and technology coming out of academic institutions; and to generate economic benefit and enhance the strategic importance of the Waterloo Region within Ontario, and Canada's broader economy.
The Young Chinese Entrepreneur Award: China
The Young Chinese Entrepreneur Award was jointly set up by the China Communist Youth League and the Ministry of Human Resources and Social Security. This award targets entrepreneurs aged 18 to 40, who start businesses themselves from scratch and have a deep sense of social responsibility. The award may be given to a wide variety of businesses, ranging from media and high technology to animal husbandry. To inspire more people, the award's organising committee publishes the accomplishments of the prize winners and arranges a lecture tour of China for them.
Teng Fei Award: China
The China Western-Returned Scholar Entrepreneur or Teng Fei Award was designed to honour and reward overseas–educated Chinese, who have returned to China and grown into enterprise leaders.
Erasmus for Young Entrepreneurs: EU
Erasmus for Young Entrepreneurs is a project initiated by the European Union. It aims at helping new entrepreneurs acquire relevant skills for managing an SME, by spending time in an enterprise in another European Union country. It contributes to improving their knowhow and fosters cross-border transfers of knowledge and experience between entrepreneurs.
Innovative Regional Growth Cores: Germany
The Innovative Regional Growth Cores programme (German: Innovative Regionale Wachstumskerne) started in 2001 with the aim of effectively using and developing existent competences and potential in the New German Länder (regions). It supports alliances of businesses, universities and research institutes, which either already possess a joint, specific platform technology in their region or have the potential to develop one.
Trade-related Entrepreneurship Assistance and Development (TREAD): India
The scheme encourages economic empowerment of women by developing their entrepreneurial skills in non-farm activities.
Saudi Fast Growth 100: Saudi Arabia
This is a national programme to promote entrepreneurship and innovation in Saudi Arabia, which ranks the fastest-growing emerging companies in the country. The programme and its list of companies are decided by the Saudi Arabian General Investment Authority's (SAGIA) National Competitiveness Centre with its joint founding partners Al-Watan newspaper and All World Network. The selection criteria are based on international standards of competitiveness, originally developed by Inc. magazine to create the Inc. 500. The winning companies are divided into two categories: Saudi Fast Growth 100 and Saudi Fast Growth 100 Start-Ups.
Bizjam: South Africa
This is a business networking portal for young entrepreneurs, where they can find potential buyers and sellers for their products. This network also facilitates identification of potential target markets and sources of capital. Business plans and ideas can be discussed with other entrepreneurs. Bizjam facilitates various forums such as roadshows, meetings and Bizjam Fridays. NYDA of South Africa is its official sponsor.

Future 100: South Africa
This is a motivational programme to acknowledge and promote young entrepreneurs in South Africa. SAYCC and NYDA, which are the sponsor bodies for this programme, determine the selection criteria. This national initiative targets young entrepreneurs, aged 18–35, with inspiring stories of success in business. The overall winner walks away with a CEO award of R100,000.
Startup America Partnership: US
The Startup America Partnership is focused on bringing together the private sector to maximise the success of America's entrepreneurs and also to maximise America's competitiveness in an increasingly global world. Through quality resources provided by its partners, it aims to help more start-ups grow smartly, expanding from dozens of employees to hundreds and ultimately thousands, to eventually become high-growth firms.

Table A12.3: ACCESS TO FUNDING

Argentina
The PR.UEVE aims to encourage technology-based companies that can gain value from applied knowledge. Innovative ideas in products, services, production processes and management, which result in the formation of technology companies, are supported through this programme. Business plan competitions are held and the winners are given support in the form of training and access to grants and loans.
France
The SME development bank (OSEO) aims to provide entrepreneurs with access to debt markets. In 2010, OSEO-BDPME provided €10 billion, guaranteeing loans of more than 80,000 entrepreneurs. OSEO is headed by a public sector holding company and reports to both the Ministry for the Economy, Finance and Industry and the Ministry for Higher Education and Research.
Germany: High-Tech Gründerfonds
This is a public-private VC fund that invests in technology companies at the seed stage. The fund has a value of about €272 million and invests in companies that implement promising research results in industry. The start-ups receive up to €500,000 each. Fields of support are provision of financing, team-building, knowledge transfer and building of networks
India: Technopreneurship Promotion Programme (TePP)
The TePP is India's largest network programme supporting independent innovators. The Department of Scientific and Industrial Research in the Ministry of Science and Technology, runs it. The network, with its 30 outreach centres spread across the country, provides grants, technical guidance and mentoring support to independent innovators. The purpose of this support is to enable innovators to emerge as entrepreneurs by incubating their ideas and enterprise. The support is provided in two phases: innovation incubation of up to about US$30,000 and enterprise incubation of up to about US$90,000. TePP provides an opportunity to innovators to fail. It is also the only programme that funds the innovator directly, without any repayment obligation. It gives all the rights on intellectual property ownership and technology commercialisation to innovators. It is exclusively aimed at non-IT, non-software entrepreneurs or inventors. The most important condition is that the idea must have a commercial application.
Indonesia: Kredit usaha rakyat (Kur / credit for people's businesses)
This is a programme offering credit facilities that are guaranteed by the government in cooperation with several local banks. The objective of the KUR programme is to accelerate the development of primary sectors, to empower small-scale businesses, to improve their accessibility to credit and financial institutions, reduce poverty levels and expand job opportunities. KUR may be in the form of working capital or investment loans, with a maximum of Rp500 million (US$60,000) given to micro, small, medium and cooperative-formed units by a credit insurance company.

Italy: Self-employment
A set of funding measures was put in place in 2000 to favour projects involving self-employment opportunities among the unemployed and those looking for their first job. The projects include: self-employment (projects with investments up to €25,000), micro enterprises (investments up to €130,000) and franchising projects with qualified franchisors. The support is provided via a free grant, special term financing and technical advice. This is managed by Invitalia, a government agency specifically intended to favour foreign direct investments and growth of local entrepreneurs.
Japan: Credit Guarantee Corporations' (CGCs) system of sharing responsibilities with financial institutions
Launched in October 2007, this scheme was introduced to create an appropriate sharing of responsibilities between the CGCs and financial institutions. It took a system in which the CGCs had, as a rule, assumed 100 per cent of the credit risk and turned it into one in which financial institutions were required, in principle, to assume 20 per cent of the risk, to foster access to business loans for SMEs. In 2009, about four million SMEs benefited from CGCs.

Table A12.4: COORDINATED SUPPORT

Australia: Enterprise Connect
Enterprise Connect is a part of the Department of Innovation, Industry, Science and Research, and its role is to connect the participant's business to knowledge, tools and expertise necessary to improve productivity, increase competitiveness and enable it to fully capitalise on its growth potential.
Australian Business Number (AuB)
Part of the Council of Australian Government's (COAG's) regulatory reform agenda, this initiative aims to develop a seamless online registration process for ABNs (Australian Business Number) and business names, including trademark searching. The system will also deliver online business information services and improve on-going interactions between government and business. The purpose of business name registration is to allow consumers to ascertain who is 'behind' a business name.
EU: Enterprise Europe Network
The Enterprise Europe Network was launched in February 2008 by the Commission's Directorate-General for Enterprise and Industry. It builds on the (now closed) Euro Info Centre (EIC) and Innovation Relay Centre (IRC) networks, established in 1987 and 1995 respectively. Bringing together close to 600 business support organisations from 49 countries, the Enterprise Europe Network helps small companies seize the unparalleled business opportunities in the European Union's single market. Closely linked with the European Commission, and including chambers of commerce and industry, technology centres, research institutes and development agencies, the members of the Enterprise Europe Network are linked through powerful databases, sharing their knowledge and sourcing technology and business partners across all network countries. Services include: going international, access to finance, European Union law and standards and intellectual property.
Mexico: Sistema Nacional de incubación de Empresas — national system of business incubation
The system comprises all organisations that follow best practices in business incubation and thereby receive recognition from the Ministry of Economy. The system has nationwide coverage and aims to strengthen the relationships between its members, so that they can exchange experiences, leading to the creation of more competitive companies.

India: The National Skill Development Corporation
The National Skill Development Corporation (NSDC) is a public-private partnership that aims to promote skills development by assisting in the creation of large, quality, for-profit vocational institutions. The NSDC acts as a catalyst in skills development by providing viability gap funding to enterprises, companies and organisations that provide skills training. The NSDC's role is to stimulate and coordinate private sector initiatives in the skills development sector.
Russia: RCSME (SME resource centre)
RCSME developed a unique service (Web site and mailing system) for regional business support organisations and SMEs, which facilitates information exchange between the regions as well as between federal and regional business support organisations. The system is one of the most helpful and efficient for SMEs and SME support organisations.
South Africa: National Youth Development Agency
The National Youth Development Agency (NYDA) is a South African youth development organisation, aimed at creating and promoting coordination in youth development matters. NYDA was formally launched on 16 June 2009 by President Jacob Zuma at a special Youth Day commemoration event, on the merger of Umsobomvu Youth Fund (UYF) and the National Youth Commission (NYC).
Turkey: Support for business development centres
The programme aims to increase the productivity and efficiency of business development centres, to create an entrepreneur-friendly environment. These centres act as incubators. KOSGEB, the Small and Medium Enterprises Development Organisation of Turkey, provides financial support by funding fixed expenses as well as company expenses to these centres.
UK: Local Enterprise Partnerships
The Local Enterprise Partnerships are locally owned partnerships between local authorities and businesses. They play a central role in determining local economic priorities and undertaking activities to drive economic growth and create local jobs. The Local Enterprise Partnerships are better placed to determine the needs of the local economy and also possess a greater ability to identify barriers to local economic growth.

Table A12.5: REGULATION AND TAXATION

Australia: business.gov.au
The business.gov.au Web site is an online government resource for the Australian business community. Businesses using the site are able to comply with government requirements more simply and conveniently.
Brazil: Individual Entrepreneur Law
The Individual Entrepreneur Law aims to help informal, sole-trader entrepreneurs (who do not have a share in any other business and who have an annual income of up to R$36,000), to formalise their businesses and thereby gain access to social benefits such as pension, medical aid and workers' compensation. To simplify the registration of these entrepreneurs with the Individual Entrepreneur Law, the Ministry of Development, Industry and Commerce (MDIC), which oversees the development of small businesses, launched an Internet portal in 2009 where entrepreneurs looking to formalise can sign up. The Law also reduces the number of steps (from forty-one to seven) that an entrepreneur is required to follow to register. It also reduces the amount of information to be supplied and offers them lower taxation.

Brazil: Lei Geral Policy
The Brazilian Government's policy on small businesses is contained principally in Lei Geral, a law that has, among other things, simplified taxes and boosted government procurement from small and micro enterprises. Through this law, small businesses with a turnover up to R$2.4 million are taxed less and receive prioritised government procurement of up to R$80,000.
Brazil: SiMPLES tax regime
SiMPLES is a special tax regime for small, medium and micro enterprises (SMMs) that aims at reducing the tax burden, simplifying tax accessory obligations and combining all Brazilian taxes into one single computation and collection. Brazilian taxes are generally computed based on either the profit or the gross revenue of the company. The tax rate ranges from 5 per cent to 25 per cent. Under the SiMPLES programme, the tax amount due is calculated with a single (and lower) tax rate based on the revenue earned by the company.
Canada: BizPaL (Business Permits and Licenses)
BizPaL is an online service that simplifies business permit and licence processes for entrepreneurs, businesses, governments and third-party business service providers. Users simply answer a series of questions on their type of business and BizPaL will automatically generate a list of permits and licenses from all levels of government (federal, provincial, territorial and municipal), with basic information on each, as well as link them to government sites where users can learn more and, in some cases, apply online.
Canada: One Stop Business registry
The Ministry of Small Business, Tourism and Culture and Western Economic Diversification, Canada offers the One Stop Business Registry programme. An easy-to-use computer programme, it allows business owners to complete important government applications quickly and efficiently, at one time and in one location.
Canada: Red Tape Reduction Commission
The Government of Canada has created the Red Tape Reduction Commission with the following mandate: • Identify irritants to businesses that stem from federal regulatory requirements and review how those requirements are administered in order to reduce the compliance burden on businesses, especially small businesses. The focus is on irritants that have a clear detrimental effect on growth, competitiveness and innovation. • Recommend options that address the irritants and that will control and reduce the compliance burden on a long-term basis, while ensuring that the environment, health and safety of Canadians are not compromised in the process.
China: Measures to lure potential Chinese entrepreneurs from overseas
Enterprises started by Chinese entrepreneurs, who have returned from abroad can receive substantial support, such as a proportion of their start up capital during the start up phase.
EU: Small Business Act for Europe
During the Spring Council of 2006, the national governments agreed to a series of simplifications to make setting up of a company faster and cheaper anywhere in Europe. These simplifications called for cheaper and faster procedures and instituting a one-stop shop for all administrative procedures required while starting a company. This commitment has been renewed in the Small Business Act for Europe, in which European Union countries have also committed themselves to reducing the time required for obtaining business licenses.

France: One-stop online business registration system
Setting up a company is now much easier, thanks to the one-stop online business registration system (Le Guichet Unique de la Création d'Entreprises). This Web site, which targets current and new entrepreneurs, helps in setting up a company faster than normal.
France: The 'self-entrepreneur' status
The self-entrepreneur status is meant for those who want to operate a one-person business (entreprise individuelle) of a commercial, skilled trade or professional nature (whether full-time, part-time or in addition to any another occupation) and with an annual turnover below: • €80,000 excluding VAT (2009 level) if the business activity entails the purchase or resale of goods, the sale of goods or services to be consumed on the premises or the provision of accommodation. • €32,000 excluding VAT (2009 level) if the business is providing services.
Italy: Law 99/2009
Law 99/2009 charges the government with coordinating all the legislative arrangements related to globalisation, including exports, promotion of investments and agreements between public organisations and the bank system using foreign bank services.
Italy: The reduction of Administrative Burdens (Law 133/2008)
This law obliges the government to measure the administrative costs of all deliverables receivable from enterprises. On the basis of these measurements, plans for simplification or abolishment are to be prepared.
Japan: Revision of angel tax programme
This tax system provides preferential tax treatment to individual investors in companies that fulfil certain requirements when angels invest in or sell the stock of the companies.
Russia: One-stop shop system for new projects
The Nizhny Novgorod region has implemented a start up scheme to provide guidance for investment projects as well as a one-stop shop system for prospective investors. Nizhny Novgorod is the fifth largest city in Russia. The investment project start up system is based on the one-stop shop principle, which means that to get land, the investor has to contact only one office, the Ministry for Investments. With this policy, new investment projects can minimise the 'unofficial relations', which cause unnecessary delays for new projects.
Russia: The Simplified Accounting System
The Simplified Accounting System offers tax advantages to taxpayers who opt for the new system. They file and pay their first-category and global-complementary tax on the basis of their earned annual net income (earnings minus expenses). In this system, one can choose how to pay corporate tax: either 6 per cent from the entire turnover or 15 per cent from the net income (income minus expenses). In addition, the payment of VAT is not required and the social funds' expenses from staff salaries will also be reduced twice
Saudi Arabia: "10 by 10"
Saudi Arabia rose from 67 in the World Bank's 2004 Doing Business rankings to 11 in the 2010 rankings. To foster new business creation, King Abdullah, in 2005, launched an ambitious "10 by 10" group of initiatives. The aim was to reduce the impact of the regulatory burden on start-ups and to position Saudi Arabia in the top 10 of the 'Doing Business' rankings by the end of 2010. The Saudi Arabia General Investment Authority was formed to monitor progress and set up a system of key benchmarks to evaluate the implementation of the "10 by 10" initiatives. It was also charged with the responsibility of advocating further reforms.

Source: G20 Young Entrepreneurs Summit, G20 Young Entrepreneurs Alliance and Ernst and Young. 2011. Entrepreneurs speak out: A call to action for G20 governments, The Nice Côte d'Azur 2011 Entrepreneurship Barometer, Produced for the G20 Young Entrepreneur Summit, October 2011. http://www.ey.com/Publication/vwLUAssets/Entrepreneurs_speak_out_2012/$FILE/Entrepreneurs%20speak%20out_2012.pdf

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Chapter 13

LAND, LABOUR AND CAPITAL IN KERALA'S JOURNEY TO SUSTAINABLE PROSPERITY

Chapter 13

Land, Labour And Capital In Kerala's Journey To Sustainable Prosperity

13.1 Factor Market Rigidities and Economic Development

13.1.1 Production is a process of transforming material inputs into products using land, labour and capital as factors. The other aspect is entrepreneurship, which creates products from ideas and is covered in a separate chapter (Chapter 12). They are termed 'factors of production' or resources and they determine the production potential for any economy. The potential of any economy can be increased by improving the productivity of the factors of production.

13.1.2. The markets for factors of production work in a similar manner to that for final goods and services. However, the key difference is that the demand for factors is 'derived demand'. It means that the demand for land, labour and capital is dependent on the demand for the goods and services produced in the economy. From Chapter 1, we know that Kerala's economy has been growing at an average rate of 8 per cent per annum since 2002−03 and that the structure of the economy has changed over time from an agricultural to a service-oriented economy. High economic growth has resulted in higher demand for goods and services, which, in turn, has increased the demand for land, labour and capital. It is not just that demand has increased, but that the number of uses of a resource like land has increased too. In addition, the changing structure of the economy means that resources have to be increasingly transferred from producing agricultural goods to services. Redirecting resources from one sector to another is a challenge. In Kerala, these challenges are economic, environmental, social and political, and are discussed in the sectoral chapters. For example, land acquisition is a major challenge whether it is for laying electric cables or roads or housing or centres of excellence or preserving the ecological balance of the State. Kerala is characterised by unemployment of the educated labour force, which means that, increasingly, the labour force is unable to find jobs indicating mismatch of demand for and supply of skills in the labour market. These challenges are labelled 'rigidities in the factor markets'.

13.1.3 Rigidities in factor markets can result in actual production that is far below potential. According to an estimate, the difference between the potential and actual GDP growth for the Japanese economy is 3.6 per cent.[1] Furthermore, considering that the resolution of factor market distortions through market mechanism is not desirable, it is important for the government to undertake conscious policy measures to achieve a more efficient allocation of productive resources. Without such measures, the State cannot hope to achieve economic, human, environmental and social prosperity (the four key elements of the Mission of KPP 2030 as outlined in Chapter 2). This chapter analyses the factor market rigidities of Kerala and offers alternative proposals to address them.

13.2 Managing Factor Market Rigidities in the Process of Development: Global Experience

13.2.1 Throughout history, land, labour and capital have been allocated and re-allocated to produce particular sets of goods and services. Economics teaches that given alternative uses and limited resources, there is a cost associated with using a resource for one particular use — its opportunity cost. In any economy, it is not simple to calculate the opportunity cost. Therein lies the challenge

of managing this transition of resources for Kerala. The key word is 'managing'. How to manage this transition in an environmentally sustainable manner while causing minimum hardship to people and achieving prosperity for all is the key question for the next 20 years. World history holds many instances and examples for Kerala to learn from — both on what to do and what not to do. Kerala may learn from the various examples and develop a particular plan that is applicable to the State. The plan has to be flexible in order to be adaptable to changing realities. The numbers show that transition is natural and Kerala is no exception. KPP 2030 recommends adopting a strategic approach to managing resources versus the current, slightly ad-hoc approach. The point is that if Kerala is able to recognise the benefits and costs of transition, it can be prepared, well ahead, for the inevitable changes and costs. In a way, the objectives of this chapter are simple — examine the current allocation of resources, costs and benefits; what, if any, factors constrain the transfer of resources between various uses; and what can be done to enable the transfer in a smooth and sustainable manner.

13.2.2 It is one of the iron laws of economics that as countries get richer, the share of agriculture in Gross Domestic Product (GDP), employment and land declines. That, in turn, is the result of two other iron laws: one, the Engel's law, which envisages a decline in the share of agricultural products in the total consumption basket as the country gets richer; and two, the inability of productivity in agriculture to keep up with that in the non-agricultural sector as the country gets richer. Over a very long term, the validity of this law is demonstrated by the history of countries such as the UK and the US. According to data presented by Angus Maddison in his monumental piece, *The World Economy*[2], the share of agriculture in employment declined from 56 per cent in 1700 to 37 per cent in 1820 to 16 per cent in 1890 to 2 per cent in 1998 in the UK. In the US, the same share declined from 70 per cent in 1820 to 38 per cent in 1890, to 3 per cent in 1998. This basic theory is strongly confirmed from more recent data on the share of agriculture in countries that have recently moved towards a high income status.

13.2.3 Table 13.1 confirms the inexorable tendency of the share of agriculture to decline in Gross State Domestic Product (GSDP) and employment on the road to prosperity. In addition, it brings out the often overlooked fact that the decline in the share of agriculture in land utilisation remains much smaller than that in GDP and employment. For example, in Korea the share of agriculture in GDP drastically declined from 29.2 per cent in 1970 to 2.8 per cent in 2007. The decline in the share of agriculture in employment from 34 per cent in 1980 to 7.4 per cent in 2007 was commensurate with its decline in GDP. But in land utilisation, it declined from 23.5 per cent in 1970 to only 18.9 per cent in 2007. Thus, in the course of its journey from a low income country in 1970 to a high income country in 2007, only 4.6 percentage points of the original land under agriculture was transferred to non-agricultural uses. Similar is the case with other countries.

13.2.4 Historical evidence suggests that many countries resorted to 'forced transfer' of resources. The very first case of an industrial revolution, which occurred in England, for instance, was associated with forced transfer (though backed by the 'law of enclosure') of land and labour from agriculture to industries and that was brutal indeed.[3] No less forceful was the transformation under Soviet Communism, where there was forced collectivisation in land and massive transfer of labour from agriculture to non-agricultural uses that enabled the former Soviet Union to achieve massive industrialisation in just 15 years (1928−1943). Since the late 1970s, China has also been following the traditional pattern of transfer of land and labour from agriculture to non-agricultural sectors.

Table 13.1
Share of Agriculture in GDP, Employment and Land Utilisation in Some Successful Growth Stories

Indicators/Countries	1960	1970	1980	1990	2000	2007
South Korea						
A. Per capita income in Constant 2000$	1,109.8	1,993.6	3,358.2	6,895.4	11,346.6	15,157.6
B. Share of agriculture in (%):						
I. GDP	NA	29.2	16.2	8.9	4.6	2.8
ii. Employment	NA	NA	34	17.9	10.6	7.4
iii. Land Area	21.4	23.5	22.7	22	19.9	18.9
Taiwan						
A. Per capita income in 2000$	1,492	2,980	5,869	9,886	16,859	17,154(*)
B. Share of agriculture in (%):						
i. GDP	28.5	15.5	7.3	4.1	2	1.5
ii. Employment	50.2	36.7	19.5	12.8	7.8	5.3
iii. Land Area						
Ireland						
A. Per capita income in 2000$	5,046.8	7,276.5	10,024.3	13,880	25,380.2	32,319.2
B. Share of agriculture in (%):						
i. GDP	NA	16.3	11.43	8.7	3.2	1.4
ii. Employment (% of total employment)	NA	NA		15.1	7.8	5.4
iii. Land Area	81.9	82.2	83.1	82	64	62
Portugal						
A. Per capita income in 2000$	2,343.2	4,419.5	6,503.6	8,838.4	11,443	11,926.1
B. Share of agriculture in (%):						
i. GDP	NA	29.8	18.8	8.8	3.6	2.4
ii. Employment	NA	NA	27.3	17.9	12.5	11.6
iii. Land Area	42.3	43	43.5	43	41.8	38.2
Spain						
A. Per capita income in 2000$	3,715.9	6,841.8	8,826.3	11,346.2	11,421.9	16,367.4
B. Share of agriculture in (%):						
i. GDP	NA	10.9	7.2	5.5	4.3	2.88
ii. Employment	NA	NA	19.3	11.5	6.7	4.5
iii. Land Area	66.5	64.2	62.5	61	59.6	56.1

Note: Taiwan Per Capita GDP in US 2006 $ terms.(*) 2006 Prices Figures.
Source: WDI 2012, Historical Statistics for World Economy, Angus Maddisson, Taiwan Statistical Data Book 2012.

13.3 The Kerala Experience

13.3.1 Kerala follows the classical patterns of structural change along with the rest of India, but with some variations. Table 13.2 presents the picture of the structural change in GDP, land and labour in Kerala and India over the same period as in Table 13.1 to enable international comparisons. For India, the share of agriculture in GDP has declined from 42.3 per cent in 1970 to 18.2 per cent in 2010. However the share of agriculture in employment has remained high at 51 per cent. This suggests that the relative GDP per worker in agriculture has declined sharply, leading to a diminished role of the agricultural sector and a heightened interest among farmers (particularly younger farmers) in migrating out of the sector. Land utilisation ratio has also shown a very small decline over this period indicating low productivity growth in agriculture. Appendix A13.1 predicts future land use patterns till 2030.

13.3.2 Kerala's situation is a little better than the national picture. Along with a decline in the share of agriculture in GDP, its share in employment has also come down (Table 13.2). But all is not well. For instance, it is indeed an issue that the non-agricultural sector is not able to absorb the labour released from agriculture. Elasticity of employment with respect to GDP is practically zero (jobless growth), worse than that at the all-India level (where the employment elasticity has been estimated to be 0.2).[4] This has resulted in high unemployment rates, especially in the young, educated population. On the land front, the decline in the share of agricultural land has indeed taken place, unlike at the all-India Level.[5] Yet, 60 per cent of the total land area contributed 13 per cent of the GDP (including allied sectors) in 2007. But the land area going out of agriculture has not become available to other productive use as a factor of production.

13.3.3 The employment data for Kerala (and the employment elasticity) needs to be interpreted with great caution. The NSS Employment Surveys are not very efficient in capturing migrant labourers. As shown by Narayana, Venkiteswaran and Joseph (2013), Kerala currently has a stock of around 25 lakh domestic migrant labourers employed in various sectors of the economy. Their numbers are growing at the rate of about 8 per cent per annum and hence, Kerala's growth cannot be taken as jobless. But the fact remains that these jobs are not taken by labourers from Kerala.

13.3.4 The question before Kerala is, therefore, how to manage these factor market rigidities to facilitate the transition of the economy to a knowledge economy. Now is the time to reflect on this issue and facilitate (not frustrate) this transformation in a socially and economically harmonious and sustainable manner. What follows, analyses the current situation in each of the three factors of production separately and presents strategic directions for addressing the issues being faced in their respective markets.

Table 13.2
Share of Agriculture in GDP, Employment and Land Utilisation in India and Kerala

Indicators	1970	1980	1990	2000	2007
Kerala					
A. Per capita income in 2000$	327.4	323.2	367.4	555.9	936.5
B. Share of agriculture in:					
i. GDP (%)	44	36	26	21	13
ii. Employment (%)	-	-	48	38	25
C. Land area*(%)	63.2	63	62.9	61.5	60

India					
A. Per capita income in 2000$	214	229.2	318.4	452.9	687.5
B. Share of agriculture in:					
i. GDP (%)	42.3	35.7	29.2	23.3	18.2
ii. Employment (%)	74.3(^)	69.2(@)	62 (#)	60	51 (*)
C. Land area (%)	59.8	60.6	60.8	61.4	60.4

*Note: * Figures for land use are calculated by NCAER based on international practices.*
Source: WDI, Kerala Economic Review (Various Editions), Statistics for Planning, Kerala (Various issues), Directorate of Economics and statistics.(*) 2010 figures.(#) 1994 figure.(^) 1972 figure, (@) 1982 figure. Kerala Employment figures for 1990 correspond to 1993−94 NSSO round, 2000 figure correspond to 1999 NSSO round and 2007 to 2009−10 NSSO round

13.4 Labour

13.4.1 Dismal Outlook on Employment Growth in Kerala

13.4.1.1 Kerala's poor employment record is well known (see Chapter 1 for discussion). In the business as usual (BAU) scenario, the outlook is also not bright. Three alternative employment scenarios are constructed here, with varying assumptions regarding the GSDP growth rate and employment elasticity.

Scenario 1 - Growth rates drop with no change in employment elasticity

13.4.1.2 Poor as the performance on employment has been, the business as usual outlook on growth and employment in Kerala is worse over the Perspective Plan period (2012−2030). As discussed in Chapter 1, the good economic growth performance in Kerala since 1986 has essentially been driven by construction; transport and communication; trade, hotels and restaurants; real estate ownership; and other services. This, in turn, is consumption-driven and is induced by the inflow of remittances, spurt in the tourism sector and government spending on community services. As discussed in Chapter 1, these sources of growth are likely to peter out, and if alternative drivers of growth are not found, GDP growth rate during the next 20 years (2012−31) may drop to even 3−4 per cent per year from the level of 7−8 per cent per year during the preceding 20 years (1992−2011). In this scenario, the unemployment rate will increase by 100 per cent over and above the already high unemployment rate of 6.6 per cent in 2011. Table 13.3 presents the picture by plan periods during 2012−2031.

Table 13.3
Employment Situation in BAU Low Growth Scenario

Indicators	2011	2012	2016	2021	2026	2031
Labour force (In Millions)	14.49	14.58	15.03	15.74	15.95	16.28
BAU growth (After shock given to all the sectors) (%)			4.00	4.00	3.60	3.70
BAU employment elasticity	0.07	0.07	0.07	0.07	0.07	0.07
Employment (millions)	13.53	13.61	13.77	13.96	14.14	14.32
Unemployment rate (%)	6.62	7	8	11	11	12

Source: NCAER's calculations

Scenario 2 - Perspective Plan growth rates with no change in employment elasticity

13.4.1.3 The first step for correcting the dismal employment outlook is to restore the economy's growth momentum. As discussed in Chapter 2, that would require focus on a knowledge-driven strategy. However, the analysis presented in Table 13.4 shows that accelerated growth by itself will not solve the problem of high and growing unemployment, as it has not done so in the past. The growth remains 'jobless' because the elasticity of employment is rather low. In fact, the very measures to stimulate growth through the knowledge economy may have the unintended effect of increasing the 'reserve price' of educated labour and that may neutralise whatever small positive effect growth has on employment. Clearly, the process of growth is unlikely to put Kerala on the road to sustained and sustainable prosperity with the current employment elasticity. Indeed, direct government intervention is needed.

Table 13.4
BAU Employment Elasticity with Perspective Plan Growth

	2011	2012	2016	2021	2026	2031
Labour Force (In Millions)	14.55	14.72	15.46	16.57	17.11	17.76
Growth Assumption (Perspective Plan Scenario)			8.00	9.00	8.00	7.00
BAU Employment Elasticity	0.07	0.07	0.07	0.07	0.07	0.07
Employment (In Millions)	13.53	13.61	13.91	14.32	14.72	15.11
Unemployment rate	7.3	7.3	10.00	14.00	14.00	15.00

Source: NCAER's Calculations

Scenario 3 - Perspective Plan growth rates and doubling of employment elasticity

13.4.1.4 Table 13.5 confirms the point made above. It reveals that the unemployment rate will drop to 4 per cent by 2030 if the elasticity of employment is doubled from 0.07 to 0.15 along with the sustained growth rate of 7−8 per cent per year over the next 20 years.

13.4.1.5 The recommended employment generation in each Five Year plan Period starting from 2012 till 2031 is reported in Table 13.5. Overall, it is estimated that 3.48 million additional jobs will have to be created during 2012−2030.

Table 13.5
Recommended Employment (in Million) - Perspective Plan Scenario

Year	2011*	2012	2016	2021	2026	2031	Incremental jobs created between 2012 and 2031
Employment	13.53	13.61	14.24	15.18	16.10	17.01	3.480

**Base year employment*

Source: NCAER

13.4.1.6 This indicates that employment elasticity will have to be more than doubled to achieve the targeted unemployment rate of 3 per cent even with a sustained growth rate of 7.5−8 per cent.

13.4.2 Towards an integrated growth-oriented labour welfare policy

13.4.2.1 For effective tackling of both growth and employment problems, the Perspective Plan has to work simultaneously on sustaining high GSDP growth rates and increasing employment elasticity of growth without affecting labour interests. Essentially, the State has to create employment opportunities and employment-intensive growth; an educational system which produces labour with employable skills that are wanted in the market; and a mechanism to re-allocate labour from low-valued added activities to high-valued added activities. It is proposed that the State formulates a comprehensive 'Growth-oriented Labour Welfare Policy' with the following objectives:

a) Connecting supply with demand for labour.
b) Increasing employment opportunities.
c) Ensuring a social security net and re-training for labour.

13.4.2.2 The 'connecting' problem arises from dysfunctional employment exchanges. The mismatch between demand and supply arises from rigidities (lack of flexibility and responsiveness) in the educational system and from employers not having tight linkages with the supply side educational and vocational institutions. This gap has been compounded by wider changes in the world of work. Employment opportunities are constrained by the lack of entrepreneurship and labour market rigidities. Finally, if in the process of course correction, labour interests are affected adversely, the purpose of reforms will be self-defeating. Therefore, there is a need for a social security net for labour. In other words, the proposed comprehensive 'Labour Policy' should be based on the following four pillars:

a) Pillar 1 - Transformational changes in education: In the knowledge economy, knowledge and skills are the driving forces of a country's socio-economic development. This requires assigning top position to skill and knowledge acquisition in the policy framework. The proposed knowledge economy framework (Chapter 2) for Kerala will spark five labour market transitions — farm to non-farm, rural to urban, unorganised to organised, subsistence employment to decent skilled employment and school to work. According to calculations, between 2012 and 2031 over 2 million workers will shift out of agriculture. These people will need to be absorbed in the knowledge economy. This will call for a transformation in the education system to prepare them to be absorbed in the knowledge economy. But a major dilemma is that the skill mismatch and lack of employability are noticed both in vocational education and training (VET) and the higher education sectors in India. An employment survey indicates that not more than 15 per cent of university graduates from the general education stream and 25−30 per cent from the technical education stream are fit for employment. The term 'employability' is defined as the capability to gain initial employment, maintain employment and switch to new employment, if required. It means a synergic combination of personal qualities, skills and subject matter understanding. This, in turn, implies a focus on overall human resource development, the essence of which is education. To address the issue of employability, therefore, the education system needs to be ready for changes in organisational structures, policies, clientele group, teaching-learning processes and the type of academic offerings. It needs to be geared to life-long learning by being flexible in terms of entry, exit and re-entry, with a greater focus on skill development. Universities will no more be just centres of mere knowledge transmission, but will also prepare a skilled workforce ready to be absorbed in the market. The specifics of what needs to be done to correct this mismatch between job requirements and skill-acquisition are discussed in Chapter 10. In the context of the proposed Labour Policy, it is recommended that the departments of labour, employment service, vocational higher secondary education and higher education work together to bring out a 'State Skill Development Policy' mainstreamed into the education system (See Chapter 10) aiming at transformational changes in education to improve the relevance of education and employability of the younger generation. It will be implemented with the support of the labour and employment service departments.

b) Pillar 2 - A well-developed labour information system: Employers need institutions that aggregate candidates for matching after preliminary screening or shortlisting. Students need geographically distributed centres that offer continuous information on aggregate jobs. Employment Exchanges (EEs) were set up for this purpose, but are currently in need of upgrading. In this Internet age, they can serve as powerful players in connecting demand for and supply of labour. Kerala already has three Professional and Executive Employment Exchanges in Thiruvananthapuram, Ernakulam and Kozhikode; 14 District Employment Exchanges; 58 Town Employment Exchanges; six Special Employment Exchanges for Physically Handicapped; two Coaching cum Guidance Centres for SC/ST; and five University Employment Information and Guidance Bureaus.[7] They are being upgraded to offer online services. It is important that the data management systems of these EEs are strengthened on a regular basis. All the employment exchanges in Kerala will be networked, to give them a new-generation look and provide all employment-related services online, across the State. Efforts will be made to connect it with the EEs of other states, which will serve as a step towards creating a 'national labour market'. In addition, the government will also encourage, regulate and standardise the development of job agencies run by non-governmental entities. There will be clear guidelines on their operations to avoid abuse and fraud. Information related to registered private companies will be made available on the government Web site.

   Further, efforts will be made to develop 'Vocational Career Guidance Systems' at the school and college levels for students to explore new career areas. This will require an online module on career opportunities and appointment of trained career counsellors on a part-time basis, at the school and college levels. The 'labour information system' will serve as a useful guide for providing information on skill requirements to policymakers, which, in turn, will serve as a source of feedback for updating the skill development programmes. This needs to be integrated into the VET system for matching supply with demand.

c) Pillar 3 - Encourage entrepreneurship: As discussed in the sectoral chapters, Kerala needs to make the transition from a wage economy to an entrepreneurial economy, where young people are not looking for jobs, but are encouraged to indulge in creativity and self-employment. Kerala has a Kerala Self-Employment Scheme for the Registered Unemployed (KESRU) under which bank loans up to Rs 100,000 are given to individuals for starting self-employment ventures, of which 20 per cent is reimbursed as government subsidy through the Employment Department. However, monetary support alone is not adequate. The proposed Labour Policy should have policy guidelines on state support to promote self-employment (See Box 13.1 for China's approach). These guidelines will have special provisions for training and monetary support for laid-off and disabled workers. Efforts will need to be made to promote public-private partnerships in these areas by involving social entrepreneurs who are engaged in entrepreneurship development. Chapter 12 discusses the approach to entrepreneurship that offers strategic directions in this context and may provide useful inputs in drafting policy guidelines on self-employment in Kerala's proposed labour policy. China has been a successful example in this case (Box 13.1)

Box No 13.1

Labour Strategy – China

The post-1980 period has witnessed important changes in China's labour policy, especially the replacement of life-long employment with contract-based employment and the replacement of government job assignment with the labour market. Such changes indicate a paradigm shift in China's labour policy in the reform era. The objectives of the policy are:

- Increase employment in large numbers by developing the economy and improving its structure.
- Create a better environment for workers to choose jobs on their own.
- Control the unemployment rate and average unemployment cycle within limits that society is able to bear.

It is based on the following principles:

- Market-based adjustment in labour employment: The labour policy has reduced substantially the job security of Chinese workers as it legally abolished the life-long employment system and allowed employers to dismiss workers for economic reasons. However, it pays special attention to the protection of laid-off workers.
- Encouragement to self-employment: This means encouraging the unemployed and laid-off workers to take up self-employment or start their own businesses. This is done by supporting training and setting up of individual ventures, reducing and exempting taxes and administrative charges on start-ups by individuals and introducing small, security-backed loans and loans at discounted interest rates. These loans are made available when the applicant meets specified qualifications, within a certain term and number of loans. Labour unions are encouraged to set up training facilities for laid-off workers and help them in getting self-employed or re-employed.
- Employment preference for laid-off workers: This includes establishment of re-employment service centres; laid-off reporting requirements; and the guaranteeing of funding for the re-employment centres from various sources. Laid-off men over 50 years and women over 40 years of age, who have difficulties finding new jobs but have the ability to work and a desire to be employed are regarded as a major target group for employment assistance, and are promptly provided with offers of posts and other kinds of help. The government has invested in the development of public posts, through re-employment assistance, to help the most vulnerable people get jobs.
- Social security payments for laid-off workers: In the mid−1980s, an unemployment insurance system was established in China to provide unemployment relief and medi-care subsidies for the unemployed, facilitate the administration of services for the unemployed and give full play to the role of unemployment insurance in promoting employment and re-employment. It is independent of enterprises and public institutions, with diversified fund sources, standardisation in security system and socialisation in management and service delivery. Laid-off workers are also offered tax reduction policies, small loan support policies and preference in state-owned enterprises
- Free employment guidance services: The public employment service agencies, at all levels, provide free job placement and employment guidance to urban unemployed and rural migrant workers. For the 'laid-offs' and the unemployed, they provide a one-stop service ranging from registration of laid-off and unemployed persons looking for jobs, to providing employment consultancy, job placement, social insurance coverage and vocational skill training.

- Employment guarantee for disabled people: According to China's laws, the state guarantees disabled people's right to work. The government makes overall plans for the employment of the disabled and creates conditions for this. To guarantee disabled people's legitimate right to employment, the government has strengthened supervision and law enforcement, so as to find out and correct in time any employer infringement of the legitimate rights and interests of the disabled in violation of the law and relevant regulations.
- Matching skills by establishing and improving the National Vocational Training System: In 1999, the Chinese government called on all social sectors to adopt the system of recognising both school diplomas and vocational qualification certificates for the sake of enhancing labourers' capacity for employment, starting their own businesses and adapting to job transfer. In 2000, the preliminary framework of the Employment Permit System was set up. At present, China has basically set up a vocational qualification training system of five levels, from elementary, intermediate and advanced-grade skilled workers to technicians and senior technicians that corresponds to the national vocational qualification standards and forms an important part of a life-long learning system for workers.

Source: DI, Y.China's Employment Policies and Strategies, Chinese Academy of Labour and Social Security, Ministry of Labour and Social Security, P.R.China. http://www.oecd.org/els/employmentpoliciesanddata/37865430.pdf

d) Pillar 4 - Labour market management

(i) Flexicurity: Flexibility with security

- Kerala needs to conceptualise new models of labour management systems without compromising the income security of workers. It needs to introduce a system that combines flexibility in the labour market with income security of workers and provides assistance in their retraining and relocation. The Flexicurity system of Denmark has been recognised as one of the best practices in labour management. Many countries have adapted it to their local conditions. It is a leitmotif of the European employment strategy. Box 13.2 describes the system. It entails a 'golden triangle' with three principles: Flexibility in the labour market, combined with re-training of the labour force, social security and an active labour market policy with rights and obligations for the unemployed.

  It is designed and implemented around the following policy components:

  - Flexible and reliable contractual arrangements.
  - Comprehensive life-long learning strategies.
  - Re-training the labour force to be a part of the labour policy programme.
  - Labour policy should have provisions for migrant labour in Kerala.
  - Effective active labour market policies.
  - Social security systems providing adequate income support during employment transitions.
- All this is done in the context of high minimum wages and high average wages with progressive taxation. This system should be studied in depth and introduced in Kerala, on a pilot basis in the new knowledge hubs proposed in Chapter 10.
- Kerala too has a very successful model of labour management that does not compromise the income security of workers. The Uralungal Labour Contract Cooperative Society (Box 13.3) could be a model and the possibility of replicating it should be studied.

Box No 13.2

The Flexicurity Model – Denmark

This scheme allows employers to fire employees during downturns and hire new personnel when conditions improve. Security is provided to workers without jobs. The third corner of the triangle involves activation policies like offering guidance for jobs, training and education to the unemployed. Denmark spends around 1.5 per cent of its GDP on its labour market activation policies.

The main aim of this policy is to provide employment security over job security. The dual advantage of this framework is that it offers employers a flexible labour force and at the same time an unemployment safety net is available for employees, with an active employment policy. This model is based on a long tradition of social dialogue between social partners. The Danish collective bargaining model has been the driver of extensive workers' protection, while considering changing market and production systems. In 2007, the European Council also adopted some conclusions on Flexicurity, which would help member countries of the EU on decisions regarding jobs and growth.

In China, the policy is enhanced by offering preference in employment to workers who have been laid-off, and providing specialised services to them to facilitate the process of self- and re-employment.

Source: Official Web site of Denmark - http://denmark.dk/en/society/welfare/flexicurity/

Box No 13.3

Uralungal Labour Contract Cooperative Society

Uralungal Labour Contract Cooperative society, started in 1925, has emerged as a premier cooperative labour society, recognised by the State government as an 'accredited agency' to undertake works without tender procedures. The society is wedded to the twin principles of integrity and quality and is a name synonymous with quality, workmanship and efficiency in civil works. It currently provides employment to 2,000 workers directly. It is an ISO 9001:2008 certified organisation.

The society is manned and managed by labourers based on strong cooperative values and principles. It is managed by a Board of Directors (with 10 members) elected from among the members. Membership to the society is restricted to people who contribute directly to the work undertaken by it. All the directors are full time workers with the society. It currently has 1,000 members, but employs non-members too. The society has facilities for imparting necessary training to workers. All members of the society are construction workers well versed in all the trades involved in the construction sector. Based on skills, sincerity, commitment and experience, membership is awarded to non-members.

The society serves as the employer of last resort for those workers who lose their jobs in traditional industrial sectors like weaving, coir making, beedi rolling and laterite quarrying. The society also cares for workers who are physically and mentally challenged. All the systems and procedures of the society are based on the principles of thrift, mutual help and strong disciplinary rules and procedures. UL Cyber Park, the first IT Special Economic Zone in Malabar is owned by ULCCS.

Source:http://indiancooperative.com/tag/uralungal-labour-contract-co-operative-society/

(ii) Employment policy and socially marginal/vulnerable people

- A guiding role will be assigned to the government and general public in promoting the employment of socially vulnerable and marginalised people (Chapters 22−23), to create a favourable environment for them to equally participate in social life. This will include:
  - o The policy of equal employment opportunities for all in all public and private organisations, with preferential policies on a selected basis.
  - o Preferential policies and supporting measures to encourage self-employment by way of granting discounted interest rates and poverty-alleviation loans.
  - o Employment services such as free vocational guidance, job referral and vocational training through government and social organisations.

(iii) China's employment policy: China has moved from passive to active employment policies. These are systematic and comprehensive. Their design assimilates good practices from international experiences, while adapting them to national circumstances. It has received wide appreciation from the international community as well as the ILO. The Chinese experience is a good example of a successful employment policy. Its major features are provided in Box 13.1.

(iv) Social security - Merge Welfare Boards and formalise social security for all labour: In the face of economic stagnation during the 1960s and 1970s, Kerala created an institutionalised form of welfare to protect the incomes of the labouring poor. In 1969, a welfare fund was established for toddy tappers. In 1977, another welfare fund known as the Kerala Labour Welfare Fund was set up for workers in small-scale factories, plantations, shops and cooperative institutions. During the 1980s, welfare funds proliferated and covered workers in such diverse occupations as loading and unloading (known as head-load workers), motor transport, clerks working with legal advocates, artisans, fisheries, handlooms, coir and cashew nuts. These welfare funds offer some form of social security at the end of working life; social insurance in the event of sickness, accident and/or death; and a measure of welfare support in the form of assistance for housing, education of children and marriage of daughters.

A typical welfare fund board administers a welfare fund, with contributions from employers and employees from the specified sector and a grant from the State Government, typically equal to contributions from employees. In certain cases where the welfare funds are not in a position to provide old age pensions, the state directly provides such pensions from its budget. However, these welfare funds are constituted on an occupational basis, which has posed challenges. For instance, it has been observed that entry to and exit from the labour market tends to be controlled by unions, since recruitment of members is primarily routed through unions. Further, in most cases payments exceed receipts.

Over the next 20 years, as the economy marches ahead with increasing formalisation of economic activity, these welfare funds will need to be standardised on formal sector lines. It is proposed that they be merged into a single monolithic 'Social Security Institute' with well-designed operational guidelines. It will cover not only formal and informal sector workers, but also self-employed persons. This will prove to be a cornerstone for the new paradigm that Kerala will shift to during the Perspective Plan period. During the early 1990s, most developed countries saw this type of evolution from occupation-based social security funds to a unified 'social insurance fund'. In that sense, Kerala will need to take the same trajectory.

(v) Skill-based labour unions: The model of labour unions has been shaped to deal with 'Fordist Industrialisation'. In the knowledge economy, this model needs modifications. Trade unions need to shift from a 'labour protection approach' to a 'skill-oriented' one and participate in the future building of labour. Under this approach, trade unions and workers' representatives at plant level need to take more 'responsibility' for upgrading the skills of workers on a continuous basis and enhance competitiveness of firms. Besides, they need to focus on better living environments for labour to ensure high productivity. Among other things, they are advised to enter into 'alliances' with company managements. Through this approach, they can bargain for higher wages for labour without compromising on the competitiveness of the company. Germany offers a good model for analysis and adaptation. German unions are partners for businesses and through effective co-management in the form of legally secured co-determination, they have a say in developing long-term strategies for economic success for both businesses and workers. That leads to a sense of shared responsibility (Box 13.4).

Box No 13.4

The German Model of Co-determination

Co-determination is an institutionalised process of employee information, consultation and decision-making in the management of an establishment. Co-determination in Germany is a two-level system: in every establishment with 5-plus employees, workers have a right to elect a works council, which represents their interests. In big companies with supervisory boards (Aufsichtsrat) — a typical example is the joint stock company — workers have additional representation at board level. Depending (mainly) on the size of the company, there is either one third or parity representation at board level. Workers' representatives on the supervisory board have full voting rights.

Co-determination in the works council: In every establishment with 5-plus employees, employees are entitled to set up a works council. The works council has to be established at the initiative of the employees. It is independent of employers — there are no representatives of the employer and no managers or executive staff in the works council. Works council members may or may not be members of labour unions. The council has three different kinds of rights: informational rights, rights demanding mandatory consultation and rights demanding mandatory agreement.

Co-determination in the supervisory board: In large companies with 500-plus employees, such as limited liability companies, family enterprises or joint stock companies, employees are represented on the company's supervisory board, in addition to their representation in the works council. The works council elects the employee representatives on the supervisory board. The number of representatives of the employees is between 1 and 21, depending on the size of the company. It is 1/3 in companies with 500-plus employees and on par in companies with 2,000-plus employees. The task of the supervisory board is to appoint and to control the management board. It has to decide on certain important business operations. Additionally, the supervisory board is informed about business operations and other basic aspects of corporate planning.

Source: Heiner Michel (2007) Co-determination in Germany: The Recent Debate http://www.uclouvain.be/cps/ucl/doc/etes/documents/WDW004.pdf

(vi) Trust building between management and labour: In a knowledge economy, growth is human centric. Human capital is even more important than physical capital. In this scenario, the gap between management and labour is narrowed down. It needs to be further bridged

through participation of management in labour unions and vice versa. This will act as a trust building measure between the two and will, in the process, ensure better understanding of the problems that each faces. This practice is already being followed in many countries. The knowledge economy model will call for a paradigm shift in labour-management relationships in Kerala too.

13. 5 Land

13.5.1 Current situation

13.5.1.1 The Perspective Plan's strategy requires the labour released from agriculture to be absorbed in non-primary sectors, particularly services. This growth will be accompanied by structural changes like urbanisation and demographic changes. A natural consequence of this process will be change in land use patterns. Kerala is already witnessing this phenomenon, as land devoted to non-agriculture uses has increased over time. This process is bound to continue as challenges evolve, and is no different from the economic history of many other countries in the world. However, the key objective in Kerala is to learn from the economic history lessons of other countries such as the UK, the erstwhile Soviet Union and even China and avoid their mistakes. The challenge will be to strategise an economic development path that will efficiently use all land in a sustainable, inclusive and planned manner, keeping its natural ecology intact and avoiding speculative elements.

13.5.1.2 Land is a key bottleneck in the process of implementing a growth strategy. The challenge in Kerala is that it is a relatively small state of 38,863 square kilometres, forming 1.18 per cent of India, but with a population that is 2.76 per cent of the country's total population. As a result, its population density at 859 people per sq km (2011) is quite high. The State varies in width from 35 to 120 km, with a coastline that extends for 590 km from north to south. As discussed in Chapter 1, within the narrow stretch, the topography and physical characteristics change distinctly from east to west starting with the hills and sloping down to the coast covered by coconut groves. Further, increasing economic growth has increased the many alternative uses of land, such as for agriculture, industries, mining, infrastructure (roads, railways, power, telecom), building houses, malls and other economic activities.

13.5.1.3 The evolution of land use patterns of Kerala over the past few decades (shown in Table 13.6) suggests that:

- There has been a continuous decline in barren and uncultivated land; pastures and other grazing land; and land under miscellaneous tree crops since 1960−61.
- Land under agriculture (gross and net cropped) has declined during the past decade. But the decline in agricultural land is not associated with a commensurate increase in land put to non-agricultural use which has increased from 5.14 per cent in 1950–51 to 9.57 per cent in 2009–10. Surprisingly, there was a marginal decrease in the land put to non-agricultural use between 2000–01 and 2009–10. The corresponding Indian number in 2008–09 was 26.31 per cent (up from 9.36 per cent in 1950–51).[8]
- In contrast, the share of 'fallow land' and 'fallow land other than current fallow' has increased over time. There is, thus, clear evidence of people leaving land fallow to eventually convert it into non-agricultural land. The Kerala Conservation of Paddy Land and Wetland Act (2008) prevents conversion of paddy land and discourages keeping land fallow, but it has not been very effective.

13.5.1.4 Though not directly shown in Table 13.6 (due to non-availability of this standardised classification in land use patterns), the above patterns indicate that wetlands are shrinking, which threatens the ecosystems of Kerala. But at the same time there is no corresponding increase in the land under non-agricultural uses, thus posing a threat to Kerala's industrialisation plans, which are important for absorbing educated labour in the economy.

Table 13.6
Land Use (in %): 1950–51 to 2009–10

Category	1950–51	1960–61	1970–71	1980–81	1990–91	2001–01	2009–10
Forests	23.40	27.37	27.34	27.84	27.83	27.83	27.83*
Non-agricultural Use	5.14	5.31	7.13	6.94	7.65	9.7	9.57
Barren and uncultivated	6.57	3.92	1.87	2.21	1.5	0.77	0.57
Permanent pastures and other grazing Land	1.11	1.17	0.73	0.14	0.05	0.01	0.01
Miscellaneous tree crops	4.74	5.30	3.42	1.64	0.89	0.13	0.11
Cultivable waste	7.94	3.71	2.05	3.32	2.43	1.93	2.52
Fallow other than current fallow	2.50	1.62	0.57	0.69	0.68	1.07	1.17
Current fallow	1.27	1.74	0.62	1.12	1.14	1.81	1.98
Net area sown	47.31	49.86	56.28	56.1	57.83	56.74	53.49
Area sown more than once	7.57	11.01	19.72	18.15	19.9	21.19	15.18
Total cropped area	54.88	60.87	76.00	74.25	77.72	77.94	68.67
Cropping intensity	-	-	-	132	134	137	128.38

*Note: * This does not match the forest area as given in the Forest Survey of India*
Sources: Planning Commission. 2008. "Kerala Development Report".
www.planningcommission.nic.in. Accessed November 22, 2012.
Kerala Agricultural Statistics. 2009–10. Accessed November 29, 2012.
Economic Reviews, 1962 and 1972.

13.5.2 Land management - The way forward: Kerala's main objectives in land management will be to:

- Manage land use through land planning over the next twenty years in a sustainable and inclusive fashion. The land management strategy should be such that it augments physical and human capital without losing out on natural and environmental capital.
- Facilitate structural change in land use in a socially equitable and economically viable manner.

a) **Pillar 1:** Land Planning: Three things that Kerala needs to streamline for efficient management of land are:

(i) Institutions: Put in place long-term strategies and plans to ensure that Kerala retains its lifestyle and unique character, while also allowing for continued growth and development. It is strongly recommended that Kerala develop a 'Spatial Planning Policy' (see chapter on Urbanisation). This will comprise guidelines for a master plan with well-planned cities, rural areas and connecting infrastructure. This will be an integrated framework of agricultural, ecological and non-agricultural uses in a scientific manner, using spatial planning techniques. Land use plans can be developed for districts in line with the state guidelines

and principles. Last, but not the least, land use plans will be developed through coordinated efforts with the involvement of both gram panchayats and municipalities. These guidelines will be binding.

(ii) Data collection and maintenance: Kerala already has an advanced system of land use data collection. It will need to be improved further. Data on environment, ecology and non-agricultural uses of land is to be strengthened with granular details.

- The United Nations has developed a System of Environmental-Economic Accounting (SEEA), which classifies land as under:

  a. Natural resources
  b. Mineral and energy resources
  c. Soil resources
  d. Water resources
  e. Biological resources
  f. Land and associated surface water resources
     i. Land underlying buildings and structures
     ii. Recreational land
     iii. Agricultural land and associated surface water
        - Cultivated land
        - Pasture land
        - Agricultural land
     iv. Wooded land and associated surface water
     v. Major water bodies
     vi. Other land
  g. Ecosystems

- Total housing and transport area

  a. Building and adjacent open area
  b. Recreation area
  c. Transport area (including roads)
  d. Agricultural area with all its details
  e. Forest area
  f. Water bodies
  g. Other land use

It is proposed that Kerala adopt a similar system of land classification as a way forward to Environmental Economic Accounting

- Land evaluation: Appoint appraisers and assessors for real estate to estimate the value of real property — land and the buildings on that land — before it is sold, mortgaged, taxed, insured or developed. Appraisers of commercial property (such as office buildings, hotels and other businesses) must have at least a bachelor's degree. In addition, both appraisers and assessors must be licensed or certified. Kerala will need to develop technical courses in real estate assessment on the lines of foreign universities. Such institutes in real estate management are also sprouting in cities like Pune and New Delhi, such as the Indian Institute of Real Estate in Pune and National Institute of Real Estate Management in New Delhi. However, one does not know the quality of these institutions.

(iii) Develop multiple land use models at both the departments and educational institutions around Kerala:

- Identify the areas that need to be protected such as wetlands, forests and other environmentally fragile land with specific goals in view. This must be done for the entire State. See Box 13.5.

Box No 13.5

Zoning of Wetlands in Sri Lanka

The wetlands in Sri Lanka's Western province were zoned; the goal was to facilitate environmentally and economically sustainable use of low-lying areas, considering their intrinsic potential while maintaining essential flood storage capacity and other environmental benefits. Four basic zones were identified: wetland protection zone; wetland nature conservation zone; wetland agriculture zone; and low-lying development zone. The zoning is based on a precautionary principle, flood protection requirements, potential economic uses and the needs of local communities and the ecology of the wetlands. A steering committee, comprising local stakeholders and NGOs and chaired by the minister was established to take the zoning guidelines forward.

Source: Urban Development, Bio-Diversity And Wetlands, Expert Workshop Report, 2009 prepared by Rob Mclnnes, Bioscan Ltd.,Oxford, UK. http://www.unhabitat.org/downloads/docs/ExpertWorkshopWetlands.pdf. Accessed March 3, 2013

- Un-inhabited, eco-sensitive areas may be zoned off and should not be open to conversion to non-agricultural use at all. This will help preserve the environmental capital. These can be used for the creation of wetland parks and to promote tourism (Chapter 3 provides further details). The wetlands may be connected through bike trails, camps and so on. Wetlands tourism is discussed in detail in the chapter on Tourism. Habited, environmentally fragile land has to be treated with care. If at all, land is taken away from inhabitants, they must be compensated in ways that have been specified later in this chapter. However, compensation is cash and kind is a must, especially as it is the vulnerable, such as Scheduled Tribes, who live on the edges of civilisation. Resettlement and rehabilitation must be a strong part of such policy.
- Further, integrate wetlands with urban planning where they are viewed as a water resource rather than natural reserves by using smart urban planning. See Box 13.6.

Box No 13.6

Wetland and Urban Planning – the US

The state of Oregon in the US has adopted a Wetland Planning Guide. In Oregon, the local wetlands inventory identifies wetlands as small as 1/10 of an acre in size. There is an economic and historical assessment and in case the wetland is to be acquired, a mitigation plan is developed. Oregon allows density transfer — for example, if a 2−acre site is zoned for 5 dwellings per acre, a total of 10 dwellings are permitted. If one of the 2 acres is a wetland, full-density-transfer provisions would allow all 10 dwellings to be located on the remaining one acre. This type of provision is generally easy to implement since the density transfer is within a single parcel. It can be accomplished through a development review process or through a planned unit development (PUD). The wetlands that remain must be protected through regulation. 'Mitigation banks' are one more tool used by Oregon to conserve wetlands.

Source: Oregon Department of State Lands and Oregon Department of Land Conservation and Development (2004), "Oregon Wetland Planning Guidebook" prepared by Shapiro and Associates, Inc. and Winterbrook Planning. http://www.oregon.gov/dsl/WETLAND/docs/wet_plan_guide.pdf

- Wherever possible, there should be a policy to reclaim and restore wetlands that have been destroyed.
- Agricultural land planning will need to take into account agricultural clusters, as proposed in the chapter on Agriculture (Chapter 5).
- For the rest of its land, Kerala will need to adopt mixed zoning to develop compact planning, given its limited land area, population density and rural-urban continuum. Integrated planning is recommended for social, physical, human and environmental capital — houses, schools, transport (all modes), sewage and sanitation, greening of urban spaces like development of parks in cities and so on.

b) **Pillar 2: Land Acquisition**

(i) Kerala will need more land to follow the growth strategy. This land will come from two sources — some agricultural land and re-developing of existing non-agricultural land. Land has to be used efficiently. The process of land acquisition should not alienate landowners, whether in rural or urban areas. The land acquisition strategy will depend on the extent, need and feasibility of the areas. A one-size fits all strategy should not be used. Again, the key is to make sure that the local population is part of the growth and development strategy.

(ii) The Land Acquisition Rehabilitation and Resettlement Act 2011 (LARR, 2011) has been approved by Parliament.

Box No 13.7

Land Acquisition Rehabilitation and Resettlement Act 2011

In the past, the land acquisition process in India (and Kerala to some extent) was highly arbitrary and extortionary. The colonial era 1894 Act on land acquisition has inadequate provisions for valuation of land and for rehabilitation of those affected by such acquisitions. The implementation of these measures was also unfair in practice. The Land Acquisition Rehabilitation and Resettlement Act 2011 (LARR) is intended to correct these unjust practices. However, in trying to correct the past injustices to landowners, the present LARR may have gone to the opposite extreme of being in favour of landowners and other stakeholders in the land, at least in conceptualisation. Implementation may prove to be complex and expensive. The system of market valuation proposed in LARR may turn out to unviable. First, the recorded prices of recent land sales on which the market value of land is to be based may not show the true price of land, because of high incidence of 'black money' in these transactions. Second, basing the market price on the valuation after the development decisions are known, gives undue benefit to landowners without any contribution on their part to value addition. The increased value of land due to acquisition for hub development should, in-principle, belong largely to the state developing these hubs and not to the present owners or future real estate developers. Even more onerous is the procedure proposed for such land acquisition. For example, consent needs to be obtained from 80 per cent of the project-affected families.

(iii) The Government of Kerala may define its own land acquisition policy under the aegis of LARR 2011, one that would be fair to landowners and workers on land and provide resources for development of world-class infrastructure in knowledge cities. It is also proposed that the government acquire land for development purposes; it should not be left to private companies to do so. Below are listed a few best practices for land acquisition:

- Model 1 - This model involves four steps: First, determine the value of land. The value of land will be assessed by authorised assessors based on the present value of the income stream created for the owners of land. This will eliminate speculative value of land. And this can be calculated with some robustness. Second, once it is ascertained, generous compensation for landowners may be fixed based on this. Of

the total compensation to the landowner, half can be paid as cash and the other half deposited in a fund to be paid out as annuity, the terms of which can be determined on an actuarially sound basis. Third, land will be acquired by the government based on this compensation. Fourth, a part of this land (say 25 per cent) acquired by the government may be auctioned to private developers. The money generated may be used to fund the cost of development of infrastructure in the area. A part of the money can also be used for training of displaced people so that they can join modern industry and services sectors.

- Model 2 - Community Land Trust model: A Community Land Trust (CLT) is a model that was motivated by the Indian history of community land and the European history of land banks, and assumed its modern form in the US. Over 200 community land trusts have now been established throughout the US, with pilot schemes currently being carried out in both Canada and the UK. The CLT is a non-profit, community-based organisation run by volunteers (including landowners) that develops housing, workspaces, community facilities or other assets that meet the needs of the community, are owned and controlled by the community and are made available at permanently affordable levels. There are many variations in the framework of the basic structure. These are:

  - Dual ownership: Ownership of land is retained by landowners and buildings on the land can be sold.
  - Leased land: Owners of buildings on land are provided with the exclusive use of their land.
  - Perpetual affordability: The CLT retains an option to repurchase structures on the land when the owners decide to sell. Resale price is set by a formula in the ground lease.
  - Perpetual responsibility: The CLT has a continuing interest in structures on its land (and people residing in them), even after they are sold.
  - Open, place-based membership: Residents of a geographically defined community can become voting members of the CLT. (Variations include broader eligibility criteria or allowing non-profit corporations, local governments and private institutions to become members).
  - Community control: Two-thirds of the governing board are community members.
  - Tripartite governance: One-third of the board represents leaseholder interests, one-third represents community members in general and one-third represents public leaders.
  - Expansionist acquisition: CLTs are committed to an active acquisition and development programme.
  - Flexible development: CLTs accommodate a variety of land uses, property tenures and building types ranging from housing and commercial space to parks and gardens.
  - A CLT may get land from:
    - Pool land from its members
    - Acquire land from outside and pool it
  - Receive public land at little or no cost.
  - Purchase a rural exception site at about agricultural value.
  - Acquire a site at open market value, through access to grant funding or community share issues.
  - Already own a site that is permitted for development.
  - After pooling land, the trust may give it to a developer for commercial uses. The money thus earned can then be transferred to the trust, out of which interest income is paid to the trust members. In India, some variations of this model are already in practice and are discussed below.

- Magarpatta Model: The Magarpatta township near Pune is currently a mixed-use

community that caters mostly to IT firms. The story of this model began in the late 1980s, when sugarcane farmers realised that their area would most likely be acquired in the future by the Pune Municipal Corporation due to increasing urbanisation in the city. In 1993, 123 farmers came together to pool 400 acres of farmland and set up a private limited company, which was then developed into a mixed-use private township. Each family got equity shares equal to the size of the landholding — each share was equal to 1 square meter of land costing Rs 100 in 1998. Shares could only be sold to member families. The equity shares give permanent rights to the shareholders over the company and the lands. The most important feature of the model is that the land pattas (7/12 registrations) remain in the name of these families, safeguarding their ownership over the land.

The byelaws of the company ensure preference to family members of shareholders in employment generated by the company. Shareholders may also invest in the construction of commercial spaces that are rented out to companies. Apart from these provisions, shareholders are encouraged to bid for contracts for development work in the township, such as supplying raw material for RCC construction, labour contracts, vending contracts (shops), landscaping, beautification and security and maintenance contracts. People also earn money from renting accommodation to IT company employees. The children of farmers are now employed in the modern sectors that the area offers. The mixed-zone ensures that people walk to work or school.

- **Pune Model:** The Maharashtra Industrial Development Corporation (MIDC) acquired land for the Ranjangaon industrial area and the multi-product Bharat Forge Special Economic Zone (SEZ) area in Khed-Shirur in 2007.[9] In 2008, the farmers could buy back 15 per cent of the developed land at half the industrial rates. Thirty-eight farmers came together to buy back land and have set up industries there. The profits generated are distributed amongst the farmers in proportion to the size of the land holdings that was acquired.

- **Land Pooling Model of Delhi:** In September 2013, Delhi enacted a new Land Pooling Policy as a part of its Master Plan 2021. This policy is based on the "concept of land pooling where in the land parcels owned by individuals or group of owners are legally consolidated by transfer of ownership rights to the designated land pooling agency for undertaking of development for such areas. A part of land (48−60 per cent) is later transferred back to the owners in specified modes. The government acts as a facilitator with minimum intervention to facilitate and speed up integrated planned development. A landowner, or a group of landowners (who have grouped together of their own volition/will for this purpose) or a developer, shall be permitted to pool land for unified planning, servicing and subdivision/share of the land for development as per prescribed norms and guidelines. Each landowner to get an equitable return irrespective of land uses assigned to their land in the Zonal Development Plan (ZDP) with minimum displacement."[10] Physical and social infrastructure and allocation of land for economically weaker sections will all be a part of the plan.

(iv) In summary, an integrative approach is required with changes in the land use classification system, institutions and the way business is done, especially in agriculture and non-agriculture uses, to grow in a sustainable manner.

13.6 Capital

13.6.1 Capital requirement: International experience

13.6.1.1 The role of capital formation in growth cannot be underestimated even in a knowledge economy. Creation of infrastructure itself will require massive investment of funds. Table 13.7 elaborates on successful growth stories including Korea, China and Malaysia, along with India. It shows the role that capital formation has played in the economic growth process.

Table 13.7
GDP Growth, Capital Formation and ICOR

Indicators/Countries	1971–80	1981–90	1991–00	2001–10
GDP growth (annual %)				
China	6.3	9.4	10.5	10.5
India	3.1	5.6	5.5	7.6
Korea, Rep.	7.3	8.7	6.2	3.9
Malaysia	7.9	6.0	7.2	4.4
Gross fixed capital formation (% of GDP)				
China	27.5	28.9	33.6	40.3
India	16.1	20.6	22.7	28.8
Korea, Rep.	27.5	30.1	34.9	28.9
Malaysia	24.4	29.8	35.5	21.5
Gross savings (% of GDP)				
China		36.4	40.4	48.0
India	19.6	21.2	24.0	32.0
Korea, Rep.	27.0	31.5	35.7	31.4
Malaysia	25.6	25.3	35.3	34.5
ICOR				
China	4.4	3.1	3.2	3.8
India	5.2	3.7	4.2	3.8
Korea, Rep.	3.8	3.4	5.6	7.3
Malaysia	3.1	4.9	4.9	4.9

Source: World Development Indicators, 2012

13.6.2 Capital requirement for the Perspective Plan

13.6.2.1 The attempt here is to calculate broad orders of magnitude of investment needs during 2012–2030 and possible sources of funding. Unfortunately for Kerala, a break up of figures on investments — total and by sectors — is not available. This lacuna should be corrected. Urgent efforts should be made to improve data availability on capital utilisation by sectors, total capital utilisation and the sources of funding. Meanwhile, these are some indicative figures on investment requirements prepared using sectoral Incremental Capital Output Ratios (ICORs) from national level data (See Appendices A13.2 to A13.6) using two scenarios. The two scenarios are:

Scenario 1: When ICORs remain constant over the PP period.
Scenario 2: When ICORs increase over the PP period.

13.6.2.2 Based on these calculations, two sets of investment requirement and investment/GDP ratios for the PP growth targets are presented in Tables 13.8 and 13.9.

Table 13.8
Investment Requirement for Capital Formation Based on Constant ICORs (Rs. crores)

Year	2012–17	2017–22	2022–27	2027–32	2012–13 to 2031–32
Agriculture Forestry & Fishing	2,166	2,835	2,951	2,887	2,710
Mining & Quarrying	811	878	871	771	833
Manufacturing	14,584	28,391	42,812	58,573	36,090
Electricity Gas & Water Supply	1,695	2,323	2,654	3,009	2,420
Construction	5,822	11,333	17,089	23,381	14,406
Trade, Hotels & Restaurants	7,009	11,697	16,254	22,141	14,276
Railways, Transport & other means	8,908	13,707	18,519	24,255	16,347
Banking, Financial services & Real estate	18,597	31,052	43,280	58,910	37,960
Public administration	6,949	8,676	10,129	10,968	9,181
Other services	15,025	25,317	32,938	50,679	30,990
Total investment	81,565	1,36,210	1,87,497	2,55,573	1,65,211
Total income(GDP)	2,58,421	3,85,600	5,74,675	8,35,352	5,13,512
Capital formation ratios	31.6	35.3	32.6	30.6	32.2

Note: The absolute values are reported in Appendix A17.1.

Source: NCAER

13.6.2.3 However, these estimates do not take into account the financial costs of the 'leapfrog' strategy for sustainable prosperity proposed in the report. This strategy will require development of world-class knowledge cities, which will initially require heavy investment. Development of non-renewable resources of energy such as solar, will initially be costlier than the thermal alternative. Generation of energy from urban waste will require costly investments. Similarly, world-class hospitals and educational institutions will require high investment initially. Thus, in Scenario 2 it is assumed that the ICORs will increase in the future. The investment requirement estimates are presented in Table 13.9.

Table 13.9
Investment Requirement for Capital Formation Based on Increasing ICORs (Rs. crores)

Year	2012–17	2017–22	2022–27	2027–32	2012–2032
Agriculture Forestry & Fishing	2,218	3,016	3,256	3,301	2,948
Mining & Quarrying	814	886	883	787	842
Manufacturing	14,870	29,834	46,315	65,176	39,049
Electricity Gas & Water Supply	1,709	2,375	2,750	3,159	2,498
Construction	6,035	12,411	19,707	28,315	16,617
Trade, Hotels & Restaurants	7,287	12,894	18,929	27,166	16,569
Railways, Transport & other means	9,353	15,446	22,265	30,944	19,502

Banking, Financial services & Real estate	19,145	33,427	48,705	69,044	42,580
Public administration	7,105	9,178	11,073	12,378	9,933
Other services	15,586	27,739	37,994	61,412	35,683
Total investment	84,121	1,47,206	2,11,877	3,01,682	1,86,222
Total income(GDP)	2,58,421	3,85,600	5,74,675	8,35,352	5,13,512
Capital formation ratios	32.6	38.2	36.9	36.1	36.3

Source: NCAER

13.6.2.4 It is envisaged that approximately 40 per cent of GDP will be required for investment in at least the next three FYPs. This will require huge resource mobilisation.

13.6.3 Resource Mobilisation

The mobilisation of domestic resources is the foundation for self-sustaining development. It requires creating conditions that make it possible to secure the required financial resources for investment. Information on household savings rate, corporate savings rate or public sector saving rates is not available. Again, pending better data availability, some broad orders of the magnitude of saving potential from different sectors is indicated.

13.6.3.1 Diaspora in development

For Kerala, its diaspora is the biggest potential source for resource mobilisation. Here is a roadmap for engaging the diaspora for development.

Diaspora investments[11]: A menu of viable options

1. Provide access to information:
   a. Share information on how to invest or obtain business loans.
   b. Create a one-stop shop for investment information.
2. Provide access to networks:
   a. Organise business events for diaspora members.
   b. Match local entrepreneurs, business owners and government leaders with their diaspora counterparts.
   c. Create exclusive international networks of top business leaders.
3. Provide access to business training programmes:
   a. Supply training directly.
   b. Support training programmes provided by the private sector and international organisations.
4. Provide entrepreneurs access to funds:
   a. Set up matching funds.
   b. Provide loans.
5. Channel private funds to finance public infrastructure.

The best solution for Kerala is to create a special Infrastructure Development Fund for KPP 2030 and mobilise funding from the diaspora for this fund. This fund will focus solely on developing infrastructure and institutions that will enable implementation of KPP 2030.

13.6.3.2 Savings from the household sector

a) A very low domestic savings rate is a major structural weakness to be overcome in Kerala, a high consumption state. Exploring instruments for mobilisation of household savings for investment, both public and private, is a moot issue. The NCAER's National Survey of Household Income and Expenditure (NSHIE) in 2011−12 illustrates the savings behaviour of

Kerala. NSHIE is the country's largest consumer survey. It covered nearly 100,000 households from 292 districts, 2,508 villages and 363 towns across 32 states and union territories. The survey shows the following distribution of investment of Kerala households' financial assets in 2011−12: cash at home (7.8 per cent), banks (28.1 per cent), post office (2.5 per cent), PPF/ PF (14.3 per cent), stock market (5.1 per cent), insurance (20.7 per cent), self-help groups/ chit fund (21.4 per cent) and others (0.14 per cent).[12] There is a significant portion of savings going to chit funds and the government may think of potential ways of channelising that into funding economic growth and development. In the traditional development experience (including that of Korea, Taiwan, China and so on), the banking system, including specially designed development banks, played a large role in such intermediation. However, in the era of neo-liberalism, these banking institutions were degraded and the role of capital markets and speculative finance was promoted.[13]

b) In the wake of the global financial crisis that started in 2008 and continues till date, the fallacy of relying on speculative finance stands exposed. Kerala, which has been by and large above succumbing to neo-liberal doctrines, should stand for time-tested models of financial resource mobilisation practised in Korea, Taiwan and China and assign an important role to state financial institutions for financing development. The management of these financial institutions should, of course, be of world-class standards by appropriate twinning with counterpart institutions, particularly in East Asia.

c) Recently, Islamic banking has been permitted in Kerala. The distinguishing features of these banks are the prohibition of charging or paying of interest, the impermissibility of demanding collateral and, to a small extent, compulsory charitable spending. Primary modes of profit include profit-sharing arrangements such as *'mudharabah'* (partnership) and *'musyarakah'* (equity participation). This may be instrumental in promoting entrepreneurship and productive capacities in the State by channelising domestic savings, but this practice can also feed asset inflation in a highly consumption-oriented state such as Kerala.[14] Malaysia is a successful example of Islamic banking, with Islamic finance in Malaysia touching 22 per cent market share[15] of the total banking sector. Kerala has much to learn from Malaysia's experience in Islamic finance policy, regulation, legal framework, product innovation and market practice.

13.6.3.3 Savings by the corporate sector: In Kerala, the private corporate sector is small, but it will grow and make substantial contributions in the future.

13.6.3.4 Savings by the public sector: Mobilising funds for use by governments is undertaken in three ways: through the levying of taxes, through the generation of non-tax revenues and through government borrowings from local capital markets.

13.6.3.5 Public debt: This is where Kerala can do better, particularly by exploiting its advantages in certain areas. One such advantage is remittances, which bears a ratio of approximately 20 per cent to the Kerala GSDP now. If Kerala can devise attractive schemes with old age security, medical insurance and unemployment benefits for migrant workers, modelling itself on Singapore (Box 13.8), it could perhaps mobilise 3-4 per cent of GDP through these sources. Unlike Singapore, Kerala has to make these schemes voluntary, but it can make them attractive and sell them aggressively as it has done in the case of tourism. Similar schemes for local employees can mobilise further resources, particularly in the new knowledge cities. If, by cooperating with Singapore, Kerala can develop a good brand name for its social security schemes, and can mobilise 6 per cent more of GDP from the diaspora and residents, then that can be channelled towards infrastructure development.

Box No 13.8

Singapore Central Provident Fund

Singapore's pioneering Central Provident fund (CPF) was initiated in 1955. Initially catering to the social security needs of the elderly, the scheme was enhanced with components for buying homes from CPF funds (home ownership), healthcare needs, family protection, asset enhancement and retirement requirements of the elderly. The CPF is a joint effort of employers, employees and the government. Permanent residents, Singapore citizens and self-employed individuals are members of the CPF. The CPF board acts as the trustee of members' savings in such a way that they protect the value of the savings. Fair market returns with minimum risks are returned to the members. At the same time, avenues for members to gain higher returns are also part of the scheme, after considering the risks involved. The government helps the scheme by exempting it from tax and providing guaranteed payment of CPF savings. It is a fully funded scheme. Assets are accumulated by members in their individual accounts and are later drawn upon. It is a compulsory scheme for permanent residents as well as people working in Singapore. Both employers and employees make monthly contributions to the fund. The total contribution rate for workers up to 50 years of age is 36 per cent, of which 20 per cent is employees' share and 16 per cent is employers' share as of 2012.

Working personnel make monthly contributions to the CPF and this money goes into three accounts:
Ordinary Account: Is an account that can be used for retirement, buying a home, buying CPF insurance, investment and education.
Medisave account: It is used to pay medical bills and approved medical insurance.
Special account: Is one that is kept for old age and contingencies.
The five main functions of the CPF are retirement provisions, healthcare, home ownership, family protection and asset enhancement.
Retirement scheme: This allows members to withdraw from their CPF fund at the time of retirement, leaving a Minimum Sum Requirement, which allows them to receive monthly payments to enable them to maintain a basic standard of living.
Healthcare: Under the CPF account, some part of the saving goes to a Medisave account. Members and their dependents can use this account to avail of medical treatment.
Home ownership: Savings from the ordinary account can be used to purchase houses under the CPF home schemes.
Family protection: This scheme provides protection to the families of members for the first few years after death.
Asset enhancement: Provides the facility of investing in Unit Trust, Exchange Traded Funds, Fixed Deposits, Treasury Bills, Insurance, Property Funds and gold with the money saved in ordinary and special accounts.
Employers are obliged to make contributions towards the employees' CPF. In case of non-compliance with the CPF Act, the employer is liable to pay penalty.

Source: Ministry of Manpower Web site, Singapore Government. http://www.mom.gov.sg/employment-practices/employment-rights-conditions/cpf/Pages/default.aspx

13.6.3.6 Sovereign wealth funds: A Sovereign wealth fund (SWF) is a state-owned fund composed of financial assets such as stocks, bonds, property or other financial instruments. Some sovereign wealth funds are held solely by the central banks while others are simply state savings that are invested by various entities to get suitable investment returns. Kerala may consider such funds.

13.6.3.7 Tax revenue: Taxation is used as the main policy instrument for transferring resources to the public sector. The capacity of the State to raise tax revenue depends not only on the sources of tax, but also on tangible economic (such as GSDP and economic structure) and non-economic factors,

such as political will, administrative efficiency and a culture of tax compliance. It is proposed that Kerala design its fiscal architecture based on a careful analysis of the revenue capacity of different taxes, given the characteristics of the State. However, some specific measures proposed include:

- An automobile tax: This tax may be imposed as an additional source of tax revenue. It is clear that checking the vehicle population explosion is a must for sustainable prosperity. A 1 per cent annual tax on vehicle purchase price may serve the twin purposes of increasing government revenue and control of greenhouse gas emissions.

13.6.3.8 Non tax revenue: Kerala will strive to supplement tax revenue by exploring sources of non-tax revenue, with due consideration given to equity concerns, including institution users' fees or by improving the targeting of subsidies for publicly financed goods and services.

13.6.4 Resource management: Additional resources without improving efficiency in revenue collection and resource management will not yield desirable outcomes. Therefore, some measures to ensure better resource management are proposed:

13.6.4.1 Increasing tax compliance: Evidence suggests that tax compliance is determined by factors specific to tax rates and tax structure, level of development and societal behaviour (including personal moral beliefs and social norms). The government will need to address these issues by taking appropriate measures to enhance tax compliance in the State. The Nordic countries (particularly Denmark, Norway and Sweden) have embarked on their own internal surveys of best practices and benchmarking exercises. Sweden set a target to become the best tax administrator in the OECD by 2012. They have focused on compliance, cost efficiency and effectiveness, collection losses, e-filing, helpline services, taxpayer perceptions of the tax agency and tax gap measurement and management. Other good country examples are Norway, New Zealand, Australia, Italy, Canada and Korea. A summary rank order of top OECD countries, based on OECD data has been provided below[16] and these examples may be used for benchmarking.

- Tax compliance rank order: Norway (100 per cent), Sweden (96 per cent), Netherlands (92 per cent), Ireland (88 per cent)
- Cost effectiveness rank order: Italy (100 per cent), Norway (95 per cent), Sweden (90 per cent)
- e-filing rank order: Italy (100 per cent), Australia (95 per cent), Iceland (91 per cent), Korea (88 per cent)
- Telephone service helpline rank order: Ireland (100 per cent), UK (90 per cent), New Zealand (80 per cent)

13.6.4.2 Fiscal discipline: Mobilisation of resources will not be enough without macroeconomic discipline. Economic policy must be designed to contain inflation and the fiscal deficits. The focus should be on mobilising domestic sources and curtailing public debt. Fiscal discipline is required at all times so as to keep deficit financing small enough to avoid causing inflation, excessive accumulation of public debt and to ensure that government borrowing does not crowd out private sector investment. Government expenditure may be revisited and better rationalised.

13.6.5 The key point above is the importance of capital formation, both physical and human. And on the central role of the government in meeting these investment needs on the scale done by countries such as Korea, Taiwan and China and also the expansion of scope for economically and ecologically efficient taxation to meet these needs.

13.7 Conclusion

13.7.1 Structural impediments in factor markets may prove to be one of the major bottlenecks in Kerala's movement towards a knowledge economy. This chapter identified some of these rigidities and set out a few proposals to address them. A major recommendation on the labour front is to move away from a passive employment policy to a comprehensive, proactive employment policy. This policy will be based on the principles of improving employability, labour information systems, labour market management and creating a unified social security system for both formal and informal sector employees and self-employed workers. In this context, it highlights the employment policy of China and the Danish practice of 'flexicurity' in labour markets.

13.7.2 Land acquisition needs to be placed in the broader perspective of land management. A Spatial Policy for the State with due preservation of its eco-sensitive assets is proposed. Also suggested are alternative models of land acquisition for development purposes. One of the major recommendations is that land must be acquired by the government at the rate that reflects its actual real value.

13.7.3 Finally, this document emphasises the importance of augmenting the domestic resource base for addressing capital market bottlenecks. It proposes that a fiscal architecture be designed for the State based on economic and non-economic factors to assess the revenue generation capacity of the economy through various sources. Attempts should be directed at curbing consumption and mobilising resources through savings. Tapping remittances is an additional advantage that Kerala possesses. Further, it is important to improve the culture of paying taxes. In addition to finding innovative ways of doing that, specific country references of best practices in both operational areas and organisation/management tasks may also be studied and adapted to local conditions. Finally, it is also crucial to use the available funds more prudently. There needs to be a strong move to maintain fiscal discipline.

Appendix A13.1
Projections for Land Use in 2030

NCAER predicts the land use patterns for Kerala in a business as usual scenario. NCAER followed the methodology set by Raveendran et al.[1], which used it to predict land use in Tamil Nadu for the state's perspective plan. NCAER predicts land use patterns for the agricultural sector, forests and non-agricultural sector. The non-agricultural sector, following the Raveendran et al. paper, comprises houses, schools, roads and industry. It however departs from the original paper in the sense that although Kerala agriculture is dominated by plantation crops, their land use is not predicted. This is because of unavailability of numbers. Therefore, for the agricultural sector, the focus is exclusively on paddy, banana, tapioca and vegetables. The argument is that these are crops required for food security of Kerala and retaining its unique culinary habits.

Agricultural Sector

Supply projections for rice, tapioca and banana are taken from the chapter on agriculture. The yield for rice is assumed as 1.93 tonnes per hectare. For tapioca and bananas it is assumed to be 514.8 thousand tonnes per square kilometre. For vegetables, no supply scenarios are projected because of paucity of numbers. From the demand scenarios, we assumed 36.6 per cent self-sufficiency. In this way, we predict the supply scenarios. In 2010, 434 sq km was being used to produce vegetables. Compound annual growth rates of the supply of vegetables are used to predict land use for vegetables. Together, the land use is predicted for paddy, tapioca and banana and vegetables.

Forests

We assume the coverage of forests increases to 33 per cent by 2030 to maintain the ecological balance of Kerala as recommended by the Ministry of Environment and Forests.

Non-Agricultural Use

Land use calculations are done for houses, schools, roads and industry. For houses, we started with the Census 2011 number and then used the population growth numbers used in the Kerala PP to predict the number of houses. There is a positive growth rate till 2022 as population is growing till then and then declines thereafter. We assumed that each house needs 2 cents of land. Using that number we calculated the land needed for houses in Kerala till 2030.

School enrollment information is available for government and private schools. For schools, using 2003 and 2011 CAGR, we predicted the number of schools and enrollments till 2030. Plus with both the schools and enrollment date, one can calculate the average enrollment in government and private schools. Using the NCAER population projections and the proportion of school-going children, one can calculate the enrollments in government and private schools. Since we know the enrolments per schools, we use that ratio to calculate the number of schools. Assuming that 4 hectares is required for each school, land use is predicted in hectares and thereby converted to sq km.

For roads, we predict road length. Using Raveendran et al., prescribed length for various types of road — National Highways, State Highways, major district and rural roads, and their current shares, we calculated the area required for roads. We took the number of factories and MSMEs and use CAGR to predict their number over time. Using Raveendran et al, we then calculated the area required for factories.

Since the numbers are based on a number of assumptions because of paucity of data, the table below is supposed to be only indicative of a business as usual scenario. This indicates that the share of non-agricultural land use will increase from 8.5 per cent in 2011 to 14.7 per cent by 2030. Share of land devoted only to paddy, tapioca, banana and vegetables is predicted to reduce to 6.7 per cent from 9.8 per cent in 2011.

Agricultural Land Use, Kerala: 2011 to 2030 (km^2)

Year	Agriculture (Paddy, Tapioca, Banana & vegetables)	Forests	Houses	Schools	Industry	Roads	Non-Agricultural Use
2011	3,326.5	9,424.1	907.9	515.7	24.1	1,416.2	2864.0
2020	2,748.2	10,204.9	1071.7	548.6	29.1	2,350	3,999.5
2030	2,279.7	11,161	1048.2	475.8	35.8	3,423	4,982.9

Source: NCAER Computations

Appendix A13.2
Investment (Rs Lakh) Requrement for Capital Foprmantion Under Scenario 1: When ICORs Remain Constant over The PP Period

Sectors	2012	2013	2014	2015	2016
Agriculture Forestry & Fishing	2,06,120	2,11,192	2,16,416	2,21,798	2,27,342
Mining & Quarrying	71,935	76,251	80,826	85,676	90,816
Manufacturing	12,42,978	13,42,416	14,49,810	15,65,794	16,91,058
Electricity, Gas & Water Supply	1,53,819	1,61,283	1,69,102	1,77,293	1,85,873
Construction	4,96,159	5,35,852	5,78,720	6,25,017	6,75,019
Trade, Hotels & Restaurants	5,88,220	6,39,666	6,95,801	7,57,063	8,23,933
Railways, Transport & other means	7,43,885	8,10,851	8,84,011	9,63,947	10,51,300
Banking, Financial services & Real estate	15,61,291	16,97,510	18,46,105	20,08,228	21,85,144
Public administration	5,92,245	6,39,625	6,90,795	7,46,059	8,05,743
Other services	12,06,252	13,38,940	14,86,223	16,49,708	18,31,175
Total investment	68,62,904	74,53,587	80,97,809	88,00,583	95,67,403
Total income(GDP)	2,21,32,130	2,38,32,466	2,56,80,628	2,76,90,057	2,98,75,453
GDP Growth rate	7.6	7.7	7.8	7.8	7.9
Investment /GDP ratio	31.0	31.3	31.5	31.8	32.0

Sectors	2017	2018	2019	2020	2021
Agriculture Forestry & Fishing	2,69,482	2,76,312	2,83,329	2,90,538	2,97,946
Mining & Quarrying	79,464	83,437	87,609	91,990	96,589
Manufacturing	23,25,205	25,57,725	28,13,498	30,94,847	34,04,332
Electricity, Gas & Water Supply	2,09,650	2,20,401	2,31,694	2,43,557	2,56,019
Construction	9,28,151	10,20,966	11,23,062	12,35,368	13,58,905
Trade, Hotels & Restaurants	9,67,496	10,59,192	11,59,863	12,70,402	13,91,793
Railways, Transport & other means	11,41,769	12,45,911	13,59,896	14,84,683	16,21,326
Banking, Financial services & Real estate	25,69,037	28,12,166	30,79,040	33,72,017	36,93,690

Public administration	7,54,377	8,07,184	8,63,687	9,24,145	9,88,835
Other services	20,32,605	22,56,191	2,504,372	27,79,853	30,85,637
Total investment	1,12,77,235	1,23,39,484	1,35,06,050	1,47,87,401	1,61,95,073
Total income(GDP)	3,24,26,175	3,52,16,733	3,82,70,522	4,16,13,265	4,52,73,245
GDP Growth rate	8.5	8.6	8.7	8.7	8.8
Investment /GDP ratio	34.8	35.0	35.3	35.5	35.8

Sectors	2022	2023	2024	2025	2026
Agriculture, Forestry & Fishing	2,82,021	2,88,394	2,94,915	3,01,589	308,418
Mining & Quarrying	80,362	83,577	86,920	90,397	94,012
Manufacturing	35,41,356	38,77,785	42,46,175	46,49,562	50,91,270
Electricity Gas & Water Supply	2,42,051	2,53,215	2,64,887	2,77,091	2,89,851
Construction	14,13,601	15,47,893	16,94,943	18,55,963	20,32,279
Trade Hotels & Restaurants	13,66,558	14,84,967	16,13,907	17,54,327	19,07,262
Railways, Transport & other means	15,68,421	16,98,453	18,39,666	19,93,050	21,59,686
Banking, Financial services & Real estate	36,38,059	39,53,672	42,97,366	46,71,669	50,79,343
Public administration	8,98,427	9,52,333	10,09,473	10,70,041	11,34,243
Other services	27,51,827	29,99,492	32,69,446	35,63,696	38,84,429
Total investment	1,57,82,684	1,71,39,781	1,86,17,698	2,02,27,385	2,19,80,794
Total income(GDP)	4,88,93,409	5,28,25,501	5,70,97,208	6,17,38,709	6,67,82,906
GDP Growth rate	8.0	8.0	8.1	8.1	8.2
Investment /GDP ratio	32.3	32.4	32.6	32.8	32.9

Sectors	2027	2028	2029	2030	2031
Agriculture, Forestry & Fishing	2,77,650	2,83,087	2,88,632	2,94,286	3,00,051
Mining & Quarrying	72,625	74,803	77,047	79,359	81,740
Manufacturing	49,42,551	53,62,668	58,18,495	63,13,067	68,49,678
Electricity Gas & Water Supply	2,76,228	2,88,059	3,00,394	3,13,256	3,26,666
Construction	19,72,915	21,40,613	23,22,565	25,19,983	27,34,182
Trade Hotels & Restaurants	18,83,469	20,35,624	22,00,407	23,78,879	25,72,193
Railways, Transport & other means	20,80,769	22,39,832	24,11,638	25,97,246	27,97,807
Banking, Financial services & Real estate	50,11,536	54,16,271	58,54,555	63,29,210	68,43,294
Public administration	9,92,463	10,42,086	10,94,190	11,48,900	12,06,345
Other services	42,34,027	46,15,090	50,30,448	54,83,188	59,76,675
Total investment	2,17,44,233	2,34,98,134	2,53,98,371	2,74,57,372	2,96,88,630
Total income(GDP)	7,17,95,061	7,72,10,277	8,30,61,951	8,93,86,291	9,62,22,557
GDP Growth rate	7.5	7.5	7.6	7.6	7.6
Investment /GDP ratio	30.3	30.4	30.6	30.7	30.9

Source: Computations by NCAER

APPENDIX A13.3
Investment (Rs lakh) Requirement for Capital Formation under scenario 1: When ICORs Increase over the PP Period

Sectors	2012	2013	2014	2015	2016
Agriculture, Forestry & Fishing	2,07,754	2,14,542	2,21,566	2,28,834	2,36,358
Mining & Quarrying	72,014	76,419	81,094	86,054	91,317
Manufacturing	12,50,693	13,59,081	14,76,806	16,04,669	17,43,539
Electricity, Gas & Water Supply	1,54,244	1,62,173	1,70,502	1,79,249	18,8437
Construction	5,01,925	5,48,305	5,98,895	6,54,070	7,14,240
Trade, Hotels & Restaurants	5,95,573	6,55,658	7,21,893	7,94,916	8,75,429
Railways, Transport & other means	7,55,612	8,36,403	9,25,771	10,24,625	11,33,967
Banking, Financial services & Real estate	15,75,879	17,29,194	18,97,729	20,83,014	22,86,732
Public administration	5,96,452	6,48,712	7,05,516	7,67,257	8,34,361
Other services	12,20,311	13,70,151	15,38,190	17,26,618	19,37,889
Total investment	69,30,457	76,00,639	83,37,962	91,49,306	1,00,42,268
Total income(GDP)	2,21,32,130	2,38,32,466	2,56,80,628	2,76,90,057	2,98,75,453
GDP Growth rate (%)	7.6	7.7	7.8	7.8	7.9
Investment /GDP ratio	31.3	31.9	32.5	33.0	33.6

Sectors	2017	2018	2019	2020	2021
Agriculture, Forestry & Fishing	2,82,306	2,91,652	3,01,306	3,11,277	3,21,576
Mining & Quarrying	79,990	84,082	88,383	92,903	97,655
Manufacturing	24,11,798	26,68,854	29,53,202	32,67,732	36,15,635
Electricity, Gas & Water Supply	2,13,120	2,24,657	2,36,807	2,49,604	2,63,082
Construction	9,92,865	11,04,016	12,27,468	13,64,571	15,16,819
Trade, Hotels & Restaurants	10,40,058	11,51,871	12,75,849	14,13,322	15,65,768
Railways, Transport & other means	12,48,439	13,81,511	15,28,794	16,91,812	18,72,257
Banking, Financial services & Real estate	27,13,403	29,96,396	33,09,389	36,55,584	40,38,527
Public administration	7,86,529	8,47,320	9,12,768	9,83,226	10,59,076
Other services	21,74,747	24,40,265	27,37,883	30,71,450	34,45,273
Total investment	1,19,43,255	1,31,90,624	1,45,71,849	1,61,01,482	1,77,95,670
Total income(GDP)	3,24,26,175	3,52,16,733	3,82,70,522	4,16,13,265	4,52,73,245
GDP Growth rate (%)	8.5	8.6	8.7	8.7	8.8
Investment /GDP ratio	36.8	37.5	38.1	38.7	39.3

Sectors	2022	2023	2024	2025	2026
Agriculture, Forestry & Fishing	3,06,625	3,15,841	3,25,322	3,35,076	3,45,109
Mining & Quarrying	81,338	84,683	88,167	91,793	95,568
Manufacturing	37,83,146	41,66,613	45,88,797	50,53,592	55,65,285
Electricity, Gas & Water Supply	2,49,396	2,61,597	2,74,387	2,87,793	3,01,845
Construction	15,94,298	17,63,744	19,50,997	21,57,909	23,86,527

Trade, Hotels & Restaurants	15,54,460	17,07,712	18,76,167	20,61,335	22,64,874
Railways, Transport & other means	18,34,637	20,12,453	22,07,524	24,21,535	26,56,336
Banking, Financial services & Real estate	40,18,547	44,05,011	48,29,103	52,94,500	58,05,241
Public administration	9,68,628	10,33,511	11,02,692	11,76,455	12,55,099
Other services	31,04,630	34,19,007	37,64,823	41,45,193	45,63,534
Total investment	1,74,95,705	1,91,70,173	2,10,07,979	2,30,25,180	2,52,39,417
Total income(GDP)	4,88,93,409	5,28,25,501	5,70,97,208	6,17,38,709	6,67,82,906
GDP Growth rate	8.0	8.0	8.1	8.1	8.2
Investment /GDP ratio	35.8	36.3	36.8	37.3	37.8

Sectors	2027	2028	2029	2030	2031
Agriculture, Forestry & Fishing	3,12,882	3,21,255	3,29,836	3,38,631	3,47,645
Mining & Quarrying	73,907	76,207	78,578	81,023	83,544
Manufacturing	54,33,398	59,28,522	64,68,561	70,57,573	76,99,982
Electricity, Gas & Water Supply	2,88,420	3,01,568	3,15,310	3,29,675	3,44,689
Construction	23,39,742	25,63,495	28,08,382	30,76,378	33,69,644
Trade, Hotels & Restaurants	22,60,162	24,68,195	26,95,498	29,43,862	32,15,242
Railways, Transport & other means	25,88,815	28,19,866	30,71,710	33,46,244	36,45,540
Banking, Financial services & Real estate	57,71,585	62,88,927	68,53,156	74,68,537	81,39,727
Public administration	11,05,261	11,67,927	12,34,096	13,03,962	13,77,729
Other services	50,23,600	55,29,514	60,85,801	66,97,431	73,69,859
Total investment	2,51,97,773	2,74,65,475	2,99,40,928	3,26,43,316	3,55,93,599
Total income(GDP)	7,17,95,061	7,72,10,277	83,06,1951	8,93,86,291	9,62,22,557
GDP Growth rate	7.5	7.5	7.6	7.6	7.6
Investment /GDP ratio	35.1	35.6	36.0	36.5	37.0

Source: Computations by NCAER

Appendix A13.4
Ratio of Savings and Investment to GDP at All India level
(at current market prices, in %)

Particulars	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10PE	2010–11QE
Gross domestic saving	32.4	33.4	34.6	36.8	32	33.8	32.3
Public sector	2.3	2.4	3.6	5	1	0.2	1.7
Private sector	30.1	31	31	31.8	31.1	33.6	30.6
Household sector	23.6	23.5	23.2	22.4	23.6	25.4	22.8
Financial saving	10.1	11.9	11.3	11.6	10.1	12.9	10
Saving in physical assets	13.4	11.7	11.9	10.8	13.5	12.4	12.8
Private corporate sector	6.6	7.5	7.9	9.4	7.4	8.2	7.9
Gross capital formation							
(investment)	32.8	34.7	35.7	38.1	34.3	36.6	35.1

Public sector	7.4	7.9	8.3	8.9	9.4	9.2	8.8
Private sector	23.8	25.2	26.4	28.1	24.8	25.2	24.9
Corporate sector	10.3	13.6	14.5	17.3	11.3	12.7	12.1
Household sector	13.4	11.7	11.9	10.8	13.5	12.4	12.8
Gross fixed capital formation	28.7	30.3	31.3	32.9	32.3	31.6	30.4
Stocks	2.5	2.8	3.4	4	1.9	2.7	3.3
Valuables	1.3	1.1	1.2	1.1	1.3	1.8	2.1
Saving-investment gap	−0.4	−1.3	−1.1	−1.3	−2.3	−2.8	−2.8
Public sector	−5.1	−5.5	−4.7	−3.9	−8.5	−9	−7.1
Private sector	6.3	5.8	4.6	3.7	6.3	8.5	5.8

Source: NCAER calculations based on CSO

Appendix A13.5
ICORs over the Perspective Plan: Two scenarios

Year	Constant ICORs	Increasing ICORs				
	2012–2031	2012–16	2017–21	2022–26	2027–31	2012–2031
Agriculture, Forestry & Fishing	4.88	4.99	5.19	5.38	5.57	5.28
Mining & Quarrying	11.63	11.67	11.73	11.79	11.86	11.76
Manufacturing	8.47	8.63	8.90	9.16	9.42	9.03
Electricity, Gas & Water Supply	18.52	18.67	18.93	19.18	19.44	19.05
Construction	2.62	2.71	2.86	3.01	3.17	2.94
Trade, Hotels & Restaurants	1.83	1.90	2.02	2.13	2.25	2.08
Railways	7.30	7.48	7.77	8.06	8.35	7.92
Transport by other means	2.73	2.86	3.08	3.30	3.52	3.19
Storage	5.65	5.69	5.75	5.81	5.87	5.78
Communication	1.99	2.10	2.27	2.44	2.62	2.36
Banking & Insurance	0.35	0.42	0.53	0.64	0.75	0.58
Real Estate & Business Services	7.35	7.52	7.81	8.09	8.38	7.95
Public administration	7.46	7.62	7.89	8.15	8.42	8.02
Other services	4.48	4.64	4.90	5.16	5.43	5.03
Implicit ICOR	4.07	4.19	4.39	4.55	4.76	4.47
Investment /GDP ratio	31.52	32.47	38.07	36.79	36.05	35.84

Source: NCAER

Appendix A13.6
Sectoral Shares in Investment Based on Increasing ICORs Assumption in Perspective Plan Scenario (%)

Year	2012–16	2017–21	2022–26	2027–31	2012–2031
Agriculture, Forestry & Fishing	2.67	2.08	1.55	1.11	1.85
Mining & Quarrying	0.97	0.61	0.42	0.26	0.57

Manufacturing	17.71	20.26	21.84	21.60	20.35
Electricity, Gas & Water Supply	2.05	1.63	1.31	1.05	1.51
Construction	7.18	8.42	9.29	9.38	8.57
Trade, Hotels & Restaurants	8.66	8.75	8.93	9.00	8.84
Railways	1.07	1.14	1.23	1.31	1.19
Transport by other means	5.28	5.42	5.60	5.71	5.50
Storage	0.06	0.06	0.06	0.06	0.06
Communication	4.69	3.87	3.61	3.17	3.84
Banking & Insurance	0.74	0.92	1.19	1.30	1.04
Real Estate & Business Services	22.02	21.79	21.80	21.58	21.80
Public administration	8.46	6.27	5.25	4.13	6.03
Other services	18.45	18.79	17.92	20.32	18.87

Source: NCAER

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[4] *Elasticity refers to responsiveness. Elasticity of employment to GDP to 0.2 means that if GDP goes up by one per cent, employment will go up barely by 0.2. This is considered as not very responsive to increases in GDP and labelled as "jobless growth" i.e. growth is taking place without commensurate increase in jobs. This clearly is not welfare improving for the citizens of Kerala.*

[5] *Notably, at the all-India level, agricultural land as percentage of land area has shown no decline in India during 1970−2007.*

[6] *Innovation for Quality and Relevance–The Higher Education Summit 2007, Federation of Indian Chambers of Commerce and Industry, New Delhi reported in the India Labour Report, 2012 by TeamLease Services & Indian Institute of Job Training.*

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[12] *Ghosh, P.K., Roy, P.K. and C. Meattle. 2013. Savings. Macrotrack. 15(6):2. June.*

[13] *It is sad to recollect today that in 1994 just as the State Development Bank of China was opened, the World Bank wrote to the Chinese authorities pointing out the sorry state of performance of development banks and strongly advised against the setting of the State Development Bank. SDB however went from strength to strength and played a key role in financing China's infrastructure development.*

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Chapter 14

DIASPORA AND MIGRATION POLICY

Chapter 14

Diaspora and Migration Policy

14.1 The Background

14.1.1 While migration has long been an inherent characteristic of societies, the last two decades have witnessed the mass mobility of populations around the world. The total number of international migrants has increased over the past 10 years, from an estimated 150 million in 2002 to 214 million persons in 2010.[1] In other words, one out of every 33 people in the world was a migrant in 2010. Remittances have also increased exponentially; up from US$132 billion in 2000 to an estimated US$514 billion in 2012, even with a slight decline due to the current economic crisis. The actual amount, including the unrecorded amount flowing through formal and informal channels, is believed to be significantly large. These remittances offer a vital lifeline for millions of people and can play a major role in an economy's take-off. There is, therefore, a need for a 'diaspora strategy' to put in place legal mechanisms to manage the international movement of people and remittances for the mutual benefit of society, migrants and the state. The term 'diaspora' has been used to describe people who have migrated from their countries of origin.

14.1.2 Diaspora strategies although traceable back to the 1960s and earlier, have gained renewed attention worldwide in recent years. A diaspora strategy is an explicit and systematic policy initiative or series of policy initiatives aimed at developing and managing relationships with a diaspora. Traditionally, diaspora strategy is conceived as a national policy. But in recent years, different tiers of the state are actively involved in formulating diaspora strategy.

14.1.3 India is the largest recipient of remittances in the world, receiving $69 billion in 2012, which represents over 4 per cent of India's Gross National Income. India is followed by China (US$60 billion), the Philippines (US$24 billion), Mexico (US$23 billion) and Nigeria and Egypt (US$21 billion each).[2] Within India, the major proportion of the expatriate population comes from Kerala. The number of emigrants from Kerala living abroad in 2011was estimated to be 2.28 million, up from 2.19 million in 2008, 1.84 million in 2003 and 1.36 million in 1998. In 2011, remittances by the non-resident Indian (NRIs) population from Kerala were Rs 49,965crores (as discussed in Chapter 1). The remittance-Gross State Domestic Product (GSDP) ratio for the State is more than 22 per cent. These remittances by NRIs from Kerala form the backbone of the State's economy, and have remained so for the last three to four decades. The role of the diaspora in the development of Kerala, therefore, becomes increasingly important.

14.1.4 The increasing migration out of the State since the mid-1970s has given rise to issues related to return and in-migration. The global economic recession has accentuated the pace of return migration from labour receiving countries and it is likely to increase with recent efforts by some countries to localise employment. The complexities involved with the 'return migrant' and 'in-migrants' in labour sending societies are multi-fold. Thus, the policy issues are diverse and a diaspora strategy is, perhaps, best thought of as an overarching framework of providing a level of coherence to the range of initiatives.

14.2 Diaspora in Kerala

14.2.1 Out-migrants

14.2.1.1 Trends and patterns of migrants

a) Kerala was a net in-migrating state until the 1930s, when the onset of an economic depression reversed the trend. Increasing educational accomplishments and better health status made it possible for young people to seize job opportunities outside Kerala, primarily in other states. Increasing population pressures due to falling mortality rates further contributed to this trend. The lopsided growth process post Kerala's formation helped the out-migration phenomenon continue.

b) Initially, a significant part of this migration was to other parts of India. However, in the 1970s, following the oil boom in West Asia, emigration of unskilled or semi-skilled persons, with basic educational qualifications and training, began on a massive scale. Out-migrants thus fall into two categories: emigrants (EMI) or usual residents of a household who migrated out of Kerala and live outside India and out-migrants (OMI) or usual residents of a household who migrated out of Kerala and live outside Kerala but within India. According to a survey conducted by the government (Table 14.1) in 1980, 5.1 lakh Keralites were working outside the State: 3 lakh in other states and 2.1 lakh outside the country, particularly in the Gulf countries (1.87 lakh). The number of migrants increased to 6.8 lakh (34 per cent increase) in 1986. Of this, 3.3 lakh (61 per cent increase) were working in foreign countries (3 lakh in the Gulf countries alone) and 3.5 lakh were working in other states. Over time, the patterns reversed and the increase in the number of emigrants (EMI) outpaced that of those working within India (OMI). In 2011, corresponding to 100 households in the State, there were 29.1 emigrants and 11.9 out-migrants.[3]

Table 14.1
Trends and Patterns on Migrants from Kerala 1980-2011

Year	Emigrants (Lakh)	Migrants to other states within India (Lakh)	Total (Lakh)	Percentage share of emigrants in total migrants
1980	2.1	3	5.1	41.2
1986	3.3	3.5	6.8	48.5
1998	13.6	6.91	20.51	66.3
2003	18.4	11.15	29.55	62.3
2008	21.9	9.14	31.04	70.6
2011	23.3	9.31	32.61	71.4

Sources: Sekhar, T.V. 1993. Return migrants in Rural Kerala. PhD thesis submitted to ISEC Bangalore and Kerala Migration Surv

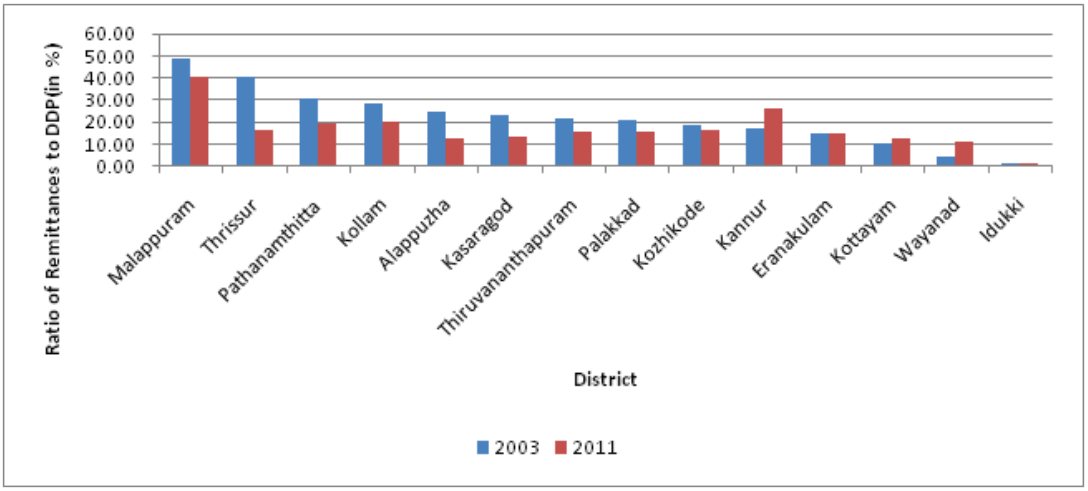
14.2.1.2 Remittances

a) Remittances started swelling in the late 1980s. Between 1991 and 2011, remittances grew at a trend growth rate of 16.7 per cent. The ratio of remittances to the GSDP of Kerala increased steadily from 12 to 21 per cent during the same period. Average annual remittances per household were Rs 57,227 in 2008 and Rs 63,315 per household in 2011. The inflow of remittances has been larger than the GSDP contribution of the whole of the agriculture and industry sectors and some of the services sub-sectors. The ratio of remittances to the sectoral GSDP turns out to be greater than one for all the sectors except 'other services' (mainly health

and education) and it hovered around one for 'trade, hotels and restaurants'. This indicates the potential of remittances as a driver of economic development.

Growth in remittances has been accompanied by spatial diversification of the origin of migrants within the State. The districts that had a low share in remittances in 2003 performed better in 2011, as shown in figure 14.1. The largest number of emigrants is from Malappuram district, a position it has retained from the beginning.[4] However, its share of the pie has shrunk a bit in recent years, from 21.8 per cent in 1998 to 17.9 per cent in 2011. The phenomenon spread to other centres such as Pathanamthitta, Thrissur, Kannur and Kasaragod.

Figure 14.1
Ratio of remittances to District Domestic Product by Districts: 2003 and 2011 (%)



Note: DDP stands for District Domestic Product

Sources: Kerala Directorate of Economics & Statistics and Zachariah, K.C. and S.I. Rajan. 2012. Inflexion in Kerala's Gulf Connection: Report on Kerala Migration Survey 2011. Centre for Development Studies Working Paper No. 450. Centre for Development Studies, Thiruvananthapuram

b) Acceleration in the inflow of remittances in the post-reform period was an outcome of the reforms in the foreign currency management system. Prior to the early 1990s, the rupee's effective rate was placed on a controlled floating basis. Under this system, the rupee was overvalued due to India's emphasis on import substitution discouraging migrants from remitting foreign exchange to the country through official channels. In 1993, this system was completely replaced by the system of market-determined exchange rate. In 1998, the Foreign Exchange Regulation Act was also repealed, which relaxed restrictions on foreign exchange dealings and, hence, provided a major thrust to remittances. Another reason for a rise in remittances was the improvement in the profile of migrants. The proportion of degree holders among migrants went up from 10.8 per cent in 1998 to 20 per cent in 2008.[5] There was a decline in 2011, but that can be explained by the weak external economy. Zachariah and Rajan (2010) show that the proportion of migrants with secondary-plus education has increased, but there is no consistent linear trend. In general, the various Migrant Surveys from 1998 have shown consistently that emigrants are better qualified than the average population within Kerala.

14.2.2 Return migrants

14.2.2.1 Return migrants have become a demographically, politically and economically significant component of Kerala's population. A flow of return emigrants to the State started in the 1980s following the completion of some major projects, increasing competition from migrants from other Asian countries, fall in wages and restrictive policies towards migrant workers by the governments of some Gulf countries. By 1986 almost 40,000 migrants had returned. By 1998, the number increased to 7.4 lakh. Return of emigrants from the Gulf countries assumed large dimensions in Kerala in the early 1990s (Table 14.2).

14.2.2.2 According Zachariah and Rajan (2011)[6], one out of every 29 persons in Kerala, one out of every 22 adults in Kerala (15+ years), one out of every 19 people in the working age population of Kerala (15−59 years) and one out of every 9 working age males in Kerala are return emigrants. Corresponding to every 100 households in Kerala, there are 16 return emigrants; 12 of them have at least one return emigrant. About 1.3 per cent households have more than one return emigrant. At present, there are roughly over 13 lakh return emigrants in Kerala compared to about 7.4 lakh in 1998. The number of return emigrants is expected to increase to about 16 lakh by 2015.

Table 14.2
Number of Migrants & Return-Migrants in Selected Years between 1980−2011 (in lakh)

Year	Return Emigrants	Return Migrants from other states within India	Total
1980	0.0	-	0.0
1986	0.4	-	0.4
1998	7.4	9.6	17.0
2003	8.9	9.9	18.8
2008	11.6	6.9	18.5
2011	11.5	5.1	16.6

Source: Zachariah,K.C. and I.S. Rajan. 2012. Inflexion in Kerala's Gulf Connection: Report on Kerala Migration Survey 2011.CDS Working Paper No. 450. Centre for Development Studies, Thiruvananthapuram. September

14.2.2.3 Malappuram, which has the highest number of emigrants (15.3 per cent), has the largest number of return emigrants as well (19.0 per cent). Thiruvananthapuram is the second largest district with respect to emigration and also return emigration. The propensity to return is greater in Thiruvananthapuram than in Malappuram when return emigrants as a percentage of the total number of emigrants is measured. On that basis, it appears that the preferred districts for resettlement of Kerala's return emigrants are (in order of importance) Thiruvananthapuram, Malappuram, Thrissur, Kollam and Ernakulam. The share of Muslims in emigrants is relatively higher; the propensity to return is also highest among Muslims. Return emigrants as a proportion of emigrants are about 56 per cent among Muslims compared to 47 per cent among Hindus and Christians.[7]

14.2.3 In-migration

14.2.3.1 Despite the high unemployment rate in the State and migration out of the State, Kerala is also witnessing a large inflow of migrant labour, from different parts of the country, in recent years. There are no statistics available on in-migration. Unlike China, migrants do not have to be registered in India, either in the place of origin or in their destination. In the absence of such a system, the two major sources of data on internal migration in India are the Census 2001 and the National Sample

Survey of 1999-2000 (NSS). But they capture only permanent and semi-permanent migration. They fail to fully capture the short duration migrants. One way of categorising migrants in the Census of India is by place of birth. According to the 2001 census, 1.3 per cent of Kerala's population were migrants. While 67.8 per cent of those who migrated to Kerala from other states were born in Tamil Nadu, 13.5 per cent were born in Karnataka. Other regions from where people have migrated to Kerala include Maharashtra (4.5 per cent), Andhra Pradesh (2.3 per cent), Puducherry (2.1 per cent), Uttar Pradesh (1.4 per cent) and West Bengal (1 per cent). Labourers from states as far as Bihar and Odisha also recorded their presence.

14.2.3.2 'Domestic Migrant Labour in Kerala', a study completed in February 2013 (by D. Narayana and C. S. Venkiteswaran, Gulati Institute of Finance and Taxation), adopted a unique train-based survey of Domestic Migrant Labour (DML) to estimate their stock and the annual inflow. The train survey covered all 63 long-distance trains entering Kerala through Kasaragod and Palakkad. The count of DML in the unreserved coaches of the trains yielded a number 1,910 per day of whom 1,265 were returning after a home visit and 646 were newcomers. These counts generated estimates of the stock of DML of over 25 lakh and annual arrivals of 2.35 lakh. The remittances to their home states by the DML are over Rs 17,500 crore a year.

14.2.3.3 Over 75 per cent of the DML come from five states — Uttar Pradesh, Assam, West Bengal, Bihar and Odisha — and is an almost entirely male workforce, aged 18 to 35 years. While friends and relatives is the main channel of migration, they mostly work under contractors and get employment for six to seven days a week. Though 60 per cent of them are employed in the construction sector, their presence is also felt in hospitality, manufacturing, trade and agriculture. The skillsets range from unskilled to skilled carpentry, masonry and the like. Over 70 per cent of them earn wages above Rs 300 per day. They remit Rs 70,000 per person annually, which are almost entirely through banking channels.

14.2.3.4 Higher wages for unskilled labour in the State, large opportunities for employment for unskilled labour and their shortage, led to the massive influx of migrant labour to the State. With signs of rapid growth of the State's economy and the increase in activities, particularly in the infrastructure and construction sectors, in-migration is expected to grow faster in the coming years.

14.3 State Government Initiatives

14.3.1 At the national level, India has the Ministry of Overseas Indian Affairs dedicated to matters relating to Indian-born migrants who live in over 110 countries worldwide. The Ministry operates with various instruments of engagement, including consulting the diaspora through worldwide annual meetings; encouraging investments from overseas; fostering philanthropy; promoting knowledge transfer and knowledge networks; supporting overseas education; and cultivating and building social and cultural identities. The Indian government has already granted 'overseas citizenship' to people of Indian origin. In a significant move, NRIs have recently been granted 'voting rights'.

14.3.2 In order to ensure the welfare of Non-Resident Keralites (NRKs), redress their grievances and safeguard their rights, the Government of Kerala set up the Department of Non-Resident Keralites Affairs (NORKA) in 1996. Since then, NORKA has been playing a vital role in safeguarding their interests. Norka-Roots is the field agency of the Department of NORKA. Set up in 2002, it acts as an interface between Non-Resident Keralites and the Government of Kerala and serves as a forum for addressing the NRKs' problems and rehabilitating returnees. The initiatives taken by NORKA can be classified into three broad categories: funding, cultural exchange and professional services.

14.3.3 Funding schemes

- The Chairman Fund offers financial assistance to deserving NRKs with the approval of the board.
- Karunyam extends financial assistance to legal heirs for repatriation of the mortal remains of NRKs who pass-away abroad or in India, but outside Kerala.
- Pravasi Welfare Fund under the NRK Welfare Act 2008 ensures relief, pension and other benefits to NRKs. The age limits are 18 to 55 years.
- Santhwana financial assistance is a distress relief fund for NRK returnees, which offers financial assistance of Rs 10,000 to 20,000 to meet the medical treatment expenses of the NRK or his/her dependent family members; death compensation to family members of the NRK; marriage expenses of the daughter of the NRK returnee; and assistance to buy artificial limbs, crutches, wheelchair or other aids to overcome the physical disability of the NRK or his or her dependent.

14.3.4 Cultural exchange

- Promotion of Malayalam language and culture: To encourage the usage of Malayalam among the Keralite diaspora, NORKA has set up a Web site http://www.entaymalayalam.org to enable people to learn Malayalam online.
- Cultural exchange programmes between people in Kerala and Keralites settled abroad: It aims at imparting more information about Kerala to third generation NRKs.
- Promotion of regional development with the active participation of NRKs: To ensure that NRKs contribute their bit to develop their native villages, NORKA has launched a scheme called 'My Village, My Dream'.
- Organise meets for NRKs: Norka-Roots has conducted an annual meet of NRKs called 'Samavayam' in 2001, 2002 and 2005. The 'Marunadan Malayalee Meet' (Samanvayam) was held in 2003 and 2005. Similarly, a meet for returnees (Samagamam) was held in 2002 and 2005. 'Keraleeya Pravasi Sangamam' was held in 2008. These meets have given a new insight into the problems of NRKs, which will help in the formulation of welfare programmes for them.
- Recognition of Malayalee Associations: Norka-Roots grants recognition to Malayalee Associations, which have existed for at least three years, functioning overseas and in other states in India.
- Heritage Village: Heritage Village, a new initiative for NRKs is proposed to be set up at Kappil near Varkala, with the active involvement of NRKs and other departments of the state government.
- International school: An international school of global standards for the children of NRKs is being planned by Norka-Roots.

14.3.5 Professional services

- Certificate authentication centres: Three attestation centres have been set up to attest the educational certificates of job seekers going abroad. The Ministry of Human Resource Development, the Ministry of External Affairs and required embassy attestations are obtained from a single office.
- Pre-departure orientation programme: This programme is intended to make overseas job aspirants aware of the general job situation abroad and to impart essential information related to visas, emigration rules, employment contracts, travel formalities and so on.
- Manpower recruitment: Norka-Roots obtained a recruitment license in 2006 from the Ministry of Overseas Indian Affairs to recruit manpower from India for employment in other countries.

- Norka News: Norka-Roots publishes a quarterly newsletter, in colour, with a view to propagate the activities of NORKA and Norka-Roots among NRKs. It proposes to act as a wider platform for interactions among NRKs.
- NRK identity card project: The government of Kerala has entrusted Norka-Roots with the task of issuing photo identity cards to NRKs who have worked for a minimum of six months in a foreign country.
- Data bank of NRKs: A sector-wise data bank of NRKs, for both emigrants and returnees, is under preparation.
- Helping trace missing Keralites: Sometimes, Keralites are reported missing abroad. As a nodal agency for NRKs, Norka-Roots helps trace these missing Keralites by working with the particular local government and other agencies.
- The Norka Centre coordinates the activities of the Department of NORKA, Norka-Roots and the attestation centre.

These initiatives notwithstanding, the diaspora is not mainstreamed in the development process. Further, there has been a focus on 'diaspora' to a comparative neglect of return migrants. In-migrants also find little mention in the development process. KPP 2030 calls for a comprehensive 'Migrants Policy' that encompasses different constituents of migration and is broad based.

14.4 Challenges

14.4.1 The effects of the diaspora and remittances have not been unambiguous on Kerala's economy. Migration has had a positive impact on unemployment. The Kerala Migration Study of 1998 notes that the unemployment rate in Kerala fell by about 3 per cent as a consequence of migration (Zachariah et al. 2002[8]). In a more recent study, Zachariah and Rajan (2012) have concluded, "Had there been no migration, the unemployment rate in Kerala would have been 16 per 100 in the labour force.[9] With the extent of migration that took place, the actual unemployment rate was only 10.5." Further, the remittances from emigrants are associated with an increase in consumption, economic growth and alleviation of poverty. As outlined in Chapter 1, a reduction or decrease in the rate of growth of remittances in the future can severely affect the rate at which the economy has been growing. They also have had some salutary effects on the current account balance. In general, it is believed that emigrants can account for significant inflow of FDI into the home economy (a la China) due to ethnic advantage, good connections with business and government and patriotism. In Kerala, however, FDI-enhancing effects of emigration could not be captured.

14.4.2 Effects of remittances are not unambiguous. The inflow of remittances might constrain long-term growth prospects by creating a resource curse-like situation (Dutch disease) in Kerala, as discussed in Chapter 1.[10] It has also been observed that remittances reduce the work incentive and entrepreneurship of recipients in the home economy. In case of permanent emigration,[11] Kerala loses direct benefits from the skills and work of an emigrant, forever. This may pose a serious problem in the future as the economy makes a transition from a traditional to a knowledge economy. The main challenge before the government, therefore, is to maximise the benefits and minimise the negative effects of migration.

14.4.3 Another major challenge is to create employment opportunities for return emigrants on the one hand and harness their skills and financial resources for the State's development on the other. It is observed that the return emigrants' contribution to the development of the State has fallen below expectations, considering the resources at their disposal, the skills and disciplined work culture they have acquired and the contacts they have established. Very few tried to start any kind of economic activity. Other than a few shops, taxi services or agricultural processing establishments, the return emigrants of Kerala did not get involved in any sort of investment activity. Part of the reason could be

the relatively low earnings and low skill set of the early return emigrants. This is expected to change with the return of the better educated, and the challenge before policymakers is to create conditions to capture their assets to promote investment and generate employment opportunities.

14.4.4 Vulnerabilities of in-migrants pose yet another serious challenge for policymakers. The inflow of migrants is likely to increase in the coming years due to acceleration in infrastructure development and construction activity. These workers bridge the gap between the demand for and supply of unskilled labour in the State and can contribute significantly to the economy. Vulnerability of the migrants arises due to differences in language, culture, legal protection, social setting and loss of the support system they have in their places of origin. Their position may even be more vulnerable than that of international emigrants because they are intra-country migrants and their voices may not be heard by the governments in their states of origin. Kerala has begun taking steps to register in-migrants and provide them with social security benefits. It is expected that these initiatives will gain momentum. This calls for a strategic migration policy.

14.5 The Strategic Approach[12]

14.5.1 The overriding objective of the proposed strategy is to mainstream the three categories of migrants — NRKs, return emigrants and in-migrants — in the development agenda. This is to be done by creating an enabling environment that effectively integrates migrants and empowers them to make significant contributions to the development of the State and, therefore, the country. The main thrust is, therefore, on harnessing the diaspora (including return migrants) and in-migrants as a resource for development. The specific objectives of the long-term strategy will be to:

- Develop comprehensive multi-dimensional strategies to harness the goodwill and resources of both the resident and returnee diaspora for development purposes.
- Enhance protection of migrants in order to safeguard their basic rights and standards, and minimise the negative effects of remittances and migration.
- Secure maximum dialogue with and cooperation from the migrants.

14.5.2 The mission is to:

- Nurture, protect, regulate and police new and emerging diaspora connections.
- Identify potential engagements and champions or leaders and mobilise and cultivate them.
- Work with and re-energise existing diaspora organisations and networks.
- Address the vulnerabilities of in-migrants.

14.5.3 There is no ‘one size fits all’ mechanism in formulating and implementing a diaspora strategy. Different countries have adopted different approaches related to the nature of government within states (in particular the history of state institutions), the scale, nature, timing and geography of the diaspora. Globally, there are three examples of successful adoption of a diaspora-led growth strategy. These are from Ireland, Israel and Armenia. In all these countries, a comprehensive diaspora policy was accompanied by widespread reforms to establish business-friendly environments and flexible financial systems, which set the stage for remittances to fuel growth. Kerala’s challenges are multi-dimensional. The strategy needs to cover not only the diaspora in host countries, but also returnees and in-migrants. In addition, as Kerala traverses the proposed growth trajectory to achieve the economic standards of developed countries, it will also have diaspora from other countries called, affinity diaspora. The following section proposes a multi-dimensional strategy for all types of migrants. There are four components to this strategy:

- Diaspora in host countries
- Affinity diaspora
- Returnees
- In-migrants from other states

14.5.4 Diaspora in host countries

14.5.4.1 Pillar 1: Know the Diaspora

a) Define diaspora: Clearly delimit the specific populations that constitute the nation's diaspora. A meaningful diaspora strategy depends on a clear understanding of who belongs to the diaspora. However, any strategy needs to ration limited resources through careful planning and targeting.
b) Researching the diaspora and providing a research and evidence base for diaspora strategy:
   (i) A crucial step is to know the diaspora. This involves:
      - Serious data collection.
      - Mapping the diaspora.
      - Creating skill inventories.
      - Understanding what they can offer, what they are willing to offer and what they aspire to get in return from the government.
   (ii) How a country interacts with its diaspora is often underpinned by research and consultative exercises. Most often, this is conducted on an ad hoc basis, through in-house or contracted research. In some cases, countries have established dedicated research units to study the diaspora. For example, The Jamaican Diaspora Foundation and its operational arm, the Jamaican Diaspora Institute, were established in 2008. A key responsibility of the Foundation is to conduct research on diaspora-related matters and to create pertinent databases. In Scotland and Ireland, universities have established research centres to study the diaspora, with strong cultural and historical foci — in Scotland, the Scottish Centre for Diaspora Studies at Edinburgh University and in Ireland, the Global Irish Institute at University College, Dublin. Currently, NORKA is funding such research in collaboration, primarily, with Centre for Development Studies (CDS). It needs to step up research in this area.

14.5.4.2 Pillar 2: Trust Building

a) Develop infrastructure connecting diasporas and homelands:
   (i) Creating and supporting information flows and portals to foster communication between homelands and their diaspora is becoming an important policy priority. There are two predominant modes of communication: from the homeland to the diaspora and vice-versa.
      - From homeland to diaspora: Many countries seek to inform the diaspora about what is happening in their home country through newsletters and Web sites (For example, the Indian government produces a monthly e-magazine, *www.overseasindian.in* and the Scottish government produces a quarterly e-magazine, Scotland). Web portals, both state-sponsored and run by NGOs or private organisations or even individuals, giving useful information to the diaspora and also about the home country, are seen by many in the diaspora and serve the diaspora community as vital infrastructure.
   (ii) The Government of Kerala can go ahead to set up a state-sponsored link, which would aim specifically at the diaspora as a constituent group.
      - From diaspora to homeland: Some countries have set up formal arrangements in consultation with their diaspora. For example, Jamaica has established the Jamaican Diaspora Advisory Board. Its members are elected and it meets twice a year to discuss diaspora-related matters. In addition, a diaspora conference of invited delegates meets every two years, with regional conferences held in the interval between the biennial conferences. The Indian government has established the Prime Minister's Global Advisory Council of Overseas Indians, and also hosts events to meet with its diaspora twice a year, in India in January and overseas in September. Kerala can follow the example. In Kerala, there have been NRK meets, but not as a regular annual feature.

b) Provide embassy and consular services:
   (i) The most obvious way that countries service their citizens abroad and their descendants is through their embassy and consular services, and through political lobbying with the host countries. Some countries, such as Ireland and Lithuania, actively seek to provide funding for specialist services and support workers to cater to their diaspora. For example, the Irish Abroad Unit funds 220 welfare officers, mainly in the UK and to a lesser extent in the US to work with vulnerable Irish populations living there. It also endows Irish societies, clubs, sporting, and heritage activities. The Lithuanian and Chilean governments also work proactively with emigrants, to ensure they know and receive their local rights and entitlements in the host country.
   (ii) Welfare strategies are promoted, particularly for vulnerable groups including the elderly, the sick and infirm, undocumented migrants, the poor and the unskilled and prisoners. This will need data on the extent to which the diaspora populations remain disadvantaged and marginalised and, perhaps, even subject to racism and discrimination. This remains an enormous challenge.
   (iii) As described above, the Kerala government has also devised welfare schemes for the diaspora. To institutionalise it, the government can appoint 'officers in charge' within NORKA to coordinate with Indian embassies in selected countries where Kerala has a significant diaspora.

c) Building diaspora patriotism by supporting social and cultural activities, education and language learning:
   (i) A prerequisite for a successful diaspora strategy is a motivated diaspora, willing and enthusiastic to contribute to its native land. The State can play a role in incubating, fostering and building social and cultural networks of its diaspora. This is often done as part of wider national cultural strategy. The four instruments recognised for this are:
      - Provision of support from the homeland: Many diaspora groups have established homeland-specific social, cultural and sporting clubs and networks, most accompanied by physical infrastructure such as meeting places. Countries often support these groups through direct and in-kind funding (such as supporting cultural visits by artists and performers), as a way of maintaining cultural identity. The Government of Kerala may provide such groups with specific services related to cultural identity such as learning Malayalam, culture and history. For example, the Irish Department of Community, Rural and Gaeltacht Affairs supports teaching of the Irish language at institutions outside Ireland. Similarly, the Lithuanian government funds Lithuanian schools to teach the Lithuanian language and cultural heritage to the descendants of Lithuanian emigrants (Box 14.1). The Ministry of Diaspora in Armenia has established a virtual Armenian Studies University, which supports Armenian students across the world and has established a 'committee on curriculum' for Armenian educators. In addition, it has established a museum highlighting the diversity of the Armenian diaspora and its achievements.

Box No 14.1

Lithuania: Building Bridges with the Diaspora

The Department of National Minorities and Lithuanians Living Abroad (DNMLLA) plays a very proactive role in safeguarding and promoting the identity of the Lithuanian community overseas. Through the strategies of long-term state relations with Lithuanians living abroad and the inter-institutional programme for cooperation with Lithuanian communities abroad, it seeks to preserve and build patriotism towards Lithuania, Lithuanian education, language and culture, and the image of Lithuania overseas. In so doing, it aims to promote awareness of, and protect, the welfare rights of Lithuanian citizens in destination countries (ensuring, for instance, that they secure access to the services they are entitled to). What makes this approach interesting is the fact that the department is simultaneously responsible for overseeing foreign-born minorities in Lithuania as well as Lithuanian citizens overseas. Coupling the two in this way provides for expertise and an elevated degree of sensitivity, which might otherwise have been lacking.

Source: National University of Ireland Web site
www.nuim.ie/nirsa/diaspora/PDFs/lithuaniandiasporapolicy.pdf

- Buttressing local groups in the diaspora: Local diaspora networks for support and community building in host countries have been run by the diaspora and for the diaspora, receiving little or no support from their homeland. Some countries have recently started giving financial and other support to these networks. The Irish government is involved in funding these events outside Ireland. KEA, a diaspora network (New Zealand), initially set up by two individuals and privately funded, is now the recipient of state grants, alongside funds from private sector companies and membership fees.
- Honours and awards: These awards and honours are an important component of trust-building exercises. India annually presents the Pravasi Bharatiya Samman Awards to up to 20 members of the Indian diaspora who have made significant national and global contributions. In 2006, KEA New Zealand started the World Class New Zealand Awards to honour New Zealanders making significant international contributions in the following classes: supreme awards (for instance Nobel Prize); ICT; creative industries; biotechnology; manufacturing; research, science, technology and academia; and finance, investment and business services.

(ii) Kerala may initiate this practice for its diaspora.

- Promoting short-term visits and bonding: Many countries target members of the diaspora through tourism marketing campaigns to encourage them to return home to visit family or simply take a holiday. Homecoming 2009, a flagship campaign of Scotland and the Aisling Return to Ireland Project are steps in this direction. The Armenian Ministry of Foreign Affairs has recently made systematic efforts to facilitate diaspora travel to Armenia, creating special interest tours (pilgrimages) and supporting upgrades in tourism infrastructure. Kerala may improve bonding using Malayali organisations abroad.

14.5.4.3 Pillar 3: Mobilisation of the diaspora and remittances

a) Attract remittances through philanthropy

(i) Philanthropic activities by the diaspora in their homeland can be a very important source of income for states. Diaspora members mostly establish philanthropic foundations, either individually or collectively. They may work with state organisations, but how they choose to

allocate and spend their funds is at their discretion. Some philanthropic foundations, such as the International Fund for Ireland (IFI), have been established by the states themselves. Box 14.2 shows one such example in Kerala.

Box No 14.2

Government Girls School, Nadakkavu

Government Vocational Higher Secondary School for Girls (GVHSSG), Nadakkavu has created a paradigm that all other institutions in the public education domain should aspire to. Through PRISM (Promoting Regional Schools to International Standards through Multiple Interventions), the local MLA garnered wide support for construction of buildings, expansion of laboratories, libraries and playgrounds. The single-minded efforts of various stakeholders, including parents, teachers and students were indispensable for its holistic development. While the MLA has given the school Rs 5.5 crore, from his local area development fund, since 2008, Dubai-based businessman K. E. Faizal, through his Faizal and Shabana Foundation, has donated Rs 15 crore to modernise infrastructure.

Together, the funds helped develop state-of-the-art school buildings — including a new block built under the guidance of Scottish architect William Cooper — an indoor stadium with three basketball courts, hockey field with astro-turf, football field, badminton courts, a dining hall with 2,000 seating capacity, gymnasium, heritage zone, science lab and a library with 25,000 books. The PRISM concept was shared with a professor at the nearby Indian Institute of Management, who roped in a social service group of the institute to prepare a project report. Subsequently, the state education department recognised PRISM as a model project for the overall development of government schools. Indian Space Research Organisation was approached for support, and it constructed four science laboratories that are on par with those in any college. Infosys pitched in with 150 computers. The academic and infrastructure developments have attracted more students, with student strength jumping to 2,300 from 1,800 from classes 5 to 12 in the 2013-14 academic year. Ninety-five per cent of the students hail from the most backward families in the city.

While several government schools in Kerala have either closed down or have been categorised unviable after students moved to private institutions, GVHSSG Nadakkavu is aiming to become one of the 10 best schools in the country. Musician A. R. Rahman has announced that he will find ways to collaborate with the school through the foundation so that students who are inclined towards music can get an opportunity to be trained by his K. M. Music Conservatory in Chennai or as a part of the Sunshine Orchestra which aims to nurture leadership and create social bridges by empowering less privileged children through music.

Source: http://www.apnnews.com/2013/12/26/faizal-shabana-foundation-make-world-class-education-available-in-a-government-school/

(ii) Set up a Kerala Fund: The State may set up a Kerala Fund to raise money from its diaspora through key social and networking events and, more generally, by prospecting for funds from wealthy donors. It can tie key donors to specific projects in which they have a keen personal and professional interest (for instance, infrastructure, education fund, health fund, social protection fund and so on). This also provides them with investment opportunities other than land.

b) Develop Business networks

(i) Business networks play a critical role in the emerging knowledge economy. Diaspora knowledge networks are overseas networks that mobilise the skills, expertise, contacts, knowledge, business acumen and financial and political resources of the diaspora, as a collective resource to benefit the local and global diaspora as well as the homeland. The four kinds of diaspora knowledge-networks are: global, specialist, professional and trans-national.

(ii) Global knowledge networks are trans-national networks linking global regions with the homeland, including trade missions, business forums, mentoring, advice and access to decision-makers. Kerala can identify successful NRK entrepreneurs and strategically approach them for investments/expertise in either specific areas or give them honorary posts in Chambers of Commerce.

(iii) A few case studies are presented in Box 14.3.

Box No 14.3

Business Network Strategies: Some Case Studies

GlobalScot: Scotland's Global Connections Strategy

Scotland's Global Connections Strategy is the creation of GlobalScot, an elite, global business network. GlobalScot targets high achieving members of the Scottish diaspora, who are specially selected and invited to join. GlobalScot is not limited to one sector or area of the world and seeks to involve a broad range of talent and expertise. The scheme works by partnering GlobalScot members with Scottish companies, with the former providing mentoring, advice, contacts and so on to the latter, which will help them in expanding their business globally. A recent development has been the Saltire Foundation that enables citizens to undertake placements in GlobalScot companies as a way of kick starting or advancing their business careers.

ChileGlobal: Chile

Like GlobalScot, ChileGlobal is an elite, global business network of successful overseas Chileans. ChileGlobal is a classic example of a business network that learns from best practices and tries to rework its learning into another context. As such, it provides something of a test bed for the global circulation and transfer of diaspora policies. ChileGlobal is shaped on the basis of the GlobalScot model. ChileGlobal has 130 members in a wide range of business sectors spread across the US and Canada (principally), South America to a lesser extent and, to a small degree, Europe. It supports the placement of student interns, mentoring programmes (including a plan to roll out a business angel model) and business development through contacts, knowledge transfer and investment. The study of these two models can provide important insights into how the same model can be adapted in different cultural and institutional environments.

KEA: New Zealand

KEA's mission is to connect New Zealand with its large global talent community and to contribute to the growth, development and future prosperity of New Zealand by sharing knowledge, contacts and opportunities with its diaspora. It presently employs four full-time regional managers to conduct its operations in different parts of the world.

Sources: Relevant Web sites

(iv) Specialist knowledge networks: These are sector-specific (for instance biotechnology, ICT, law) and generate solid and specific ties to the homeland, to aid the expansion of specific sectors by providing knowledge, mentoring, expertise and financing (venture capital). For

example, Kerala may explore ties with NRKs in the Nordic Countries with expertise in education, renewable energy, waste and water management and so on since Kerala is to be benchmarked against these countries.

Ireland has taken this approach, seeking to create and maintain a wider base of participation in less targeted and focused networks. It has created region-specific networks:

- The Asia Pacific Business Forum which links 11 Irish business groups in Asia Pacific and the Gulf to facilitate an exchange of ideas and resources and to leverage reputation and connections.
- The Irish Chamber of Commerce, USA is a trans-national economic network with 13 chapters across the US.
- The Irish Technology Leadership Group in Silicon Valley (an elite network of Irish corporate leaders who support the Irish ICT sector by soliciting Irish business ideas in a *Dragon's Den* format), Biolink (a network of biotechnical professionals spread across the US) and Techlink, UK (a network of Irish scientists based in London looking to commercialise laboratory breakthroughs). In the Irish case, additional examples include the Irish Network of New York, the Irish Network of San Francisco and the Irish Professional Network of London.

  Similarly, Advance Australia (AA) has created a number of industry-specific, but geographically dispersed networks in academics/research, media arts/entertainment, financial services, life sciences and technology. AA seeks to enable Australians abroad with information about 'ambassadors at large', who open doors and opportunities for Australia and Australians across the globe.

(v) Professional knowledge networks: These are networks of professionals and highly skilled expatriates located in cosmopolitan cities. The focus is on both social and business networking and the exchange of contacts, skills, advice and ideas.

Armentech (Armenian High Tech Council of America) seeks to use its collective expertise to promote and support the creation and development of technology-based businesses in Armenia through inward investment and venture capital, building linkages, expanding outsourcing, improving the image of Armenian IT firms and providing training. These networks are most often supported by specialist state services that focus on the development and globalisation of indigenous firms, inward investment, domestic exports and marketing. Examples include Fundación, Chile; Scottish Networks International; Enterprise, Ireland; and the Armenian Development Agency. These organisations also provide direct advice to the diaspora wanting to invest in the homeland or to those who are interested in developing business-to-business partnerships.

(vi) Trans-national business networks: They aim to foster economic ties between the place in which the diaspora resides and the homeland. The network resources produced include knowledge of markets, cultural knowledge and access to trans-national opportunities. The Overseas Indian Facilitation Centre is a one-stop shop for investment advisory services and business-to-business partnerships. Similarly, the Armenian Development Agency runs a one-stop agency for foreign investors.

The Government of Kerala organised 'Emerging Kerala-2012, a Global Investor Connect' in Kochi. It has decided to organise it every alternate year. The objective is to showcase those sectors that have the highest potential for investment in the State. The government assures all necessary support to investors for setting up suitable projects in these sectors. Some

of the targeted sectors are: IT and IT-enabled services, tourism, healthcare, knowledge/ education, trade and retailing, food and agro processing, energy including green energy, biotechnology/ nanotechnology, water and inland waterways, ports, ship building and related industries and infrastructure development. Given the weak private investment climate, more proactive initiatives are required.

The NORKA department may create a cell targeting Kerala entrepreneurs abroad and setting up networks. It may adopt a plural approach that aims to foster a number of business networks and to grow a wide base of contacts and expertise. It will focus not only on well-known diaspora businessmen, but encourage the promotion of business networks in selected countries.

14.5.4.4 Pillar 4: Reverse brain drain and Capabilities

a) While it is widely recognised that a country's diaspora can make a valuable contribution to the homeland, excessive brain drain and skills shortages create the need for reversing brain drain and capabilities to harness it as discussed above. Return migration was a central feature of first-generation diaspora/migration strategies back in the 1960s, but it was displaced by a new interest in harnessing talent from destination sources. As part of the move towards the knowledge economy, programmes designed to encourage highly skilled NRKs to return may be initiated.
b) Kerala will need to give attention to better understanding the circumstances that bring talented diaspora home, to work on temporary positions, to contribute to their native land. Traditionally, two forces attract them to such positions: one, economic opportunity with occupational status and the level of responsibility, and two, family and life cycle, including a desire to return to look after, spend time with and care for an elderly parent or relatives. The new strategy will have to be built on this understanding.

   Encourage return of highly skilled migrants by offering financial incentives and advertising important vacant 'temporary positions' such as researchers and policy analysts for those contemplating spending time in the State.

   Officials can institute innovative policy strategies to reach out to this skilled migrant pool. Chairs and visiting fellow opportunities may be instituted in higher education institutions. China and the Republic of Korea woo expatriate researchers back home with science parks designed to concentrate high-tech industries or science-related businesses. The proposed knowledge hubs (Chapters 2, 4, 10) may prove to be instrumental in creating opportunities for top professionals and highly skilled researchers, university professors and policy analysts to spend time in Kerala and contribute to its prosperity.

14.5.5 Affinity diaspora

14.5.5.1 Kerala has significant diaspora overseas, but it will also be the recipient of other nations' and regions' skilled diaspora as it makes the transition to a knowledge economy and sets up education hubs. It will thus have a potential affinity diaspora, which is the circular diaspora from other countries/ regions who stay temporarily in the State. This will also need to be tapped. Scottish Networks International runs a scheme that seeks to build partnerships between post-graduate students and Scottish companies for work placements. By developing a relationship with the company, it is hoped that if and when the students leave Scotland, they will help their partner company and other Scottish companies do business wherever they settle. In effect, they will continue to work for Scotland regardless of where they reside in the world. Countries tend to seek goodwill amongst other populations in two ways. First, by creating and fostering country-to-country business networks that seek to build

mutual cooperation and dependencies. For example, the Ireland Turkey Business Association (ITBA) creates links between Turkish business people in Ireland and Irish businesses and also helps Irish businesses seeking to do business in Turkey. Second, by undertaking international development work that aims to help a nation and its people. It creates visibility, new markets and opportunities for the country's enterprises. Kerala can attract second-generation NRKs to do internships in Kerala.

14.5.6 Nurturing of return migration

14.5.6.1 Conventional wisdom about return migrants was that they were failures or retirees who always intended to return to their country of origin. They were generally not expected to contribute significantly to their home countries' development. Today, however, returnees reflect new migration circumstances that are evolving due to a globalised world. The globalising effect of easy travel, fluid citizenship status and rapid communication are key factors driving this change. As a result, returning migrants are increasingly becoming younger and more highly trained. Many of them are circular migrants, as they go out for a short period of time. In the case of Kerala, it has been observed that a large number of them are in the working age group.

14.5.6.2 A number of issues remain as governments continue to explore migration for development options. Three key considerations include:

a) **Pillar 1:** Database and profiling of skills: There is a need to set up the right mechanisms to create and maintain databases on return migrants. This will require a legal framework to be in place, which standardises definitions, procedures, scope and quality standards. It will create an administering infrastructure for compiling and maintaining the database. The EU, for instance, has a regulation on 'community statistics on international migration, citizenship, residence permits and asylum', which has detailed guidelines on the compilation of this database.

b) **Pillar 2:** Adopt facilitation measures for those contemplating return: Some of the leading practices are reviewed here to elaborate on this strategic direction.
   (i) Jamaica implemented a Charter for Long-Term Returning Residents in 1993, aiming to reduce the costs (importation of belongings) and the bureaucracy for returnees, and establishing the Returning Resident Facilitation Unit. The unit was later upgraded into a department and a Minister for Diaspora Affairs was appointed in 2002.
   (ii) Lithuania, as part of its programme to preserve Lithuanian identity amongst migrants, also recognises the need to create Lithuanian schools abroad to ensure that the children of return migrants are quickly integrated into the domestic school system. At present, they fund over 200 weekend schools worldwide. Ireland and Scotland have both set up relocation services.
   (iii) The Irish Abroad Unit (within the Department of Foreign Affairs) provides a range of administrative and legal information to potential returnees. It provides information through its 'Returning to Ireland' service on the statutory services and entitlements available to those 'coming home'. Both this department and the Department of Social and Family Affairs, fund organisations in the voluntary sector that provide advice and services to the Irish abroad, including those who are considering relocation to Ireland. The Safe Home Programme (funded by the Department of Environment, Heritage and Local Government) was established to help the elderly and the most vulnerable within the Irish community abroad settle back in Ireland. The Irish Department of Environment, Local Government and Heritage provides funding to voluntary housing bodies to make available up to 25 per cent of accommodation to elderly returning emigrants, who satisfy eligibility criteria under the Safe Home Programme.
   (iv) Scotland's Fresh Talent Initiative includes a Relocation Advisory Service through which those who want to relocate can secure information and advice using a dedicated web

portal (www.scotlandistheplace.com) and phone line. Information is also provided by the organising committee of the flagship Homecoming Scotland 2009 event.

c) **Pillar 3:** Generate new alternative strategies to mobilise emigrants' knowledge and expertise in support of development: Returnees bring with them tangible (such as financial capital) and intangible (such as contacts, relationships, skills, acquaintances) resources that have been accumulated during the migration experience abroad. Returnees do not often invest their tangible resources to create widespread employment or larger benefits for others. Instead, they tend to use it for consumer spending, payment of debts, long-term investments such as individual education and building and improving homes. A large proportion of returnees are in the working age group. It is important to harness the skills and financial resources of the returnees. The government need to ensure that migrants are able to make real contributions to the State's development by mobilising their resources.
   (i) Create an investment cell within NORKA: It may be the single-point contact for investment advice. In the Philippines, for example, the government's Overseas Workers Welfare Administration supports an inter-government agency referral system called the Replacement and Monitoring Centre. It offers returnees job placement services, skills training, livelihood programmes and job opportunity assessments, and gives employers a database of skilled migrant workers.
   (ii) Encourage returnees to spend or invest through partnerships with the government and the private sector.
   (iii) Encourage returnee-initiated programmes that build local skills among the general population.
   (iv) Explore ways to invest in the infrastructure of the professional sectors is which the returnees worked. For example, while Ghana badly needs nurses, lack of infrastructure and inadequate investment in that country's health sector means that Ghanaian nurses who are trained abroad are unable to find employment back home.

d) **Pillar 4:** Reintegrate returnees into society
   (i) Reintegration of returnees into society is a major issue for policymakers. Given the dissimilarities in values and norms between the host and home countries, cultural conflicts are bound to arise. The severity of this problem is related to the time spent in the adopted country. Forced return may also aggravate adjustment problems and may also contribute to social problems. Evidence suggests that returnees sometimes become the target of social envy, because they are more successful. Their initiatives are not easily accepted. Any preferential treatment given to them can create further tensions in society.
   (ii) There needs to be greater understanding of these issues. The government will need to explore these issues and identify the areas that need to be addressed before formulating policies.
      - Build a broad network of experts from the region, representing all principal disciplines focused on human migration, labour mobility and national development issues (for example demography, law, economics, sociology and political science).
      - Organise discussions involving relevant state bodies and NGOs dealing with immigration on issues relating to improving Web information systems.
      - Clarify issues relating to integration and improvement approaches of various information systems and technical peculiarities for realisation of such approaches.
      - Develop legislation on the integration and improvement of various info systems containing information relating to return migrants.

e) **Pillar 5:** Participation of NGOs to overcome constraints in reintegrating return migrants: Some NGOs in the country of origin have worked with their government to establish networks of expatriates in a host country, which support migrant savings and alternative investment

programmes. In the Philippines, for example, local NGOs have helped migrants establish small-business ventures and local churches have launched microenterprises. These efforts reveal how important it is for social development workers, policymakers and implementers, as well as migrants and their families, to work together to ease reintegration and harness development potential.

14.5.7 In-migration

14.5.7.1 Recent research indicates that domestic migrant labour (DML) from the Eastern parts of India is attracted to Kerala. While different studies show different channels of movement, the two things the studies agree on is that the housing conditions of DML are poor and there are significant languages barriers in accessing government services. In-migration is essentially executed through an elaborate network of recruitment agencies, which operate in the poverty-stricken areas that according to them are the best 'catchment zones'[13]. In many cases, advances have been paid to the family of the migrant much before they depart their homes. The agents also meet the cost of travel and other incidental expenses. Once the migrants arrive in Kerala, they are allocated to construction sites. Due to language barriers, migrant labour is unable to directly communicate with the local population.[14] On the other hand, a study by Narayana, Venkiteswaran and Joseph (2013) shows that for over 80 per cent of the in-migrants, the migration channel is friends and relatives.[15] The source of funds for travel and initial sustenance is friends and relatives. While a majority of them work under contracts, a large congregation of workers waiting to be picked by potential employers is a common sight in many urban centres. They put in long hours and are ready to do overtime, and there are hardly any complaints from their employers. But they are denied social security benefits. Many of them have worked outside their states of origin before coming to Kerala. What attracts them to Kerala is the higher wage level and prompt payment at the end of the week. The DML in Kerala often live in crowded rooms, with hardly any space to move around.

14.5.7.2 The state government has a welfare scheme, 'Inter State Migrant Workers Scheme', in place since 2010. Under the scheme, each registered worker will get up to Rs 25,000 for in-patient healthcare in empanelled hospitals. There is also a provision of Rs 3,000 per annum per head for the education of migrant workers. The Kerala Construction Workers' Welfare Board has implemented the scheme. This scheme has failed to enrol a large number of migrant workers for various reasons.[16] Some measures that can be taken to improve conditions of DML include:

- Voluntary registration of DML based on which all benefits to them will converge. A common single point, one–time voluntary registration system is proposed. All the scheme benefits will be conditional on registration. It should be linked to the Aadhar/ UID card. Building up a database is necessary. If registration is done at the local level, it is important that information is passed to the state level so that all information about DML is available in one place.
- Improving housing and living conditions of DML should be a priority of the state government. Provision of affordable housing to in-migrants and regulation of their living conditions should be done by the government.
- The government should initiate awareness campaigns and programmes to reach out to migrant workers. A cell within NORKA can be dedicated to 'inter-state migrant workers' to overcome language barriers and set up communication channels with them.
- Social security and health issues: It is important for the state government to have a social security net for DML. Health coverage through national programmes or special schemes may be thought of.
- Employment issues: Steps may be taken to make DML aware of their rights by undertaking awareness programmes in their respective languages.

- Helpline in different languages: Installing helplines in languages spoken by in-migrants should be a top priority.
- Vocational education may be opened to DML so that they can upgrade their skills. If local residents are being charged lower fees, then DML may be included in that category if they have stayed in the State for more than a year. All benefits should be linked to their UID/Aadhar card.
- Clearly, there is a need for further research on DML issues and research institutes should develop research specialists in these issues, just as they have done for the Kerala diaspora.

14.6 Implementation and Measuring the Success of Diaspora Strategies

14.6.1 Strengthen NORKA

14.6.1.1The principal agency for the diaspora is NORKA. The main problems being faced by NORKA and Norka-Roots are:

- The absence of a legal framework.
- Lack of an institutional structure.
- Shortage of trained and experienced staff in handling migration related issues.

14.6.1.2 It is proposed that the State create its own Migration Policy with well-defined objectives and strategic directions, covering all kinds of migrants (emigrants, return migrants, and in-migrants). Further, NORKA should be restructured with three well-defined organs covering NRKs, returnees and in-migrants. Each organ should have specialised officials for tackling different dimensions of the policy (as suggested above). Each one should have a helpline/call centre. Non-resident Keralites throughout the country should also be connected with NORKA through these helplines. Finally, education on migration should be mainstreamed at the university level and in management courses to promote the tackling of migration-related issues by trained professionals.

14.6.2 Resource Allocation

14.6.2.1 Budget allocation: Budget allocation should be in some proportion to remittances received by the State.

14.6.2.2 Matching funds: Under the matching funds concept, different levels of government allocate a dollar or more for every dollar that migrant organisations invest in their communities. The most frequently cited examples come from Mexico (where matching programmes were pioneered and popularised), among which the state of Zacatecas's TresPor Uno or 3x1 programme is the most celebrated. Considered by many observers as a best practice, the 3x1 programme has been replicated across Mexico, throughout South America and around the world.

14.6.2.3 Use of existing structures: Capitalise on existing consular networks and links with other government offices, both at the national and local level.

14.6.2.4 Partnerships: Partnerships with the private sector, other governments and the international community may be strengthened to gather resources.

14.6.3 The Role of NGOs needs to be strengthened: NGOs can play an important role. In Chile, for instance, there are five specialist NGOs working with the Chilean diaspora (Chile Global; BIONEXA; Pyme Global; ChileTodos; Euro Chile). Advance (Australia) and KEA (New Zealand) are not-for-profit NGOs working independent of governments to provide select services to the diaspora. Industry associations and the private sector may also be crucial elements in providing such services and need to be involved in policy formulation.

14.6.4 Monitoring and evaluation of the programmes

14.6.4.1 Finally, operating diaspora programmes often involves significant investment by states and other organisations in staffing and infrastructure, programme content development and delivery and on-going evaluation and expansion. As a result, agencies running programmes seek to measure their success with respect to the investment made. Measures of success can focus on both tangible and intangible outcomes, and in the case of business-related ventures it can be an economic assessment of the return on investment. Countries, and schemes within countries, differ on how they measure success, varying with respect to tangible/intangible outcomes and the time period of evaluation. Since there are no defined targets and associated tangible metrics for measuring progress and success, nor a defined period in which to reach certain targets, government measures are evaluated by a mix of tangible and intangible measures. For example:

- The quality and strength of the network, based on feedback from clients and number of quotations and contracts.
- Investment in the State by NRKs.
- Temporary visits by highly skilled professionals.
- Success of annual meets.
- Investment activity by returnees.
- Unemployment rate among returnees.
- Basic amenities provided to in-migrants.
- The level of satisfaction through perception surveys.

14.6.4.2 Evaluation of the programmes may be conducted using the above indicators, periodically, to assess their success.

14.7 Conclusion

14.7.1 Policymakers have increasingly recognised the value that the diaspora brings to development efforts at home. Most governments take an extra step in institutionalising their engagement with the diaspora by creating special offices or directorates within government agencies. Kerala has also created specialised institutions, NORKA and Norka-Roots, to engage with the diaspora on a formal basis. These institutions need to be strengthened, with a clear mandate and a well-defined policy framework. The strategic policy framework outlined in this chapter is based on the following principles:

- The government that knows its diaspora well is more likely to succeed in engaging with them.
- Trust-building, by strengthening social and cultural networks, is critical for economic privileges.
- A diaspora strategy needs to be mutually beneficial for both the domestic economy and the diaspora population.
- The diaspora must be mobilised to act as a development partner in the economy.
- Capacity building is an important aspect of the strategy. Institutional and human resource capacities need to be strengthened to design and implement the strategy.
- Creating innovative institutions, leveraging existing structures and establishing partnerships with various stakeholders can overcome the problem of inadequate funding.
- Evaluations are necessary to assess whether the policy is on track.

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2 *Ratha, D., Aga, G.A., Eigen-Zuchi, G., Plaza, S. and A.R. Silwal. 2013. Migration and Development Brief. April19.World Bank.http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1288990760745/MigrationDevelopmentBrief20.pdf.*

3 *Zachariah,K.C. and I.S. Rajan. 2012. Inflexion in Kerala's Gulf Connection: Report on Kerala Migration Survey 2011.CDS Working Paper No. 450. Centre for Development Studies, Thiruvananthapuram. September.*

4 *Malappuram is has seen the highest emigration but is still the poorest district in the state.*

5 *The references for the educational attainment of migrants have come from the following two papers:*
Zachariah,K.C. and I.S. Rajan. 2012. Inflexion in Kerala's Gulf Connection: Report on Kerala Migration Survey 2011.CDS Working Paper No. 450. Centre for Development Studies, Thiruvananthapuram. September
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9 *Zachariah,K.C. and I.S. Rajan. 2012. Inflexion in Kerala's Gulf Connection: Report on Kerala Migration Survey 2011.CDS Working Paper No. 450. Centre for Development Studies, Thiruvananthapuram. September.*

10 *It has also been pointed out that remittances themselves have been instrumental in dampening growth in productive capacities in the state. They created a Dutch Disease or Resource Curse like situation in Kerala by creating labour scarcity and pushing up wages. Migration of labour out of the state led to labour shortage in all other sectors and soared up wages. Increase in wages eroded the competitiveness of the economic sectors. The wage-rise effect could have been offset by the consumption effect as mentioned above. But it did not happen in the tradable sectors (goods and tradable service sectors) because these sectors are exposed to competition from outside in an open economy context which did not allow the domestic prices to increase. Not only have the goods' sectors (industry and agriculture) suffered but also the tradable service sector has remained small. Further, in a land scarce region, increasing remittances shot up the demand for land for construction activity. As a result, land prices have gone up steeply, further affecting investment activities adversely. Thus, the Dutch Disease (Resource Curse) like situation created by remittances adversely affected the growth of high productivity tradable sectors in the state. The image of the state as investor-unfriendly reinforced the phenomenon of the Dutch disease.*

11 *Temporary migration is beneficial for the economy because the returned migrants are expected return with enhanced skills and financial assets.*

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