KARNATAKA INFORMATION COMMUNICATION TECHNOLOGY GROUP

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To,   January 8th 2013
Shri Jagadish Shettar,
Honourable Chief Minister,
Government of Karnataka,
Vidhana Soudha, Bangalore, 560001

Dear Sir,

It is with great pleasure that we are submitting to you the Karnataka Information and Communication Technology Group 2020 (KIG2020) Report and recommendations.

The Government of Karnataka mandated the KIG2020 to recommend a strategy that leverages Karnataka's global image in ICT and its thriving Knowledge Economy to achieve the following three core objectives by 2020:

- Rs 400,000 crore of ICT revenues including exports (from Rs 135,000 crore in 2012)
- 20,00,000 direct employment in ICT by 2020 (from 800,000 in 2012)
- 1,000+ new start-ups to be incubated by 2020

The KIG2020 team studied Karnataka's historical strengths in ICT and the synergy that exists between government, industry and academia to collaborate and create a roadmap for the state's future development in ICT. It has taken the following approach:

- Balance the dominant ICT services economy with the Product and Innovation economy and the emerging Electronics Systems Design and Manufacturing (ESDM) sector
- Trigger growth in 7 Emerging ICT centres in Karnataka apart from Bangalore
- Increase focus on new entrepreneurship and innovation through the Karnataka ICT Innovation Fund (KICTF)

Combined with the right strategy, the opportunities offered by ICT and ESDM have the potential to generate unprecedented employment, fuel growth in higher education, drive innovation, generate wealth and taxes and bring in inclusive growth covering all sections of society across Karnataka by 2020. For this, the work needs to start now based on the suggested road map.

The KIG2020 Report is the result of many months of study by industry leaders. It has been deliberated and discussed with many senior business leaders, government officials, technologists, educationists, administrators and operations experts. Their knowledge and their desire to see Karnataka at the forefront of innovation, technology and entrepreneurship, leading to people-centred, inclusive, environment-sensitive development with improved living standards across all sections of society, are distilled in the recommendations.

The report details 10 Key Initiatives and recommends several measures for the government so that Karnataka can leverage fully this unique opportunity. After India which today is the largest exporter of software in the world, Karnataka would be the second largest exporter as an entity. This unique leadership status needs to be nurtured and invested in to make Karnataka the global leader in ICT. The recommendations in the report are for the near-term and are meant to create immediate impact.

We believe that under your astute leadership, the report and its recommendations will transform the future of Karnataka, helping the state align itself with fresh global developments that are reshaping society and business in the 21st Century. We are convinced that the report championed by you and your government will also help create sustainable cities of the future to improve the quality of life for their citizens and act as a magnet for great talent from India and globally.

A historic transformation across the state awaits us. We look forward to discussing this report and its implementation to unlock the opportunity before Karnataka.

We urge you to evaluate this report and create an Empowered Group to oversee the implementation of the recommendations so that the journey forward could commence early.

We thank you for giving us this unique opportunity to author this report. We also place on record our gratitude to all stakeholders for their assistance in creating this report, including members of our Group who so willingly gave much of their time.

Regards,

Sri. TV Mohandas Pai,   **Sri B V Naidu,**
Chairman – KIG2020,   Co-Chairman – KIG2020
Chairman   Chairman & CEO,
Manipal Global Education Services Pvt. Ltd.,   Sagitaur Ventures India Pvt Ltd.,
Bangalore   Bangalore

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The Karnataka ICT Group (KIG) was constituted to examine the global changes being driven by a knowledge economy and to realign Karnataka's ICT policies to meet the challenges of the future and sustain its growth. The KIG comprises stakeholders who have witnessed the transformation of Karnataka from a `Pensioner's Paradise' to the `Technology/Outsourcing Capital of the World'.

The group has deliberated and debated on the changes in the ICT industry with the relevant stakeholders, drawn upon the knowledge and wisdom of domain experts, discussions with government departments, commissioned studies and used data from the public domain to arrive at a set of findings for the Government of Karnataka. The findings have guided the group towards recommendations aimed at transforming the state from being the back-end office of the world to the leading edge of innovation, electronic product design and manufacturing by the end of 2020.

The objective of the group is to guide the government and other stakeholders in orchestrating policy and the role of various sectors in ensuring a well-coordinated, balanced and equitable growth path for the State. The group hopes to bring together stakeholders in business, governance, policy, entrepreneurship, innovation, education, science, technology, infrastructure, talent development, etc. The group is confident that the recommendations in this report will create a new age of growth and prosperity in Karnataka around ESDM and ICT, renewing and refocusing the powerful branding that Karnataka already enjoys on the world IT map.

The Members of Karnataka ICT Group 2020 (KIG 2020)

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The world is going through immense change. A series of financial, environmental, political and social crises are forcing governments and societies to re-think development and prosperity. Worldwide, the new approaches to balanced development are focused around five dimensions viz., productivity, infrastructure, quality of life, equity and environmental sustainability. Such a balanced approach will help in creating equilibrium between Industrial & Economic development and Social & Ecological development. Hence, the policy makers must take a holistic view while creating a roadmap into the future.

This report addresses both the strategic and tactical recommendations for economic growth through ICT as well as the overall infrastructure requirements to create "New Age Economic, Social and Ecological Growth" that has a long term and sustainable impact.

Contemporary growth theory has established the relationship between knowledge and productivity. As far back as 1996, the Organisation for Economic Co-operation and Development (OECD) had estimated that more than 50 % of Gross Domestic Product (GDP) in the major OECD economies was knowledge-based . The outsourcing of knowledge-intensive activities to India has contributed in making the services sector as the largest contributor to India's GDP (55%). With the growth of Information Technology (IT), the last decade has seen India's stock of knowledge capital grow several folds. The critical mass of knowledge now presents further potential to create innovation, entrepreneurship and improve the efficiency of capital.

ICT: the national picture

ICT has played a major role in the Indian economy. As a proportion of national GDP, IT/ BPO sector revenues have grown from 1.2 % in 1997-1998 to an estimated 6.4 % in 2010-2011. Its share of total Indian exports (merchandise plus services) has increased from less than 4 % in 1997-1998 to 26 % in 2010-11. According to NASSCOM India's IT services and BPO exports were predicted to grow 16-18 per cent in 2011-12 to $70 billion. India's Total exports in 2011-12 were US$ 300 billion. Today, the industry offers direct employment to 2.9 million and has the capacity to provide direct employment to around 7.5 million people by 2020 (estimated total direct + indirect employment by 2020: 30 million).

Karnataka's beginning of a new era as the "knowledge hub"

Post-independence, Karnataka was known as the hub for the country's leading engineering and research organizations such as Hindustan Aeronautics Ltd (HAL) and the Indian Space Research Organization (ISRO). Around 50 scientific and research organisations made Bangalore a scientific hub. Bangalore, the state capital, was also known as the Pensioner's Paradise.

ICT V 1.0 @ Karnataka (1991-2000): Karnataka began its outsourcing industry journey in 1991 with only 13 companies. It was the first state to privatize engineering education and had the largest number of engineering colleges at this time. Human resources being the key for the Software Industry, Bangalore was able to take an early lead in this sector. This was the time the Government of India set-up Software Technology Parks of India (STPI) in Bangalore, giving the industry a major boost. Initially the industry faced tremendous road blocks in terms of policy support as well as inadequate telecom Infrastructure. These road blocks were quickly addressed by the Software Technology Parks of India (STPI), along with the industry. The government created a congenial policy environment through the Software Technology Park (STP Scheme), which proved to be a boon for the industry. Further, the government set up an Exclusive Satellite Gateway in Electronics City to support the industry. It further announced its first IT Policy in 1997 to become a role model for the rest of the country. What started as a "Professional Support Services" industry quickly created a big opportunity with the Y2K problem -- a huge problem that required software engineers to look into practically every single computer globally. Highly cost competitive software engineering talent from Bengaluru to solve the Y2K bug put India on the world technology map. Multinationals began to review the possibility of locating their back office/ engineering work in Bangalore. Soon, outsourcing became a global reality. This period put many Indian companies on a rapid growth path. The Internet boom, the boom in capital markets and global attention towards Bangalore has significantly fuelled this growth. During this period Bangalore has grown from a mere 13 companies in 1991 to more than 1000 companies by 2000, with exports of US$ 1.0 B, contributing to more than 25% of national exports.

ICT V 2.0 @ Karnataka (2001 – 2010): This was a period when there was no looking back for Karnataka. The state attracted many multinational companies who started setting up large engineering, R&D and back office operations in India. Many large global financial institutions, health and airline companies have set-up their back office operations in India. Soon, Bangalore became the Outsourcing Capital of the World. Today, Bangalore has become the second largest technology cluster in the world. Bangalore has seen balanced growth amongst high technology operations (VLSI Design, Telecom Software, Embedded Software) and business IT applications development and complete Back Office Business Outsourcing. More than 30% of the total exports from Bangalore are high technology intensive like VLSI Design, Telecom Software, Embedded Software. Hence over the years, Karnataka has led the way by developing technology, processes and manpower to build a cost-effective IT-BPO industry. During this unprecedented rapid growth, the number of companies in Bangalore have grown to around 2,200 with total exports of around US$ 17 B, contributing to around 35% of national exports.

ICT V3.0 @ Karnataka (2011 onwards): From the year 2011 onwards, Karnataka's journey as a leader in Information Technology continues as it builds the agenda for the future by creating a sustainable and stronger eco-system to meet the global emerging needs of both IT and the Electronic System Design and Manufacturing (ESDM) sector.

In the light of new global thinking, Karnataka must build a stronger path to progress. In 1997, the State Government of Karnataka had the foresight and vision to create an IT Policy. At that time, it was the first state in the country to have such a policy. The policy has been widely recognized as a catalyst for the growth of the state. Now, Karnataka must demonstrate its vision as a global leader by bringing an inclusive and balance growth with holistic approach to development and prosperity.
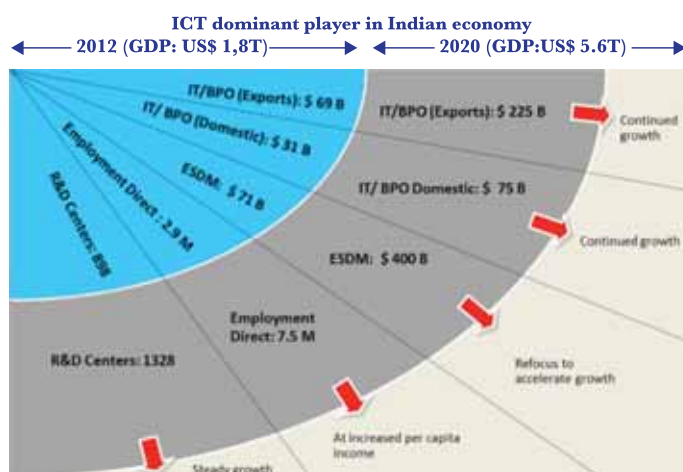
While continuing to grow in the ICT sector, Karnataka can also potentially become the national ESDM hub, by establishing itself as a major contributor to the US$400 billion ESDM industry by the year 2020 (National Policy on Electronics 2012). Karnataka will thereby also become one of the largest generators of employment in the ESDM sector (total employment potential: 28 m). For this, Karnataka must re-balance its approach to IT, placing increased emphasis on ESDM. Accordingly Karnataka needs to focus on the following:

- Sustain growth in the traditional ICT Services with increased focus on Innovation, IP and Productisation.
- Bring-in new emphasis for the ESDM sector and encourage high tech manufacturing
- Re cast the developmental plan for 7 other "Emerging ICT Clusters (EICTC) to bring in more inclusive growth in those clusters.

Accordingly, our policies need to be "Broadened, widened and deepend to encourage increased innovation, IP focused development and high tech manufacturing"

India Target:

Karnataka: Ideally placed to meet the national agenda

Karnataka has been the role model for the rest of the country. Many of the National Policies were successful because of the participative "Partners in Progress" approach of all stake holders namely, government, industry and academia. Karnataka's relentless pursuit of IT as the growth engine has been at the core of its success in building its global reputation as an IT hub:
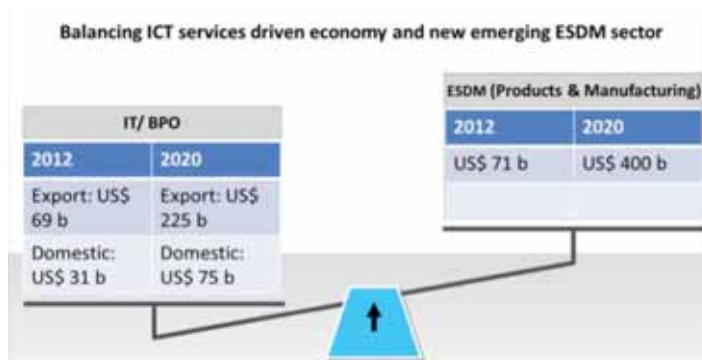
- Karnataka is home to a third of the software companies contributing more than 35% of the national exports.
- Karnataka's electronic, computer software, and biotechnology exports composed 63.5% of its total exports in the year 2009-10
- Karnataka's software exports contributed 21.4% to its Gross State Domestic Product (GSDP) with export CAGR of 13.5% and GSDP CAGR of 15.2% between FY05 -FY10
- BPO/ITeS companies grew to around 270 in number by CAGR of 13.4% from the years 2005 – 08, while hardware exports grew to US$825 million at CAGR of 14.4% in the referenced period.
- 9 of top 10 leading IT companies on Forbes Global 2000 list have based the headquarters of their India operations in Bangalore.
- Karnataka contributes around 500,000 IT professionals from its leading engineering institutes to India's total IT workforce of around 2.5 million.
- Karnataka's IT sector has attracted 44.6% of total investments in the national IT industry in 2010-11
- With investments of US$1,271.45 million, 47 of the 58 Special Economic Zones (SEZ) approved in the state are slated to drive the IT/ITeS sector

Further, more than 400 out of the Global Fortune 500 Companies were outsourcing IT Services from Bangalore. Bangalore had around 85 Chip Design houses. Bangalore has more than 366 R&D houses. With more than 6.0 L IT Professionals, Bangalore has continued to witness the clustering effect.

With this kind of balanced growth, Bangalore has created a base for innovation, product development and IP creation so that it can fuel the next level of growth. During this period, Karnataka has also paved a path for secondary cities like Mysore, Mangalore and Hubli to be part of the growth.

The Report of the Working Group on Information Technology Sector, GOI, states that India has become a global power house in software and software services sector. This has been made possible in large measure due to the contributions made by Karnataka in the IT/ BPO industry. Going forward, IT/ BPO along with ESDM provide the next major window of opportunity. Together, they have the capability to accelerate development of the state over the next decade.

Karnataka's strategy for growth must therefore be to continue with its focus on IT/ BPO and simultaneously align with the National Policy on Electronics 2012 that aims to "create an indigenous manufacturing eco-system for electronics in the country (that) will foster the manufacturing of indigenously designed and manufactured chips creating a more cyber secure ecosystem in the country. The increased development and manufacturing in the sector will lead to greater economic growth through more manufacturing and consequently greater employment in the sector."

3.0 Karnataka's roadmap to global leadership by 2020: 10 Key Initiatives

KIG 2020 GOALS

Revenues

Rs 400,000 Crores

Employment

20,00,000 Direct

New Startups

>1000

Initiative	Description
IT/BPO	Continued emphasis on growth
ESDM (Electronics System Design & Manufacturing)	Leveraging the growth in this emerging sector that has national focus
Education	Use technology to enhance capabilities
Talent Development & Job creation	Capacity Building
Promote Innovation, IP Creation, R & D and Karnataka ICT Innovation Fund	Increase Value addition
Entrepreneurship Development & Mentoring	Creating new opportunities and jobs
Development of Emerging ICT (EMICT) Centres in Karnataka	Develop other centers beyond Bangalore
ICT relationship with other Countries & Focused Marketing	Leverage the global eco-system
Infrastructure	Supporting the growth needs of the industry
Branding	Highlight Karnataka to be the Global ICT investment destination

This report aims to unlock the potential for holistic state development through a renewed focus on Information Technology. This report recommends ten Initiatives to create a vibrant ecosystem centred on the core strength of IT and IT-related industries: ESDM, IP Innovation & Karnataka ICT Fund, emerging ICT Clusters in Karnataka, Education, Talent Development, Infrastructure, Branding, Entrepreneurship and Strategic Relationship with other countries.

The required initiatives, targets and policies recommended under each of the ten key initiatives are designed to deliver against the emerging global sectors for successful cities and economies: productivity, infrastructure, quality of life, equity and environmental sustainability.

The outcomes of the measures suggested in this report are expected to result in the following estimated revenues from the IT/BPO and ESDM industries of Karnataka:

For Bengaluru	Today 2012	KIG Goal 2020	KIG and Beyond 2025
Industry Size	(Rs crore)	(Rs crore)	(Rs crore)
IT & BPO	135,000	300,000	480,000
ESDM	17,000	100,000	160,000
Total	152,000	400,000	640,000
Direct Employment			
IT & BPO	800,000	1,800,000	2,800,000
ESDM	30,000	240,000	380,000
Total	830,000	2,040,000	3,180,000

The outcomes of the measures suggested in this report are expected to result in the following estimated revenues (direct and indirect) to the Government of Karnataka:

For Bengaluru	Today 2012 (Rs crore)	KIG Goal 2020	Cumulative
From IT / ITeS	5,000	12,000	70,000
From ESDM	1,500	10,000	41,000
Real Estate	1,000	6,000	33,000
Total	7,500	28,000	144,000

4.1 Continuing to be a dominant player

India's – and more specifically, Karnataka's – technology and technology services industry have played a major role in the nation's development and growth. The IT and BPO sectors have been critical to growth in ancillary industries such as education and training, transport, construction and security. The industry has been responsible for creating new employment and offering employees an opportunity to share in wealth creations through stock options (a remarkable trend triggered by IT that has had a deep and lasting indirect impact on entrepreneurship). The industry has also led the way with diversity, employing more women and persons with disabilities than possibly any other industry. Karnataka's IT and BPO success have attracted international attention not only for the economic change it has brought about, but also for the social change it has triggered. This trend must be maintained and enhanced in the coming decade.

There are several global megatrends that are reshaping the IT/ BPO space. Changes in healthcare, education, banking, retail, environment, energy and mobility are reshaping markets. Based on these trends, the total addressable market for IT and BPO is likely to grow from US$ 500 B to US$ 1.5 T by 2020. India's contribution in this can grow from the current US$ 100 B (US$ 69 B exports + US$ 31 B domestic market) to US$ 300 B (US$ 225 B exports + US$ 75 B domestic market).

Of this, Karnataka's contribution to IT/ BPO exports has been US$ 26 B. Karnataka can improve its contribution in the IT/ BPO sector and help maintain India's position as a dominant global player by recognizing that 80% of future growth will come from non-traditional sectors, new customers and newer geographies. For example, clinical solutions in healthcare, environment and climate change solutions around sustainability and mobile applications alone will be around US$ 200 B. The change calls for a new approach to the industry one that embraces innovation, nurtures a superior talent pool, manages security and risk, meets regulatory and policy demands. Recognizing the required change has the potential to increase employment in the IT/ BPO sector from the current 8 lakh to 20 lakh by 2020.

The continued focus on IT/ BPO will ensure accelerated the growth of the economy, will fast-track the development of new centres of growth in the state, add to employment, and fuel innovation.

Bangalore's brand as a global IT centre must be enhanced with the new parameters that are coming into play such as productivity, infrastructure, quality of life, social equity and environmental sustainability that indicate the city's potential to continue to attract global talent and provide the environment for renewed growth.

4.2 Targets

Key targets for Karnataka:

- Continue to have above 30 % of total IT/ BPO demand of US$ 300 B (exports + domestic) by 2020
- Policy to reflect new focus areas for IT/ BPO growth (health care, environment and sustainability, mobility)
- Infrastructure for growth to be made available in new centres (outside metro)
- Direct employment generation target of 20 lakh for 2020

4.3 Recommendations

- Clear all pending IT projects within next 90 days
- Create a division in IT&BT department to provide hand-holding to IT/BPO companies who intend to grow in Karnataka.
- Declare Bangalore as a MICE Centre.
- Create a state portal for delivering all citizen services
- Set up the State's Disaster Recover Data Centre at Hubli/Dharwad
- Create demand-based funding for human resource development (see section on Talent Development & Job Creation)
- Create appropriate infrastructure, technology and course curriculum for education that is industry-led (see section on Education) and increase number of PhDs from the state.
- Provide tax incentives to students pursuing further education and skill enhancements. Set up a Karnataka Student Fund Aid Agency that provides and manages loans, grants and work-study programs. The central purpose of the agency should be to ensure that students from all sections of society, including the weaker and underserved, have the opportunity to pursue higher education.
- Invest in R&D, innovation and IP creations (see section on Innovation, IP Creation and Funding)
- Bring focused attention to developing entrepreneurship (see section on Entrepreneurship Development and Mentoring), leading to improved employment opportunities.
- Develop a PPP framework in areas of education, innovation, talent development focused towards inclusive growth
- Develop new centres of Innovation (see section on Development of emerging ICT Centres in Karnataka)

5.1 An emerging sector with a huge potential

The Electronics manufacturing industry is the largest and fastest-growing manufacturing segment in the world. Its current value is estimated to be US$ 1.75 trillion and is expected to reach US$ 2.4 trillion by 2020 . The domestic demand propelled by the growth in telecom equipment, consumer products and mobile handsets stands at US$ 45 billion and is projected to grow to US$ 400 billion by 2020. When combined with India's growing strength in semiconductor chip design, Electronics Systems Design and Manufacturing (ESDM) can provide unprecedented opportunity for growth.

India moving ahead with ESDM: The National Policy on Electronics 2012 aims to tap the emerging global opportunity in ESDM. The Department of Electronics and Information Technology (DeitY) is also taking several measures to make India a preferred destination for investments in the ESDM sector. In addition to capacity and skill building measures, the government has already announced following measures towards the same:

1) Preferential Market Access
2) Modified Special Incentive Package Scheme (M-SIPS) that provides 25% of the capital investment in non-SEZ areas and 20% in SEZ areas as financial incentive for the ESDM sector. Rs 10,000 crore has been earmarked for the scheme during the 12th Plan.
3) Fab policy
4) Electronics Development Fund
5) Creating Electronics Mission

Amongst the key objectives of the policy are:

(i) To create an eco-system for a globally competitive ESDM sector in the country to achieve a turnover of about US$ 400 billion by 2020 involving investment of about US$ 100 billion and employment to around 28 million people at various levels.
(ii) To build on the emerging chip design and embedded software industry to achieve global leadership in Very Large Scale Integration (VLSI), chip design and other frontier technical areas and to achieve a turnover of US$ 55 billion by 2020.
(iii) To build a strong supply chain of raw materials, parts and electronic components to raise the indigenous availability of these inputs from the present 20-25 per cent to over 60% by 2020.
(iv) To increase the export in ESDM sector from US$ 5.5 billion to US$ 80 billion by 2020.
(v) To significantly enhance availability of skilled manpower in the ESDM sector. Special focus for augmenting postgraduate education and to produce about 2,500 PhDs annually by 2020.

Inflection point for ESDM: India is one of the fastest growing markets of electronics in the world. There is potential to develop the ESDM sector to meet India's domestic demand as well as to use the capabilities so created to successfully export ESDM products from India. The National Policy on Electronics has been designed to transform India into an ESDM hub. Already the country has over a 1,000 local and multinational ESDM companies across several cities and towns. Analysts have been predicting that 2012 will be the start of a period when India will begin to achieve global scale with an increase in research, design and manufacturing in ESDM.

5.2 Targets

Key targets for Karnataka:

- Karnataka must aim to be the leader in the ESDM sector in India and contribute to over 10% of the US$ 400 billion by 2020. It must aim to generate at least 20% of exports (US$ 80 billion) from India in ESDM.Chart Depicts Karnataka's share of the projected overall National revenues in total ESDM opportunity and share of ESDM exports by the year 2020:

- Maintain leadership position in chip design and embedded software in India and contribute more than 60% share of country's turnover of Chip Design and Embedded Software by 2020
- Develop and strengthen core competencies in ESDM in specific verticals such as defence electronics, telecom products, avionics, energy and automotive and become a hub for these verticals in India.
- Become preferred destination for ESDM investments in India
- Achieve a minimum 5,000 patent filings from Karnataka in the ESDM sector alone.
  - i. Significantly enhance availability of skilled manpower in the ESDM sector. Provide special focus for augmenting post graduate education (produce 25% of India's PhDs in ESDM by 2020)
  - ii. Generate new employment for 240,000 from ESDM sector, at least 50% outside of Bangalore
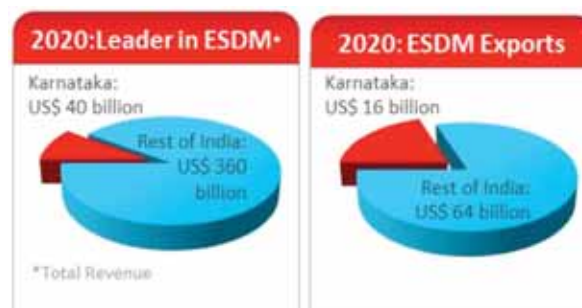
5.0 ESDM (Electronics Systems Design & Manufacturing)

5.3 Recommendations

Promotional Market Development

5.3.1 Promote "Karnataka ESDM Companies"

To encourage the ESDM companies from Karnataka and also to provide preferential status and incentives for the ESDM companies based out of Karnataka, It is recommended to define "Karnataka ESDM companies" as follows:

A company to be defined as "Karnataka ESDM Company" if
- The Company is registered in Karnataka and is working in the ESDM sector.
- The Company achieves a minimum of 30% Domestic Value Addition. The thresholds are increased year on year in line with DeiTY policy.
- The Company should employ at least 50% of its total workforce in Karnataka.

- **Budget:** Nil
- **Impact:**
  - It will drive local innovation and value creation.
  - It will create significant number of local jobs both direct and indirect.
  - It will bring significant industry revenues as well as taxes.
  - It will also spawn local sustainable eco system.
  - It will accelerate entrepreneurship and innovation.

5.3.2 Change the name from "Department of IT & BT" to "Department of Electronics, IT & BT (Deity & BT)"

This will bring in a balanced focus for both IT and emerging ESDM sector and create a larger awareness across all the stake holders as well attract global attention for innovation, domestic products and high tech manufacturing.

- **Budget:** Nil

5.3.3 Implement Karnataka Preferential Market Access (K-PMA)

Karnataka Preferential Market Access (K-PMA) to be implemented In line with national policy and should be applicable for ESDM products procured by Karnataka government or government licensees, government supported organizations or projects, from "Karnataka ESDM" companies;

The year wise (K-PMA) and value addition thresholds shall be in line with the national Electronics and Telecom Policy as notified from time to time. The minimum value addition to qualify as domestic products will be as shown in the table.

- **Budget: Nil**
- **Impact:**
  - This Policy will provide much needed initial volumes for ESDM products to local entrepreneurs and help and promote local products with initial support from Government of Karnataka.
  - It will provide strong pull factor for investors to set-up manufacturing facilities in Karnataka as compared to other states in India.
  - This Policy will stimulate local job creation, since K-PMA is linked to local jobs

Electronic Products	
Year	Percentage domestic value-addition in terms of Bill of Material (BOM)
Year 1	25%
Year 2	30%
Year 3	35%
Year 4	40%
Year 5	45%

5.3.4 Incentives for Promoting ESDM Patent/IPR from Karnataka

Provide incentives for filing ESDM Patents.
Budget for patents:

For the year 2013-2014	: Rs 10 cr
Total for 7 years (2013-2020)	: Rs 160 cr

5.3.5 Globally promote Karnataka ESDM companies- ESDM marketing/branding fund

To provide annual marketing support to Karnataka ESDM companies as a 50% subsidy to enhance export/trade promotion. This will help Karnataka and its companies to be seen as credible global players in ESDM. Product business in general requires a lot more brand building and hence proactive promotional support will help the companies.

- **Budget:**   For the year 2013-2014   : Rs 10 cr
  Total for 7 years (2013-2020) : Rs 50 cr

- **Impact:**   This will help promote Karnataka ESDM companies globally

Capacity Building Initiatives

5.3.6 Incentives for Capital Investments in ESDM

Provide 10 % capital subsidy (both for manufacturing as well as R&D units) for ESDM companies from Karnataka that achieve a minimum value addition of 30% in Karnataka and employ 50% of their total workforce in Karnataka.

- **Budget:**   The following budgets have been estimated based on the overall growth targets of the Industry.
  For the year 2013-2014   : Rs 100 cr
  Total for 7 years (2013-2020): Rs 1,700 cr

- **Impact:**   - This is in line with national electronics policy and will provide incentive for increasing investment in the entire ESDM value-chain;
  - This will also provide strong pull factor for investors to set-up ESDM (design, R&D and high tech manufacturing facilities in Karnataka as compared to other states in India).

5.3.7 Encourage ESDM Clusters – Add-on incentives to GoI EMC scheme

In order to attract the investments in the ESDM sector including EMS and component manufacturing, following incentives needs to be structured for developing Electronic Manufacturing Clusters (EMCs)

- Provide land and power at concessional rates;
- EMCs to have world-class logistics and common infrastructure
- Common testing facilities, training facilities

These EMCs could be physical clusters (in one location) as well as virtual clusters (spread within a city).
Initially it is proposed to start with two clusters, and can eventually spread to 7 clusters across the state by 2020. Budget for each of the clusters is estimated to be around 25 cr. Wherever possible PPP model can be adopted to create such clusters.

- **Budget:**   For the year 2013-2014   : Rs 50 cr (Two Clusters)
  Total for 7 years (2013-2020): Rs 175 cr (Overall for 7 clusters)

- **Impact:**   Attract global investments in ESDM sector for Electronic Manufacturing Clusters (EMCs) as well as for component manufacturing

5.3.8 Create a focused ESDM fund of Rs 500 cr

Create a focused ESDM fund of Rs 500 cr to take care of the financial needs of the ESDM industry starting from Start up to growth, debt and working capital.

This fund will be operated as part of the overall ICT Innovation Fund (ICTIF) which is defined in Annexure –3- ICTIF.

- **Budget:**   **Govt of Karnataka:**   Rs 150 cr
  Govt of India: Rs 150 cr
  Public/Private Financial Institutions: Rs 200 cr

Total budget from above 3 : Rs 500 cr
- **Impact:** Fund can potentially catalyse:
  - 25 Fab less design companies
  - 25 Electronics Systems companies

Post Performance Initiatives

5.3.9   Incentives for Promoting R&D and Innovation from Karnataka

c) Facilitate R&D grants
Refer to Chapter 8, Section 8.3.2

d) Set up 7 ESDM Innovation/Incubation Centres with state-of-the-art facilities
Refer to Chapter 8, Section 8.3.2

5.3.10   Provide post-performance fiscal incentives to overcome disability against global competition

Electronics Industry has severe disability when compared to global manufacturing clusters. CII has done a study to estimate this disability factor as 22% over China when you compute the ROI.

The following table shows the computation of the disability factor for Indian companies in comparison to Chinese companies:

	India	China	Comments
Sale Value	100	100	
Assumed Value Addition	50	50	Assuming 50% Value addition
Sale revenue after deducting CST	98	100	CST of 2% in India
Raw Material	48	48	Same
CST on raw material	0.48	0	2% CST on 50% of raw materials
Raw Material support + Logistics	2.5	1	
Power	5	2	
Finance	5	2.5	
Marketing & Others	15.5	15.5	
People Cost	12	12	
Total Investment	80	80	
Profit	9.52	19	
Return on Investment	11.90%	23.75%	
Refund on VAT	0	8.5	17% VAT refund on value addition
➜ **ROI Total**	**11.9%**	**34.4%**	**22% disability for Indian Companies**

The National Electronics Policy and some of the state incentives can help overcome this disability to make the ESDM industry globally more competitive. Hence it is recommended that the following post performance incentives be provided for those who achieve 30% local value-addition and 50% employment in the state in first 5 years.

Enhance the national policy issued by Dept of Commerce, by providing performance incentive equal to 5% of exports and 2.5% of domestic sales annually.

- **Budget for Export Incentive:** For the year 2013-2014   : Rs 168 cr
  Total for 7 years (2013-2020): Rs 2,500 cr

- **Budget for Domestic Sales (Deemed Exports) Incentive:** For the year 2013-2014 Rs 196 cr
  Total for 7 years (2013-2020): Rs 2,990 cr
- **Impact:** Will ensure the ESDM sector will be on par or better than global competition

5.4   Recommendation Summary

SI No	Recommendation	Budget for 2013-2014 (in Crores)	Budget for 2013-2020 (in Crores)
	Promotional Market Development		
1	Promote "Karnataka ESDM Companies"	Nil	Nil
2	Change the name to Dept. of Electronics, IT & BT	Nil	Nil
3	Implement Karnataka Preferential Market Access (K-PMA)	Nil	Nil
4	Globally promote Karnataka ESDM companies-ESDM marketing/branding fund	10	50
5	Incentives for Promoting ESDM Patent/IPR from ○ Karnataka	10	160
	○ Capacity Building Incentives		
6	○ Incentives for Capital Investments in ESDM	100	1700
7	Encourage ESDM Clusters – Add-on incentives to GoI EMC scheme	50	175
8	*Create a focused ESDM fund of Rs. 500 Cr	50	150
	Post Performance Incentives		
9	Incentives for Promoting R&D and Innovation in Karnataka	Refer to Chapter 8 , Section 8.3.6	Refer to Chapter 8, Section 8.3.6
10	Provide post-performance fiscal incentives to overcome disability against global competition		
10a	Export Sales Incentives	168	2500
10b	Domestic Sales Incentives	196	2990
	Grand Total	726	9525

* The funds will be part of the ICTIF which will be operated under KITVEN

5.5   Impact of ESDM sector to Karnataka over period of 7 Years:

- Expected Overall Karnataka based ESDM Industry Revenues :   Rs 8,54,700 cr
- Expected State Government Revenues from ESDM :   Rs 49,752 cr
- Expected Government Outflow from proposed schemes: Rs 9,800 cr
- Post Performance Incentives: Rs 7,400 cr (75%)
- Capacity Building (On Investment Commitment):   Rs 2000 cr (20%)
- Market Development, Patent / Innovation Support: Rs 360 cr (5%)
- Job Creation Potential: 3,75,700

"Initial 5% of Budget support can trigger a Snowball Effect for the growth of the ESDM Industry as shown below"
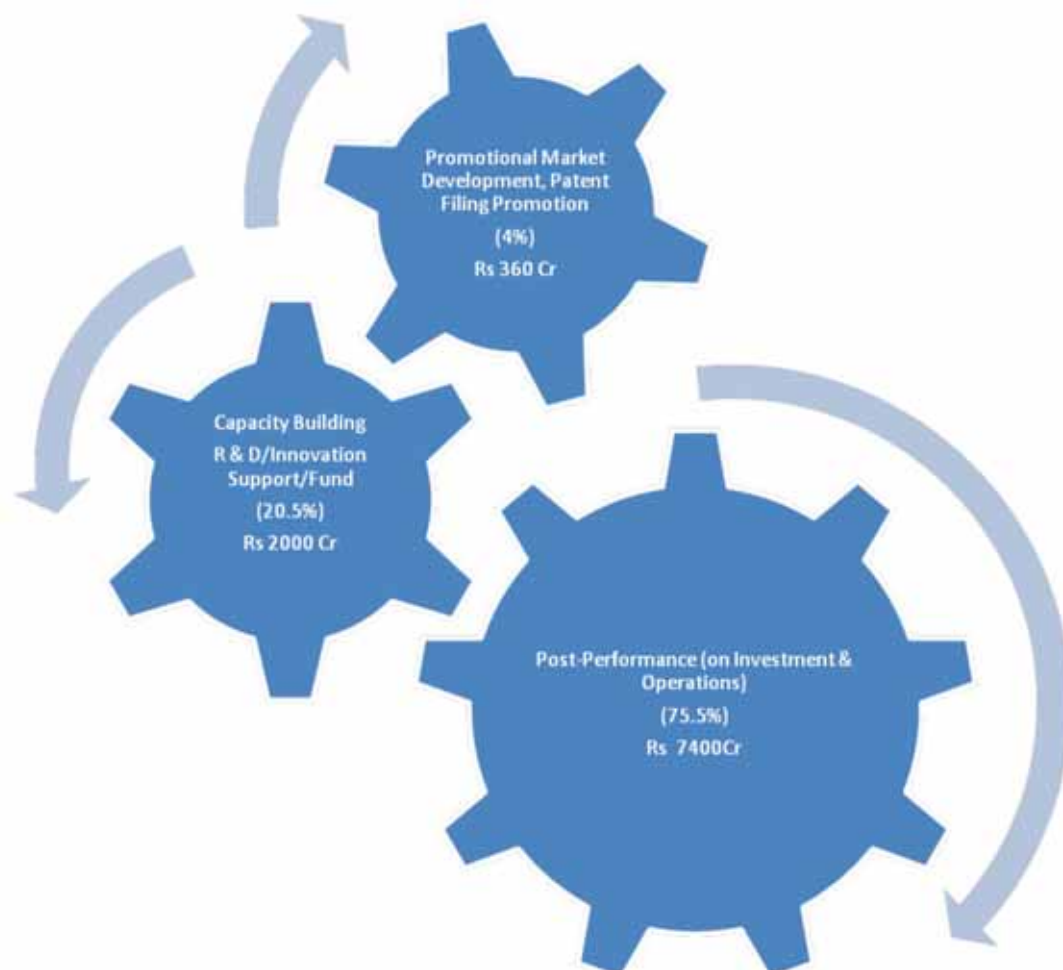
6.1   Use technology to enhance capability

Education and training systems are the fundamental building blocks of the future. They create the societies of tomorrow. Education policy drives the goals of an equal opportunity society. Education curriculum delivers against the promise of an equal opportunity society. It is therefore important to imagine the future and begin making changes now that will create the societies to meet our needs of the future.

Already there is change around us. We have become more mobile, information is becoming free, and there is more freedom to choose a lifestyle, a profession, a place to work from and live in. The World Wide Web, social networking and mobile technologies are dissolving the boundaries between states and countries, giving rise to an e-generation.

The advent of technology is reshaping what we must deliver as education, but is also changing how we do it. The classrooms of the future are going to look very different from the classrooms of today. There is urgent need to examine this future and transform education in the state of Karnataka so that it becomes a tool to drive and direct social change and meet the challenges of the future.

Karnataka education snapshot: Karnataka is considered a knowledge hub due to the presence of a number of educational and research institutions as detailed below:

The gross enrolment in higher education in Karnataka is steadily rising over the years. The Gross Enrolment Rate (GER) in higher education in Karnataka was 18.1% in 2011-12 as compared to 12.9% in 2007-08 and 13.6% in2008-09. The GER for men was 19.8% and for women it was 16.3%. The GER for SC was 18.4%, with GER for men among the SCs being 22.5% and women 13.9%. The GER for ST was 14.9%, with GER for ST men was 18.5% and ST women 11.0%. In actual numbers, the total enrolment in Karnataka in 2011-12 was 12,60,000. For a GER of 35% in 2020, the total enrolment of students in higher education should increase to 22, 58,000.

The distribution of enrolment in graduate and postgraduate courses across different streams in the year 2010-11 shows the following:

Table 4: Enrolment in graduate and postgraduate courses in Karnataka (2009-10)

	Arts	Commerce	Engineering	Science	Medicine	Education	Law	Management
Under Graduate	349668	190548	178432	90144	63260	9362	9308	6198
% of Enrolment	39	21.2	20	10	7	1	1	0.7
Post Graduate	11034	2938	3398	5474	6732	127	72	282
% of Enrolment	37	10	11	18	22	0.4	0.2	1

Source: Statistics of Higher and Technical Education 2009-10 (Provisional) MHRD, GOI.

Enrolment in Post Graduate Courses

- Arts
- Commerce
- Engineering
- Science
- Medicine
- Education
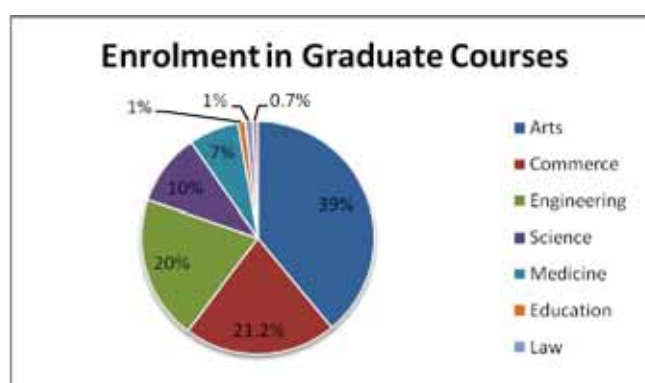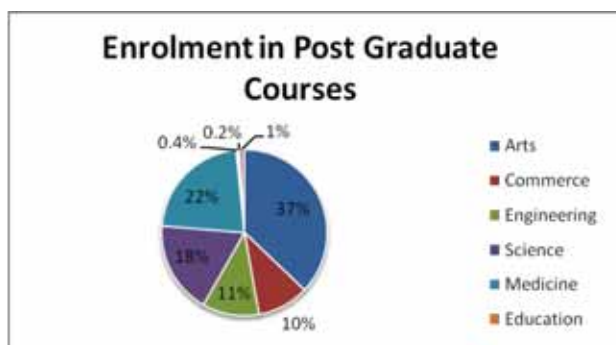
For the year 2010-2011, 3,134 institutes were under collegiate education. More than half (51.9%) are unaided thereby illustrating the growth of the private institutions in the higher education sector. A majority of the engineering colleges (87.2%) and polytechnics (57.4%) are private institutions.

The state-wise distribution of PhDs awarded for the year 1998-2007 show that Karnataka has a share of 6.1% amongst States and is much lower than Maharashtra and Andhra Pradesh. Important indicators for research and development with regard to higher education are publications, the associated impact factor and the number of awarded patents. The publications in the year 2006-07 of the different state universities in Karnataka reveal that the published paper to faculty ratio is the highest for Gulbarga University with 2.58 and is the lowest for Kuvempu University with 0.54. However, the impact factor of these publications has not been considered.

Karnataka is ranked 4th among all states in India in terms of the number of patent applications filed in 2009-10 with 755 applicants out of 7044 Indian applicants. Further, Karnataka ranks 2nd with 12.4 patent applications per million populations. But both these rankings are misleading since there are a large number of research institutions (outside the purview of universities) in Karnataka and these institutions are the main agencies as far as total research publication and patent filings are concerned.

According to the Higher Education in India at a Glance, UGC, 2012, the total number of universities and university level institutions in Karnataka (2010-2011) was 44 with 22 state universities, 2 private universities, 18 deemed universities, one central university and one institution of national importance. The total number of colleges in Karnataka in the year 2010-2011 was 3078. Karnataka has a total of 63,743 teachers in higher education, with a pupil teacher ratio of 15.

However, Karnataka ranks 8 (out of 35) in the national Education Development Index for 2012 in relation to primary and upper primary education. The ranking for colleges has also fallen (as per India Today annual college survey 2012). The India Today list of Top 10 engineering colleges in 2012 has only one college from Karnataka (Karnataka produces 60,000 engineering graduates each year of the total of 10 lakh in the country). If this state of primary and higher education is any indication, Karnataka must address the need for quality education immediately.

6.2   Targets

Key targets for Karnataka:

- Connect all high schools over a Karnataka Knowledge Network (KKN), improve quality of high school education leveraging technology and best in class bi-lingual content
- Connect all government and private colleges over KKN, improve quality of higher education leveraging technology and best in class content
- Set up IIITs in PPP mode
- Set up Institute of Semiconductor and Embedded Technologies to fuel innovation and entrepreneurship in ESDM
- Develop Hubli / Dharwad as a second node for ESDM talent generation

6.3   Recommendations:

Create "Karnataka Knowledge Network (KKN)" comprising following three major components:
- Free Bangalore Wi-FI
- Karnataka School Network
- Karnataka College Network

6.3.1   Provide Free Wi-Fi in Bangalore

Bangalore has been identified as second largest technology cluster in the world. While there are around 8.0 L professionals employed, Bangalore attracts more than 75,000 to 100,000 professionals who have finished education and are anticipating new jobs. Added to this is Bangalore's large student population that is part of the vibrant technology economy. In order to make this pool of technology talent more effective, and also create a global brand as a Fully Wi-Fi City, it is recommended to provide Free Wi-Wi to all the Bangalore citizens through the KKN. Create a fully wired state in Karnataka though "Karnataka Knowledge Network (KKN)"

Free Wi-Fi Network covering Bangalore (1,300 Sq km), with 125 Hot Spots per Sq km with 1000 users/km. Accordingly this network will have 1, 62, 000 Hot Spots covering 13, 00, 000 users.

➔ **A detailed working of the network along with the estimated costs is attached in the Annexure-1 –Education and Annexure -1- Education**

- **Budget for the Free Wi-Fi Network:**
  For the year 2013-2014   : Rs 40 cr
  Total For 7 years (from 2013-2020) : Rs 570 cr

6.3.2   Karnataka School education

- Provide tablets with wireless and 3G connection to students from standard 7 and above in state government schools, preloaded with teaching material for each class and access to a portal where they can download the latest teaching material; source best-in-class content (e.g., from existing open sources like Khan Academy, Gooru Learning, etc); content to be bilingual (Kannada & English) with ability of text to speech conversion. The tablets need to be state of the art technology and should be able to meet the requirement of the student.

➔ **Detailed Specs are provided in Annexure -4-KKN for End User Device**

- Out of the total 7,500 schools, this network will cover to begin with 1,500 schools in 2013 reaching 9,500 by 2020. It is estimated to cover 4, 00,000 students in 2013 and grow up to covering 25,00,000 students by 2020.

➔ **Details of the Design document and workings of the Estimated Cost are attached in the Annexure-4—KKN and Annexure -1- Education**

The overall budget for the School Network covering network infrastructure, class room equipment, tablets for students and content in English and Kannada:

- **Budget:**
  For the year 2013-2014   : Rs 380 cr
  Total For 7 years (from 2013-2020)   : Rs 3125 cr

- Impact: Improved quality of learning; solves problem of distributing expensive text books; eco-friendly approach; makes learning interactive; ideal to build a society of young students who are part of the global emerging e-generation. In the long run this can lead to creating "Inclusive Education" reaching all sections of society in general, and empowering rural children in particular.

6.3.3 Karnataka Higher education

- **Build KKN– Connect all government &private colleges:** This is an extension of the National Knowl edge Network; ensure high speed bandwidth (at least 50 Mbps) on a fully outsourced basis; cost to be borne by government (100% for government colleges and 50% for private colleges for 3 years); content to be made easily available through GOI/IIT's/ERNET etc. IIIT-Bangalore to co-ordinate the consolidation of the content (from global open sources) and be responsible for updating it; provide all students and faculty of government colleges/university a tablet/laptop preloaded with content; students of private colleges to buy the equipment themselves.

- **Set up Institute of Semiconductor and Embedded Technologies:** GOI support for setting up hub and resource centre for technological innovation and entrepreneurship in ESDM

- This network will cover to start with 1,500 colleges out of 7,500 colleges in 2013. Further it will cover 9,500 colleges by 2020. It is estimated to cover 7.9 L students to start with in 2013 and increase this up to 48.52 L students by 2020.

- **Budget:**
For the year 2013-2014	: Rs 1470 cr
Total For 7 years (from 2013-2020)	: Rs 10125 cr

➔ **Details of the Design document and workings of the Estimated Cost are attached in the Annexure-4-KKN and Annexure-1- Education**

6.4 Recommendation Summary

S.No	Recommendation	Budget (Rupees in crores) 2013-2020	Budget (Rupees in crores) 2013-2020
1	Provide free Wi-Fi in Bangalore	40	570
2	Karnataka School education	380	3125
3	Karnataka Higher education	1470	10175
	Total	1890	13870

7.1   Capacity building

The ICT landscape will be completely transformed by 2020 on the demand side. This will call for transformation of business models, infrastructure and talent on the supply side. New opportunities will appear, calling for talent development.

According to estimates, the ICT sector will create employment opportunities for 28 million (30 million according to another estimate by NASSCOM) by 2020. Of this, 2.7 million will be from the high-calibre pool that will be directly employed in the ESDM sector.

The draft National Policy on Electronics 2011 strongly recommends that the electronics manufacturing industry work closely with the private sector, universities and other institutions of learning to design programs that deliver industry-led training that can create the required talent pool for the industry.

Meeting the impending demand for trained and skilled manpower is dependent on:

- **Course, Curriculum and Testing:** To be need-based, industry-led
- **Training delivery:** Designed to scale and meet the demand through creation of master training faculty and other infrastructure; focus on global quality of manpower training; inclusive so that it is made available to all sections of society
- Assessment: Standardized certification that is accepted by industry

7.2   Targets

- **Key targets for Karnataka:**
- Create sustainable talent pool to cater to the demand of 1,50,000 direct, high quality jobs in this sector.
- Create a pipeline of 1,000 master trainers for faculty development
- Develop a common assessment program for ICT/ ESDM Academies
- Set up infrastructure for biometric profiling of ICT professionals

7.3   Recommendations

7.3.1   Create a Central ICT/ESDM Talent Development Academy

Create an ICT academy for the state on a PPP model leveraging the execution capabilities of the private sector and the delivery structure of the state governments. The CEO for the academy should be from the Private Sector with a governing council consisting of appropriate persons from the State government, private sector and other reputed persons in the field. This ICT Academy should also focus on new emerging technology areas in Animation and Parallel computing apart from the Embedded S/W, VLSI Design and other ICT courses.

This academy should focus on creating volume growth in creating quality professionals and should become self-sustaining in less than three years in a PPP model. Further this academy will act as co-ordination centre for secondary and tertiary centres in Emerging ICT Centres (EMICTC).

- **Budget:** Rs 25 Cr
- **Impact:** Low overheads on government administration; global best-practices brought to academy creation

7.3.2   Set-up ICT/ ESDM talent development Centers at (EICTCs)

Set-up ICT/ESDM talent development Centres in all the 7 identified emerging ICT centres, which will function in co-ordination with Central Academy in Bangalore in hub and spoke model. Centres will use all modern distance learning techniques, including interactive teaching. Govt should encourage corporate participation in appropriate models to strengthen the operations of these centres.
- **Budget:** Rs 35 cr
- **Impact:** Secondary and tertiary centres will enable local talent to be pooled and trained for local deployment.

7.3.3   Develop 1,000 Master faculty members per year for ICT/ ESDM Centres

Master faculty members will act as facilitators to train ICT/ ESDM Academy faculty along with IIIT.

- **Budget:** Rs 10.0 Cr per year

7.3.4   Adopt a Common Assessment Program for ICT/ ESDM Centers

Develop a Common Assessment Program for all the skills and urge the industry to hire based on the calibrations of the scores of CAP and employ accordingly. The focus will be on skills and not on academic qualifications alone. Assessment program will be delivered by organizations like NASCOMM for all the skills up gradation.

- **Budget:** Rs 2.0 Cr
- **Impact:** Program will guarantee skills calibrated to industry needs.

7.3.5   Create an Unique biometric profile of all the ICT professionals

Create a database of unique biometric profiles of all ICT professionals in the state of Karnataka. The availability and use of the database will ensure Karnataka is a safe and secure destination for IT related activities

- **Budget:** Rs 10.0 cr
- **Impact:** Ensure safety and security of IT professionals and IT related activity in the state.

7.3.6   Skill Development Financing

Arrange skill development financing schemes through bank loans; state government to provide a 10% default guarantee to banks and encourage them to extend skill development loans at low interest rates. If the state government creates a Rs 100 crore default guarantee fund, the banks may be willing to extend Rs 1,000 crore in skill credit to the youth of the state.

- **Budget:** Rs 100 Cr
- **Impact:** Skill development financing will help all segments of youth participate in and realize the opportunity of ICT.

7.3.7   Set up an Indian Institute of Technology (IIT) at Hubli/Dharwad

Encourage development of Hubli/ Dharwad as a second node in Karnataka by setting up an educational facility that is an institution of repute like IIT to add focus to that region.

- **Budget:** Rs 500 Cr
- **Impact:** Create world-class talent funnel to sustain ESDM industry, innovation and growth

7.3.8   Set up a IIIT at Dharwad based on the GOI Policy

Use PPP mode for setting up; IIIT- Bangalore to be the parent institute (University of Tokyo model). The cost of setting up an IIIT can be addressed with investments of 35% from GOK, 50% from GOI and 15% from private contributions.

This IIIT can be developed as Second Node of Karnataka and can have focused programmes in the following areas:

- Animation
- Electronics Systems Design and Manufacturing (ESDM)
- CUDA parallel programming for nurturing talent with parallel programming skills so they are industry ready in today's world of Hybrid (CPU+GPU) computing

- **Budget:** Rs 150 Cr
- **Impact:** Create world-class talent funnel for higher education to sustain ESDM industry, innovation and growth

7.4   Recommendation Summary

Sl.No	Recommendation	Budget (Rupees in crores) 2013-2014	Budget (Rupees in Crores) 2013-2020
1	Create a Central ICT/ESDM Academy	25	25
2	Co-location of secondary and tertiary ICT/ ESDM Academy Centers	5	35
3	Develop 1,000 Master faculty members per year for ICT/ ESDM Centers. Rs 10 Cr /year to be provided.	10	70
4	Adopt a Common Assessment Program for ICT/ ESDM Centers	2	2
5	Create a database of unique biometric profile of ICT professionals	10	10
6	Skill development financing	100	100
7	Set up an Indian Institute of Technology (IIT) at Hubli/ Dharwad	50	500
8	Set up a IIIT at Dharwad based on the GOI Policy	50	150
	Grand Total	252	892

8.0   Promote Innovation, IP Creation, R&D and Karnataka ICT Innovation

8.1   Increasing Innovation for sustainable value addition

Karnataka has traditionally been a leader in relation to innovation. Bangalore created the IT revolution in the country. Bangalore is recognized globally as the Outsourcing Capital of the World. Karnataka is now poised to take the next big step towards becoming an ICT/ITeS/ESDM R&D and production centre.

The government is geared towards creating an industry friendly policy framework with its focus on clusters of ESDM excellence, policies such as the Modified Special Incentive Package Scheme, capacity building through relevant education and skill development, education loan schemes, financial subsidies, tax incentives and employment opportunities. However, it is innovation and IP creation that deliver business value. Businesses that leverage creativity to generate innovation in their products, services, processes and business models become leaders.

It is necessary to nurture a culture of innovation. This is because innovation:

- Attracts a premium
- Builds competitive barriers
- Becomes a powerful incentive for talent
- Is an engine for sustainable development
- Gains global attention

Government policy must initiate and encourage innovation and the tolerance for risk-taking associated with it.

Worldwide, systems to nurture and monitor innovation around strategy, practice, performance measures, behaviour & culture and rewards & recognition are being formalized. Long run economic growth depends on the creation and fostering of an environment that encourages innovation. Innovation is considered an important driver of long term productivity and economic growth. It is argued that countries that generate innovation, create new technologies and encourage adoption of these new technologies grow faster than those that do not.

8.2   Targets

Key targets for Karnataka:
- Develop 10,000 patents in the ICT domain including 5,000 patents in ESDM by 2020
- Encourage public/private supported R&D labs in Karnataka's emerging ICT Centres
- Create financial eco-system through ICT innovation fund to support 1000 start-ups in Karnataka

8.3   Recommendations

8.3.1   Create Rs 1,000 Cr Karnataka ICT Innovation Fund (ICTIF)

Set up Karnataka ICT Innovation Fund (ICTIF). The overall scope of the fund should be enlarged to take care of IT Sector as well as the ESDM sector. Karnataka ICTIF should also have linkages with industry and the Central Government's Electronics Development Fund; build relationships with development funds available in Israel, Japan, Taiwan, Australia and US to encourage incubation programs. Funding also to be generated through angel networks for the seed fund. This fund can be implemented through the existing frame work of the KITVEN enhancing the scope of and strengthening the same.

- **Budget:** GOK contribution for the overall fund can be around Rs. 300 crore, GOI contributes to be Rs 300 cr and the rest Rs 400 cr shall be raised from banks/market and other funds.
- **Impact:** Fund to take care of financial needs of the ICT industry from funding for startups to growth and debt/working capital; give a boost to the development of competitive products using cutting-edge technology. 1,000 ICT startups created; 100,000 jobs created by 2020 (30% outside Bangalore)

➔   **Details of the ICTIF is given in the Annexure-3-ICTIF**

8.3.2 Create a program to identify 100 Innovators and new Start ups per year

Support annual portfolio of entrepreneurs and innovators through ESDM resource centers and Karnataka ICTIF. Ensure that target of 1,000 start ups by 2020 is met.

- **Budget:** Rs 50 Cr
- **Impact:** Successfully help commercialize products and business; help build product diversity

8.3.3 Encourage setting up of public/private focused R&D Centres in Karnataka:

Karnataka has been the hub of R& D institutions in the country. There is still scope for encouraging R&D in some of the following areas:

a) Parallel computing
b) Animation
c) New Materials

Govt should encourage 3 of these R&D centres to come up in one of the 7 Emerging ICT centres. For such R&D institutions GOK should provide the following support:

a) Land to be provided at concessional rate or free of charge.
b) 10-15% of the overall project cost to be supported as a grant.
c) Full exemption from the VAT for all the capital purchases of the project.

Budget: The overall budget for such centres: Rs 300 Cr (Rs 100 Cr for each of the three centres)

8.3.4 Set up ESDM/VLSI Innovation Centers

Set up ESDM/VLSI incubation centers in association with DeitY/Software Technology Parks of India (STPI)/Academic Institutions/Industry Associations/Industry. These innovation centres should have focus in VLSI design tools, characterisation labs and electronics system prototype development etc.

Investments and policies recommended in this report to initiate and boost ESDM/ICT related infrastructure, fiscal measures, entrepreneurship, innovation, R&D, testing, education, talent development, marketing and promotional support and collaboration networks to be made available to these innovation centres. Govt should encourage atleast 3 innovation centres, which can be set-up along with the "New Age Incubation Network" of 7 EMICTCs.

The VLSI lab which is being setup at IITB with GOK's support should be upgraded to ESDM innovation center and should act as a nodal point for all other ESDM innovation centers across the state.

Budget for 3 ESDM Innovation Centres:
  For the year 2013-2014 : Rs 30 cr
  Total for 7 years (2013-2020) : Rs 90 cr

Impact: Will help achieve the target of 10,000 patents and products designed in India for Indian markets which in turn will create a huge multiplier effect on economic and job value.

8.3.5 Promote Indian IP for ICT patents (other than ESDM patents) development

Facilitate IP development by Indian industry, academic and R&D institutions by providing incentive of Rs. 100,000 for successful Indian patent and Rs. 500,000/- for successful global patent. A target of 5,000 patents to be achieved with 3000 patents filed in India and 2000 patents filed in other countries. This budget is for ICT patents other than ESDM. The incentives for ESDM patents are covered in ESDM section Chapter 5.

Budget for 5000 patents:
  For the year 2013-2014 : Rs 10 cr
  Total for 7 years (2013-2020) : Rs 130 cr

8.3.6   Promote R & D amongst the Indian ICT corporates

It is essential for India to create IP and R & D focus amongst all corporates so that the culture of innovation and IP development will establish a strong foundation in the long run. This will eventually help India to strengthen its IP/product based economy in addition to the service based economy in the ICT sector.

Provide 20% of overall R&D expenditure of the company as grant subject to a maximum of 2% of annual turnover for Karnataka ESDM companies.

     Budget for R&D:
         For the year 2013-2014   : Rs 117 cr
         Total for 7 years (2013-2020)   : Rs 1,750 cr

8.4   Recommendation Summary

SI No	Recommendation	Budget (Rupees in Crores) From 2013-2014	Budget (Rupees in Crores) From 2013-2020
1	Create Rs 1,000 Cr Karnataka ICT Innovation Fund (ICTIF) with 30% from GOK, 30% from GOI and 40% from private and public financial institutions	300	300
2	Create a program to identify 100 Innovators and Entrepreneurs per year	7	50
3	Set up ESDM/VLSI Incubation Centres in association with DeitY/ Software Technology Parks of India (STPI)/Academic Institutions/Industry Associations/Industry		
3a	Provide R&D grants	117	1775
3b	Set up 3 ESDM Innovation Centers with state-of-the-art facilities	30	90
3c	Provide incentives for achieving filing 5000 Patents		
	60% of 5000 patents - Incentive for filing India Patent	6	78
	40% of 5000 patents - Incentive for filing Foreign Patent	4	52
4	Encourage setting up of public/private focused R&D centres in Karnataka (3 centres- Rs 100 Cr for each centre)	300	300
	Grand Total	**764**	**2645**

9.1   Creating new opportunities and jobs

India needs to create 1- 1.5 crore (10-15 million) jobs per year for the next decade to provide gainful employment to its young population. The Planning Commission says that accelerating entrepreneurship and business creation is crucial for such large-scale employment generation. ICT and ESDM industries in Karnataka can be major contributors to the national mission.

It is a proven fact that entrepreneurship-led economic growth is typically non-bureaucratic, inclusive, and sustainable and drives quality education and innovation. On the other hand, India's public and private sector have failed to deliver on the promise of increased employment over the last few decades. If anything, public sector and government employment, as per the Planning Commission's report, has declined. The private sector has also been slow to add to employment due to increasing digitization, automation and productivity gains (see table below).

Sector	Current employment	Employment creation potential	Rationale
Public sector	~9%	Low	Employment declined by ~1% (00-'05) 11th 5 Year Plan estimated only 8% contribution to new opportunities required
Traditional Private sector	~91%	Low	Witnessing negligible employment growth due to digitization and productivity increases, e.g. +Indian banks witnessed ~0% employment growth (91- 11) +Agriculture employment stagnated

Source: Creating a Vibrant Entrepreneurial Ecosystem in India, Report of The Committee on Angel Investment & Early Stage Venture Capital, June 2012, Government of India Planning Commission

According to the Kauffman Foundation, a well-regarded research body in the US, "On an average, existing firms are net job destroyers, losing 1 million jobs net combined every year. By contrast, new, less than one year old firms added an average of 3 million jobs in total." Developing countries need to, and most likely will, understand the importance of business and entrepreneurship to their continued development.

There is ample evidence that Indian entrepreneurship is poised for a major boost. Companies that were entrepreneur driven such as HCL, Cognizant, Infosys, and Bharti, India Bulls, Makemytrip, Naukri, have demonstrated that they can achieve scale and value (testified through public listings). Others such as Flipkart and InMobi continue to demonstrate the power of Indian entrepreneurship.

Several nations, including the US, Israel, Singapore and New Zealand, have proven how entrepreneurship generates jobs. The process has been accelerated through government policy and an appropriate regulatory framework, through access to early stage capital, through the creation of knowledge networks, through the creation of entrepreneurial hubs, and a culture that encourages collaboration and exposure to global business.

India has the potential to build about 2,500 highly scalable businesses in the next 10 years – and given the probability of entrepreneurial success that means 10,000 start-ups will need to be spawned to get to 2,500 large-scale businesses. These businesses could generate revenues of Rs 10 lakh crore (US$200 billion) – a contribution to GDP and creation of employment at the same time. Karnataka can play a major role in the country realizing this potential.

9.2   Targets

Key targets for Karnataka:

1. Focusing on creating 1,000 ICT start ups
2. Promote Incubation Network facilities as part of 7 Innovation centres and make the Angel funds available through the ICTIF fund.
3. Launch business plan competition
4. Subsidized membership for start ups to industry bodies
5. Set up events, road shows, creativity hubs etc for start ups
6. Guaranteed government IT purchases from start ups
7. Make software licenses available on pay per use basis
8. Partner with NASSCOM to create the Karnataka 10K Start up Program

9.3   Recommendations

9.3.1   Build "New Age Incubation Network" at all the 7 EMICTCs.

The current incubation models that are prevailing are either infrastructure support incubation centres or Academic focused incubation centres. However it is essential to create "New Age incubation centres" at all the 7 centres with the active support of the Industry, Academia and the Govt. Some of these incubation centres can be further strengthened to focus more on IP/product developemt as "Innovation centres". All the basic incubation centre will contain the following:

> Plug and Play infrastructure.
> Software available in SAS model
> VLS tool library etc.

Each of these incubation centres should be supported by committee of the members from Academia, Industry and Govt. The charge mechanism of these incubation centres should be low cost in nature in the beginning and incubation centres should be encouraged to pick up the equity of the incubating companies in lieu of the first year charges. These incubation centres should also work in close association with the ICTIF fund operated under KITVEN, and should become self sufficient within three years of operation.

> **Budget:** 15 cr
> **Impact:** These incubation centres will foster entrepreneurs and business that contribute to the growth of the ICT sector.

9.3.2   Launch business plan competition

Have an on-going business plan competition with 20 winners every quarter getting equity of Rs 5 lakh to Rs 25 lakh (or interest free loan). Get a selection panel from TiE, NASSCOM, Angel groups, investors, etc
> **Budget:** Rs 2.5 Cr/ year
> **Impact:** Help identify and encourage the best ideas and innovations

9.3.3   Limited-period subsidized membership for start ups to industry bodies

Offer memberships to start ups at 10% of normal cost, for three years, to any one industry organization that the start up wishes to be a part of. The balance 90% of cost shall be shared equally between the industry association and the government.
> **Budget:** Rs 2.0 Cr/ year
> **Impact:** Start ups able to gain from industry network

9.3.4   Provide access to events and conduct road shows

Sponsor visits to events outside home location of entrepreneur

> **Budget:** Rs 2.0 Cr / year
> **Impact:** Access and exposure to industry outside of home location that also creates healthy exchange of ideas and information

Have road shows with role models from all over India visiting colleges in and outside Bangalore

> **Budget:** Rs 2.0 Cr / year Impact: Enhanced exposure for start ups to ideas from outside; access to mentorship opportunities; ability to build networks

9.3.5   Guaranteed government IT purchases from start ups

Stipulate that 20% of all State Government purchases in IT should go to start ups registered with the ICT/ESDM entrepreneurship cell which are making progress in employment. This can include call centre and BPO services.

      Impact: Reward for startups that are creating employment opportunities through guaranteed revenues

9.3.6   Set up creativity hubs to support innovation, collaboration, and networking

This is the equivalent of a community centre that is part of the 7 ESDM/VLSI Innovation Centres set up in association with DeitY/Software Technology Parks of India (STPI)/Academic Institutions/Industry Associations/Industry. Model such spaces after those in London and several other cities that are promoting entrepreneurship and innovation (one organization that runs this is called THE HUB www.the-hub.net).

      Impact: Improve knowledge sharing

9.3.7   Partner with NASSCOM to create the Karnataka 10K Start up Program

Program should be driven by NASSCOM to create awareness of technological entrepreneurship and build entrepreneurship capability among the youth of Karnataka and help start ups at seed stage with mentorship and capital.

      Budget: Rs 16.5 cr
      Impact: Enable creation of 250 technology start ups in next 24 months

9.4   Recommendation Summary

Sl No	Recommendation	Budget (Rupees in Crores) 2013-2014	Budget (Rupees in Crores) 2013-2020
1	Build new age "Incubation Network" facilities	5	70
2	Launch business plan competition Rs 2.5 Cr per year	2.5	17.5
3	Limited-period subsidized membership for start ups to industry bodies Rs 2.0 cr per year	2	14
4	Provide access to events & conduct road shows Rs 4.0 cr per year	4	28
5	Guaranteed government IT purchases from start ups		Nil
6	Set up creativity hubs to support innovation, collaboration, and networking		Nil
7	Make software licenses available on pay per use basis		Nil
8	Partner with NASSCOM to create the Karnataka 10K Start up Program	16.5	16.5
	Grand Total	30	146

10.1   Going beyond Bengaluru

ICT clusters bring together industry, entrepreneurship, education, talent, research and infrastructure to create employment and dynamic economic benefit. Combined with government policy, ICT clusters and ecosystems can magnify geographic and other advantages.

ICT clusters also ensure lasting growth as amply demonstrated by Bangalore, Silicon Valley (US), Oulu (Finland) and Dresden (Germany). Start ups in these geographies have shown tremendous success. Established companies have moved in to leverage the talent and have, in turn, succeeded. These clusters have very well developed educational institutions and continue to attract the best global talent.

10.2   Targets

Key targets for Karnataka:
        Identify and develop at least 7 cities as emerging ICT centres in Karnataka

10.3   Recommendations

10.3.1   Replicate the Bangalore cluster model in emerging ICT cities and towns

Karnataka should aim to replicate the Bangalore cluster model in cities and towns that are ready for such development and has potential for growth

At the core of the effort should be the creation of policies and an environment that promotes and stimulates new investments in the ICT Sector at these identified locations.

Accordingly these centres need the following elements for triggering the Growth.

- Talent Development Centre
- Industry Association & Marketing support
- ESDM Innovation Centre
- Non-IT Skill development Centre
- Land, Infra support & Incubation Centres
- Rural Technology & Business Operations

A pictorial depiction of the model is shown below:

Mangalore, Mysore, Hubli, Dharwad, Gulbarga, Belgaum and Shimoga to become Emerging ICT centres

The Government needs to develop each ICT Centre, E.g. Mangalore, around the elements depicted in the picture trigger growth.

10.3.1.1 Industry Promotion

a) Incentivize and encourage industry associations

Provide a budget for the ICT associations in new ICT centres: Budget for quarterly events for next 5 years to make these places exciting and eventful

Budget: 2 cr per year for a total of 14 cr over 7 years

Impact: Attract attention to the new ICT centres; attract and retain talent in new ICT centres

b) Provide marketing support for the industries around these centres

c) Provide employment incentives

Offer all the ICT companies who are registered with STPI, SEZ or other agency like the IT department, a quarterly payment at two times the company contribution to ESI/ PF up to Rs. 2,500 per every employee per month for up to 2 years. This incentive should be prevalent for the next 5 years.

Budget: Rs 200 Cr over 7 years.

Impact: ability to create at least 100,000 jobs in these places by 2020

10.3.1.2 Create incubation centres/ESDM innovation centres

Refer to Chapter 8, Section 8.3.3

10.3.1.3 Create NON-IT Skill Development Centres in all the 7 emerging ICT centres of Karnataka

There is huge need of the skill work force for the support functions of corporate in general and IT industry in particular. There is immediate need to bring in certification in these domains like House Keeping, Security etc.

➔ **A Detailed presentation on the programme to setup Non-IT skill development centers is placed in Annexure-5-(Project 'Garv').**

Budget: Rs 3 Cr/centre totalling around Rs 21 Crores

Impact: Unemployed/minimal educated rural youth would get opportunities in the areas of their choice to get skill certified. Corporates will get access to the certified skilled youth for all their supporting functions.

10.3.1.4   Land and infrastructure to be developed

Incentivize real estate industry to develop emerging ICT centres.

Real estate developers to be incentivized to develop 10-15% of the total space they are creating in Bangalore in the new ICT centres. If possible, this should be made mandatory.

- Develop integrated towns in each of the ICT cities on PPP model
- Give special incentives to develop hotels and other social infrastructure in new ICT centres

10.3.1.5   Set-up Karnataka Rural Technology & Business Operations (RTB-Ops)

Create RTB Ops Centres in all the 7 identified Innovation Centres with proper infrastructure and training for rural youth. The target for RTB Centres will be to train 50,000 youth from underserved socio-economic backgrounds and school drop outs in the next 5 years (200,000 by 2020). The training imparted will be for youth aged 17-21 in English and computer skills. Training programs will be 5 to 6 months in duration and cost Rs 15,000 (approximately).

Trained personnel will be provided employment in GOK internal call centres and citizen service centres (police, VAT department, excise department, utility companies etc) set up in these cities/ towns. RTB-Ops entities must be able to demonstrate capability and execute business from non- Government clients as well. The total amount of business from Government or related to Government work should not be allowed to exceed 50% of the work executed by the entity The infrastructure required to accommodate 50,000 people will be 20 lakh sq ft spread across the 7 regions of Karnataka (South, South-east, West, North-west, North, and Central). The infrastructure can be leased out to RTB-Ops at a reasonable rate on a pay as you go basis. Fiscal incentives along with international academic tie ups and collaborations will assist entrepreneurs in setting up RTB Ops Centre and delivering quality training while government provides subsidies (to students for education) and banks provide students with vocational loans.

Budget: Rs 210 Cr (cost of setting up 7 centres) + Rs 10 Cr marketing fund for RTB-Ops
Impact: Jobs created for 50,000 underserved rural youth in next 5 years growing to 200,000 youth by 2020; rural underserved brought into mainstream; additional revenues of Rs 2,500 Cr (cumulative) by 2020

➔ **Details of the RTB Ops Centres are given in the ANNEXURE-7-RTB-Ops**

10.3.1.6   Create new talent development centres with the help of government in these locations

All the talent development centres will work in synchronisation of the "State Level Talent Development academy" which is recommended to be set-up under PPP model.

This will improve the availability of the talent on continuous manner and will provide the opportunity for the rural youth to get these talent development programmes closer to their home towns. These talent development centres can provide the programmes that are sought by the Industry from time to time.

Budget: Rs 5 Cr / Centre, total of Rs 35 Crores.
Impact: Local high-value talent creation

10.3.7   Developing Govt supported IT infrastructure in the 7 EMICTs

Government should start its own or outsource its call center operations; Nodal centres of the citizen service centres, State Data Centres and other department data centre operations/Communication Hubs etc. Such initiatives from the Government trigger the growth in those areas.

Budget: The existing Budgets of various departments for such functions should be mandated to be utilised in those cities, which otherwise would have been utilised in Bangalore.
Impact: Such initial emphasis by the Government can attract the technical talent to these cities resulting in growth of ICT and bring in socio economic impact at these EMICTs.

10.3.8   Adopt some of the state policies for capital subsidies and employment incentives based on employment numbers at the 7 EMICT locations

10.4   Recommendation Summary

Sl No	Recommendation	Budget (Rupees in Crores) 2013-2014	Budget In Crores 2013-2020
1	Karnataka should aim to replicate the Bangalore cluster model in cities and towns that are ready for such development and has potential for growth	Nil	Nil
1a	Incentivize and encourage industry associations	2	14
1b	Provide marketing support for the industries around these centres	Nil	Nil
1c	Provide employment incentives	100	200
2	Create incubation centres	Refer to Chapter 8, Section 8.3.3	Refer to Chapter 8, Section 8.3.3
3	Create NON-IT Skill Development Centres in all the 7 emerging ICT centres of Karnataka	3	21
4	Land and infrastructure to be developed	As required on PPP Model	As required on PPP Model
5	Set-up Karnataka Rural Technology & Business Operations (RTB-Ops)	90	220
6	Create new talent development centres with the help of government in these locations.	5	35
7	Developing Govt supported IT infrastructure in the 7 EMICTs	Existing Budget	Existing Budget
8	Adopt some of the state policies for capital subsidies and employment incentives based on the number of people employed at these 7 locations.	Existing	Existing
	Grand Total	200	490

11　ICT Relationship with other countries & Focused Marketing

11.1　Leverage the global eco-system

ICT is a global industry. There are pockets of excellence all over the world that can provide thinking, technology, best practices, access to markets and access to capital. For these reasons, it is important to build relationships with other countries that consider ICT important to their growth and economic progress. Bangalore has largely benefitted because of its global reputation built over a period of time. Because of this branding, many country premiers have visited Bangalore, which has brought in unprecedented and tangible benefits. It is very important for Bangalore to maintain those relationships for the benefit of the industry. Karnataka should continue to market itself in those countries.

Now in the current changed scenario, growth of the domestic market is also very attractive. Many countries like Israel, Taiwan and Australia have several IPs which were not commercialized because of a lack of markets. At this time, India in general and Karnataka in particular should build relationships with these countries so that IPs can be commercialized with our engineering skills.

11.2　Targets

Key targets for Karnataka:

1. Set up dedicated Global Guidance and Monitoring Group in State Department of ICT
2. Use External Affairs Ministry to conduct road shows in Delhi
3. Sign MOUs with identified countries/ sister cities indicating areas of co-operation
4. Identify top 50 companies in the world for potential ESDM investments in Karnataka
5. Provide all necessary support for the existing MNC companies to grow YOY in Karnataka

11.3　Recommendations

11.3.1　Set up a dedicated global guidance group in State Department of ICT

The group will guide, monitor and improve Karnataka's interaction with foreign countries and to operationalize the MOUs

11.3.2　Use External Affairs Ministry to conduct road shows in Delhi

Invite Ambassadors/ Consul Generals in New Delhi

> **Impact:** This will attract global attention to ESDM/ ICT initiatives

11.3.3　Sign MOUs with identified countries to build relationships with labs in their countries

Sign MOUs with identified countries indicating areas of co-operation, with special focus on building relationships with labs in their countries. Karnataka also should offer special packages for these labs to enhance and strengthen relationships.
> **Impact:** Gain access to ideas, initiatives, bets practices, markets in key countries. Attract investments from other countries

11.3.4　Sign Sister-city MOUs with potential countries

> **Impact:** Gain access to ideas, initiatives, bets practices and markets in key countries.

11.3.5　Organize very focused delegations from these countries

> **Impact:** Market Karnataka as global ESDM/ ICT centre. Create ambassadors for Karnataka ESDM/ ICT initiatives.

11.3.6　Identify top 50 companies in the world for potential ESDM investments in Karnataka

Identify top 50 companies with interests in ESDM. Engage with these companies and work with them by providing a special package of incentives to attract investments in the ESDM sector in Karnataka.

> **Impact:** Gain access to global investors and their networks
> Overall Budget allocation of Rs 2 cr per year, for a total of 14 cr over 7 years, for all of the above recommendations.

11.4   Recommendation Summary

SI No	Recommendation	Budget (Rupees in Crores) 2013-2014	Budget In crores 2013-2020
1	Set up a dedicated global guidance group in State Department of ICT to guide, monitor and improve Karnataka's interaction with foreign countries and to operationalize the MOUs		
2	Use External Affairs Ministry to conduct road shows in Delhi		
3	Sign MOUs with identified countries indicating areas of co-operation		
4	Sign Sister-city MOUs with potential countries		
5	Organize very focused delegations from these countries		
6	Identify top 50 companies in the world for potential ESDM investments in Karnataka		
7	Provide all necessary support for the existing MNC companies to grow YOY in Karnataka		
	Overall budget of Rs 2 cr per year for all of the above recommendations	14	14

12.1   Making Bangalore world class to attract international investments

Bangalore is one of India's fastest growing cities. In a 2012 survey conducted by Mercer, Bangalore was rated as the best Indian city to live in. Globally, Bangalore moved from 141 rank to 139 in the 2012 Quality of Living Worldwide City Rankings of the Mercer survey. The international business community will closely follow what Bangalore does and how it evolves over the next decade. The city's decisions on development will decide its productivity which in turn will decide if global businesses choose Bangalore as their centre for future growth.

Bangalore must aim to improve its infrastructure, working and living conditions, if it is to continue to attract international investments. According to a McKinsey report, 70% net new employment in India will be generated in cities by 2030, US$1.2 trillion of capital will be needed to meet projected demand in Indian cities, 700-900 million square meters of commercial and residential space (equivalent to the city of Chicago) will have to be built every year, 2.5 billion square meters of paved roads will have to be added (20 times the capacity added in the last decade), 4,700km of metros and subways will have to be constructed (20 times the capacity added in the last decade). The report forecasts that Karnataka will be amongst the five top states in terms of urbanization. The process of addressing this growth and preparing for it must begin now. It is equally important to make investments in Karnataka's major cities because they are the source of 80 to 85% of tax revenues for the government.

Five states are likely to be more than 50 percent urbanized

	Urbanization rate, 2008 %, total population	Urban population Million	Urbanization rate, 2030 %, total population	Urban population Million
Tamil Nadu	53	35.4	67	53.4
Gujarat	44	25.2	66	48.0
Maharashtra	44	47.9	58	78.1
Karnataka	37	21.6	57	39.6
Punjab	36	10.0	52	19.0
Haryana	31	7.5	45	15.2
West Bengal	29	25.8	40	41.5
Kerala	28	9.7	41	15.8
Andhra Pradesh	28	23.4	46	45.5
Madhya Pradesh	25	17.2	32	29.9
Jharkhand	25	7.6	31	12.0
Rajasthan	24	15.5	33	29.5
Chhattisgarh	24	5.8	40	11.7
Uttar Pradesh	21	39.2	26	68.9
Orissa	18	7.0	24	11.0
Himachal Pradesh	12	0.8	20	1.8
Bihar	9	8.9	17	21.3

SOURCE: India Urbanization Econometric Model; McKinsey Global Institute analysis

The cost of delay: According to estimates by the KIG, a delay in addressing the infrastructure needs of Bangalore until 2020 will mean an escalation of costs from the current estimate of Rs 255,992 crore to Rs 318,000 cr (also see the attached report by Jones Lang LaSalle: Validation of Real Estate Related Workings of KIG Vision 2020, Karnataka, India).

Balanced approach: In keeping with global thinking, Karnataka must create a balanced approach to development, ensuring that the five dimensions of productivity, infrastructure, quality of life, equity and environmental sustainability are addressed. Such a balanced approach will help in creating equilibrium between Industrial & Economic development and Social & Ecological development.

Dimensions	Definitions/ variables
Productivity	The productivity index is measured through the city product, which is composed of variables such as capital investment, formal/ informal employment, inflations, trade, savings, export/ import and household income/ consumption. The city product represents the total output of goods and services (value added) produced by a city's population during a specific year
Quality of life	This index is a combination of three sub-indices: education, public-health sub index and public spaces.
Infrastructure development	This index combines two sub-indices: one for infrastructure proper and one for housing
Environmental sustainability	This index is made of three sub-indices: air quality (PM10), CO2 emissions and indoor pollution
Equity and social inclusion	This index combines statistical measures of inequality of income/ consumption (Gini coefficient) and inequality of access to services and infrastructure

The current indicators for quality of life in Indian cities is poor (see chart below). The metrics related to quality of life need to be improved. With adequate planning, it is possible to ensure world class infrastructure for Bangalore, making it a model for growth and development in the country.

The current performance of India's cities is poor across key indicators of quality of life

Legend:
- Current
- Basic service standard
- Best in class

Water supply quantity
Liters per capita per day
- 105
- 150
- 220

Share of public transportation
%, total trips
- 30
- 50
- 82

Parks and open space
Square meters per capita
- 2.7
- 9
- 16

Sewage treated
%, sewage generated
- 30
- 100
- 100

Solid waste collected
%, total waste generated
- 72
- 100
- 100

Slum population
%, total population in cities
- 24
- 0
- 0

SOURCE: United Nations; press search; City Development Plans; The Energy and Resources Institute; Planning Commission; Census 2001; Central Pollution Control Board; McKinsey Global Institute analysis

Maximizing potential and productivity: Intervention by the Karnataka Government can trigger and shape a surge in planned, well-executed urban development, ensuring that Bangalore continues to attract international talent and business. More importantly, fresh sectoral policies can be aimed at ensuring that areas around Bangalore and other parts of Karnataka benefit directly from such investments, fuelling job creation and employment.

Karnataka is well positioned to lead the way in rethinking urban prosperity in the 21st Century through policies that offer adequate public services and through action that leads to sustainable and equitable growth, enabling individuals to maximize their potential and productivity.

12.2   Targets

Key targets for Karnataka:

- **Mobility & Transport**
  1. Mass Public Transport System - ensure at least 60% population uses public transport
  2. Non-Motorized Transport Initiatives - raise Walk-ability Index to global standards
  3. High Speed Travel Corridor – Reduce commuting between city extremes to less than 60 minutes

- **Sustainability & Environment**
  4. Water Resources – Optimize water usage & enhance conservation of natural resource
  5. Green Initiative - Reduce carbon footprint & conserve resources
  6. Low Cost Housing – Create affordable housing for all
  7. Smart Cities and Emerging Cities - Walk to work to be enabled and encouraged
  8. Public Sanitation Initiatives – Provide Hygienic toilets for all
  9. Solid Waste Management -Ensure garbage free cities
  10. Air Quality & Dust Mitigation - Attain and excel the National Ambient Air Quality Standards of 2011
  11. Social Welfare Initiatives - Create a respectful and altruistic society
  12. Parks and Afforestation - Create a greener and cleaner Bengaluru

- **Services & Utilities**
  13. Homeland Security, Traffic Management and Surveillance - Ensure a safe and livable city and increase commuting speed
  14. Fire & Life Safety - Ensure emergency response time is within 3 minutes
  15. Power - Ensure reliable and uninterrupted power
  16. Development Control Rule Amendments - Enhance structured, sustainable and organic development
  17. Networking and WiFi - Networking the common man

12.3   Recommendations

- **Mobility & Transport**

12.3.1   Mass Public Transport System - Encourage at least 60% of the commuters to use public transport

1. Metro connectivity (Phase 1, 2 and 3) to cover over 250 kms by 2020 in Bengaluru
2. Capacity building of BMTC services- addition of 3000 more buses by 2020
3. Sub-urban commuter rail system to link up surrounding towns
4. Capacity building of City Taxies within CBD & SBD
5. Create multi modal transport centers with MLCP's near them
6. BRTS along the ORR, PRR and Radials from ORR to PRR
7. Implementation of Intelligent Transport System
8. Incentivize car pooling
9. Ban on-street and footpath parking and mandate organized paid parking compulsory within CBD to improve lane driveway

Budget: Rs 75,706 Crs
Impact: Bring down congestion; reduce pollution, improve access to city centers to create a dynamic city on par with global standards for sustainable environments.

12.3.2   Non-Motorized Transport Initiatives - Raise Walk-ability Index to global standards

1. Roads to be remodeled as per Tender SURE specifications
2. All roads should provide for pedestrian crossings
3. Skywalks at major locations with escalators
4. Public bike sharing system
5. Pedestrian overhead crossings with lifts and escalators
6. Automated bicycle sharing system
7. Covering of the Primary & Secondary Storm Water Drains to facilitate cycling tracks & boulevard development – 850 Kms

Budget: Rs 1,930 Crs
Impact: Induce walking for better health. Reduce burden on public transport. Improve access to public spaces to create a dynamic city on par with global standards.

12.3.3   High Speed Travel Corridor - Commuting between city extremes in less than 60 minutes

1. Complete the Peripheral Ring Road in two phases – 118 Kms
2. Create elevated/underground Core Inner Ring Road around CBD - 28 Kms
3. 6 Radial link roads connecting Core Inner Ring Road- ORR and PRR
4. Extension of 11 Link Roads beyond PRR - 165 Kms
5. Development and up-gradation of Arterial and Sub-arterial roads as per Tender SURE guidelines - 1,940 Kms
6. Development of other city internal roads in lines of Tender SURE guidelines - 8,000 Kms
7. Implement Satellite Town Ring Road linking up the BMRDA satellite townships - 204 Kms
8. High Speed Rail Link to Mysore and BIAL
9. Construction of additional Grade Separators & Roads over bridges/ RUB's
10. Use of single toll card across all toll roads

Budget: Rs 94,907 Crs
Impact: Commuting from one end of PRR to other in less than 60 minutes during peak traffic; ability to attract better talent because of improved standard of living

Sustainability & Environment

12.3.4   Water Resources - Optimize of water usage & enhance conservation of natural resource
1. Reduction of unaccounted water from 56% to at least 25% - potential recovery of over 200 MLD
2. Commercial losses of over 12 to 15% to be plugged immediately by incentivizing local zonal offices
3. Recycling and reuse of waste water - recovery of at least 50% of domestic consumption
4. Mandate reuse of grey water for all consumers of over 30 KLD
5. All newer developments/ layouts to have dual piping
6. Industries to be mandated for the use of tertiary treated water for non-portable applications
7. Up-gradation of existing secondary treatment plants to tertiary treatment standards - potential recovery of 500 MLD for Indirect Potable Usage
8. Segregation of sewage from storm-water drains & treatment
9. Zero discharge concept for larger developments
10. Rejuvenation and rehabilitation of over 400 lakes & water bodies - potential of over 200 MLD
11. Channelizing of all primary and secondary Storm Water Drains and formation of service corridor along side for sewer lines - 850 Kms plus reduction of flooding in city
12. Land to be identified for water-treatment plants, sewage treatment plant and reservoirs for spatial expansion
13. Collection of excess storm-water runoffs in 2 or 3 balancing reservoirs in the 3 valleys around Bengaluru and treating & supplying to existing BWSSB storage reservoirs - potential of over 500 MLD
14. Use of ICT in BWSSB distribution monitoring system
15. Creation of 10 or more water testing facilities across the city under IISc for water quality monitoring
16. BWSSB to engage in green power for long term sustainability
17. Service level benchmarking for utilities to be implemented as per Ministry of Urban Development guidelines

Budget: Rs 32,540 cr
Impact: Rationalized use of water following global best practices to make Bengaluru and Karnataka into global role models in conservation and resource management.

12.3.5 Green Initiative - Reduce carbon footprint & conserve resources

1. Mandate GRIHAA/ LEED Gold certification for all future developments over 50,000 sft
2. Existing developments over 100,000 sft to be certified by 2020
3. All IT/ITES developments to utilize at least 15% green power
4. Telecom towers to use green power over the next three years
5. Clean technologies in vehicles – Electric Vehicles, Hybrids, plug-in hybrid engines, Bio-fuels, Ethanol blends, Hydrogen, Fuel cells
6. Introduction of public charging Electric Vehicles & subsidies by Government for Electric Vehicles

Budget: Policy Matter
Impact: Conserve resources, bring down long-term costs, reduce pollution, improve public health metrics; ability to attract better talent because of improved standard of living

12.3.6 Low Cost Housing – Create affordable housing for all

1. 750,000 dwelling units in the EWS/ LIG category to be provisioned for the city
2. Land of about 4,500 acres need to be earmarked in and around Bengaluru. This land can be then sold to Low Income Developers
3. Subsidies and grants as admissible by the GOI/ National Housing Bank/ State Government to be made available
4. All newer developments to be mandated for low cost housing either within certain developments or as separate developments
5. Corpus for such development in other emerging cities to be earmarked by the Government
6. Integrate Slum Rehabilitation program
7. Relaxation of FSI norms to reduce per flat land cost

Budget: Rs 4,272 cr
Impact: Balanced society growth, higher equity between social strata leading to stable cities; ability to attract better talent because of improved standard of living

12.3.7 Smart Cities and Emerging Cities - Walk to work

1. Develop Satellite Smart Cities which are self-sustainable and integrated
2. Smart cities within CBD with high densification to be part of the zonal planning and are to be self-sustainable
3. Government to set up data center in developing and emerging cities (non-urban)
4. Improve connectivity between urban and developing areas
5. Incentivize social infrastructure development in emerging cities

Budget: Policy Matter
Impact: Satellite cities to reduce pressure on Bengaluru; develop new centers for growth

12.3.8 Public Sanitation Initiatives - Hygienic toilets for all

1. Ratio of 1 public toilet seat per 150 of the population as per International standards
2. Implementation of National Urban Sanitation Policy
3. Construction of Community Toilet Complexes at all strategic locations

Budget: Rs 1,788 Crs
Impact: Improved public health; improved global image as destination for business; ability to attract better talent because of improved standard of living

12.3.9   Solid Waste Management - Ensure garbage free cities

1. Long term sustainable plan for waste to energy plants to be implemented thereby reducing dependence on landfills
2. 80% of solid waste generated to be reused/recycled
3. Solid waste Management to be decentralized within zones & not centralized
4. Source segregation from major producers of waste viz commercial establishments, hotels, apartment complexes, offices
5. Incentivize waste to energy schemes

Budget: Rs 1,310 Crs
Impact: Sustainable practices to improved public health; lowered cost of public health management; improved global image as destination for business; ability to attract better talent because of improved standard of living; improved availability of energy

12.3.10   Air Quality & Dust Mitigation: Attain and excel the National Ambient Air Quality Standards of 2011

1. Mandate use of CNG for all public vehicles within city limits (for buses, autos, city taxies & company cabs)
2. Ambient air quality monitoring stations at more locations
3. Soft and hardscaping of all open stretches to avoid dust collection
4. Implement precast construction techniques to reduce pollution due to construction
5. Implement Dust free construction techniques

Budget: Policy Matter
Impact: Lowered cost of public health management; healthy workforce for higher productivity; improved global image as destination for business; ability to attract better talent because of improved standard of living

12.3.11   Social Welfare Initiatives - Create a respectful and altruistic society

1. Create animal welfare measures and shelters for stray animals
2. Create civic awareness campaign initiatives
3. Identify and maintain playgrounds in each of the layouts
4. Identify and the creation of crematoriums and burial grounds in each of the layouts

Budget: Rs 2,568 Crs
Impact: Improved social environment; improved global image as destination for business; ability to attract better talent because of improved standard of living

12.3.12   Parks and Afforestation - Create a greener and cleaner Bengaluru

1. Parks to be developed and maintained
2. Lung spaces to be earmarked at all new layouts
3. Rapid tree plantation in scientific manner to be under taken to replenish the greenhouse effect due to urbanization

Budget: Rs 1,854 Crs
Impact: Improved environment leading to improved health; improved global image as destination for business; ability to attract better talent because of improved standard of living

Services & Utilities

12.3.13 Homeland Security, Traffic Management and Surveillance - Ensure a safe and livable city and increase commuting speed

1. Over 900 city junctions to be improved for smoother flow of traffic
2. 360 junctions have been signalized. 180 have been fitted with surveillance cameras. The balance amount to be executed
3. Surveillance cameras along all arterial & sub-arterial roads
4. Synchronization of traffic signals with appropriate fiber connectivity
5. Education on road usage & discipline
6. Imposition of congestion tax within CBD during peak hours
7. Adequate funding for operations and maintenance of personnel and infrastructure to be ensured
8. Aerial Monitoring system through Unmanned Aerial Vehicle for Emergency responses
9. Deployment of Heli-Ambulances

Budget: Rs 689 Crs

Impact: Improved security; lowered congestion; better connectivity leading to convenience; improved productivity; improved global image as destination for business; ability to attract better talent because of improved standard of living

12.3.14 Fire & Life Safety - Ensure emergency response time is within 3 minutes

1. Fire stations and services to be augmented as per B-SAFE-2031
2. Zoning of the city based on risk factors and planning accordingly
3. Scientific way of locating fire stations equipment based on zoning with the principle of response time for emergencies within 3 minutes
4. Acquiring personal protective equipment and infrastructure development
5. NOC fee for fire approval to be enhanced from Rs 20/sqm
6. Self-assessment and periodical reporting of the health and conditions of fire protection system in buildings
7. Mandate renewal of fire license every 2 years from KSFES for all developments
8. Adequate funding for operations and maintenance of personnel and infrastructure to be ensured
9. Notify non-compliances on the Web & Media

Budget: Rs 499 Crs

Impact: Improved safety; improved global image as safe destination for business; ability to attract better talent because of improved standard of living

12.3.15 Power - Ensure reliable and uninterrupted power

1. Implementation of Distribution Automation System (DAS) project
2. Implementation of Restructured Accelerated Power Development and Reforms Program (R-APDRP)
3. Long term sustainable plans by bundling of power through National Grids and PTC to be ensured
4. Smart Grid Concepts to be implemented
5. Implementation of roof top solar renewable energy for all newer developments

Budget: Rs 2,775 Crs

Impact: Adoption of sustainable practices to lower long-term costs; create pollution-free cities; improved global image as destination for business; ability to attract better talent because of improved standard of living

12.3.16 Development Control Rule Amendments - Enhance structured, sustainable and organic development

1. Car parking requirements to be rationalized depending upon the development zone
2. Parking to be a shared resource within the city
3. 15% of the car parks in all developments to be mandated towards public parking
4. FSI regulations to be rationalized and linked to impact fee as in Hyderabad
5. Aviation height regulation to be rationalized for high-rise development and HAL Airport/AAI to upgrade its infrastructure
6. Setback rules need to be amended to keep maximum 8 mtrs setback all around as done internationally
7. Distance between two building blocks within a development not to exceed more than 8 mtrs
8. Violations to be demolished and complete licenses for present and future developments to be cancelled with hefty penalties.

Budget: Policy Matter
Impact: Better planning for decongested cities; ample public amenities to be made available to improve standard of living

12.3.17 Networking and WiFi - Networking the common man

1. All villages to be wired & networked
2. Last mile fiber optic connectivity to all newer developments
3. All information on governance to be available on the internet
4. Coverage of entire Bengaluru metropolitan area with Wi-Fi

Budget: Rs 829 Crs
Impact: Better connectivity to ensure quick and equitable distribution of information; better access to government services by citizens; high impact on e-governance; better availability of public sector services; ability to collaborate and build stronger societies

12.3.18 Other General Recommendations

1. Planning & Implementation of City's Urbanization programs to be on a Metropolitan basis and not compartmentalized
2. Provision of 6 nos of Integrated Freight Complexes around the periphery of Bengaluru
3. KSRTC to augment fleet & services for other emerging cities
4. Comprehensive Urbanization plans similar to Bengaluru to be worked out for other Emerging Cities viz Mysore, Mangalore, Hubli-Dharwar, Belgaum, Gulbarga with Vision 2050
5. Governance structure for Urban administration as per McKinsey's report to be formulated immediately

➔ **A detailed validation of the Infrastructure study and recommendations is presented by the JLL report in Annexure-8-JLL.**

12.4 Summary of Expenditure

Sl No	Recommendation	Budget in Crs
	Mobility & Transport	**172,543**
1	Mass Public Transport System - Encourage at least 60% of the commuters to use public transport	75,706
2	Non-Motorized Transport Initiatives - Raise Walk ability Index to global standards	1,930
3	High Speed Travel Corridor - Commuting between city extremes in less than 60 minutes	94,907
	Sustainability & Environment	**44,332**
4	Water Resources - Optimize of water usage & enhance conservation of natural resource	32,540
5	Green Initiative - Reduce carbon footprint & conserve resources	-
6	Low Cost Housing – Create affordable housing for all	4,272
7	Smart Cities and Emerging Cities - Walk to work	-
8	Public Sanitation Initiatives - Hygienic toilets for all	1,788
9	Solid Waste Management - Ensure garbage free cities	1,310
10	Air Quality & Dust Mitigation: Attain and excel the National Ambient Air Quality Standards of 2011	-
11	Social Welfare Initiatives - Create a respectful and altruistic society	2,568
12	Parks and Afforestation - Create a greener and cleaner Bengaluru	1,854
	Services & Utilities	**7,473**
13	Homeland Security, Traffic Management and Surveillance - Ensure a safe and livable city and increase commuting speed	689
14	Fire & Life Safety - Ensure emergency response time is within 3 minutes	499
15	Power - Ensure reliable and uninterrupted power	2,775
16	Development Control Rule Amendments - Enhance structured, sustainable and organic development	-
17	Networking and WiFi - Networking the common man	829
18	Administration, Communications & DPR	2,681
	Interest on Financing	**31,643**
19	Interest on Financing	31,643
	TOTAL EXPENDITURE in Crores	**255,992**

12.5 Source of Funding

Summary	Rs. Crs
Contributions / Collections	
GOK Funding spread Over 12 years	81,000
Government of India	14,900
Collection from Road Tolls	9,272
Railways	2,920
ULB's	5,992
Other Funding	54,163
Metro and Transportation Cess	20,817
Infrastructure Fund Generation	58,549
Total Funds Available	**247,613**

Loan outstanding at the end of 2024   8,379 Crores

12.6 Policies of Financing

Infrastructure Resource generation Options:

Option 1: State Government Funding
Option 2: Central & State Government Funding
Option 3: By City Taxes
Option 4: By Connectivity Fund and project implemented through SPV

Impact:

Option 1 & 2 are long drawn processes
Option 3: Requires Legislative reforms

Recommendation:

Option 4: By Connectivity Fund and project implemented through SPV

Infrastructure Resource generation

Proposed Method of Fund Mobilisation for Bengaluru Integrated Connectivity Plan (BICP)

Propose following Infrastructure Fund (base):

Residential : Rs -125* per sft for all zones
Office & Commercial: Rs -175* per sft for all zones
Premium FSI (beyond the eligible base FSI):

	Commercial (Rs per sft)*	Residential (Rs per sft)*
Zone A	2,500	2,000
Zone B	1,000	800
Zone C	640	512

*Every 3 years increase to factor inflation

Potential Development within various Zones by 2024

Development Zone	Residential (Crores Sft)	Office/ Commercial (Crores Sft)	Total Development (Crores Sft)
Zone A: Within Core Inner Ring Road	10.23	1.80	12.03
Zone B: Between Core Inner Ring Road & ORR	28.63	5.05	33.68
Zone C: Between ORR and PRR	38.85	6.86	45.71
Zone D: Beyond PRR	24.54	4.33	28.87
Total Development	**102.25**	**18.04**	**120.29**

Additional infrastructure required by 2024

Categories	In & around Bengaluru	Other Emerging Cities
Office/ Commercial Space	18 Crore Sft	2 Crore Sft
Manufacturing Spaces	1.7 Crore Sft	1.3 Crore Sft
Residential Spaces	102 Crore Sft	28.4 Crore Sft
Low Cost Dwelling Units	7.5 Lac Units	2 Lac Units
Total Additional Land Required	14,500 Acres	6,300 Acres
Additional Power (Peak demand)	1,200 MW	460 MW
Additional Potable Water Required (Nett)	375 MLD	150 MLD
Additional Solid Waste Generated	1,800 MT/Day	800 MT/Day
Additional Sewage Generated	300 MT/Day	125 MT/Day
Infrastructure Expenditure required	**255,992 Crores**	

TOTAL AREA DEVELOPED

	Devlp in Yr 2012 (Crs Sft)	Area - Crs	Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023	Y2024	Cumm Devlp - Y13- Y 24
Growth Rate Y-O-Y			5.50%			6.50%			7.50%			8.50%			
	6.50		6.86	7	8	8	9	9	10	11	11	12	13	15	120
Development Within Inner Core Area	12.00%														
Residential		85.00%	0.70	1	1	1	1	1	1	1	1	1	1	1	12
Non Residential		15.00%	0.12	0	0	0	0	0	0	0	0	0	0	0	2
Development between ICR - ORR	53.59%		-			-			-			-		-	-
Residential			3.12	3	3	4	4	4	5	5	5	6	6	7	55
Non Residential			0.55	1	1	1	1	1	1	1	1	1	1	1	10
Development between ORR - PRR	33.00%		-			-			-			-		-	-
Residential			1.92	2	2	2	2	3	3	3	3	3	4	4	34
Non Residential			0.34	0	0	0	0	0	0	1	1	1	1	1	6
Development beyond PRR	1.41%		-			-			-			-		-	-
Residential			0.08	0	0	0	0	0	0	0	0	0	0	0	1
Non Residential			0.01	0	0	0	0	0	0	0	0	0	0	0	0
Total Development - Residential	100.00%		5.83	6.15	6.49	6.91	7.36	7.84	8.42	9.06	9.74	10.56	11.46	12.44	102
Total Development - Non Residential			1.03	1.09	1.14	1.22	1.30	1.38	1.49	1.60	1.72	1.86	2.02	2.19	18.04
Total Development			6.86	7	8	8	9	9	10	11	11	12	13	15	120

Projected Cash Flow for the period Year 2013 to Year 2024

Summary	Rs. Crs	Y1 - 2013	Y2-2014	Y3-2015	Y4 - 2016	Y5-2017	Y6-2018	Y7 - 2019	Y8 - 2020	Y9 - 2021	Y10 - 2022	Y11 - 2023	Y12-2024
Contributions / Collections													
GOK Funding spread Over 12 years	81,000	6,000	6,000	6,500	6,500	6,500	6,500	7,000	7,000	7,000	7,000	7,500	7,500
Government of India	14,900	655	706	709	2,338	2,342	2,346	2,280	2,280	780	155	155	155
Collection from Road Tolls	9,272	-	340	2,030	2,573	2,758	1,400	171	-	-	-	-	-
Railways	2,920	-	584	584	584	584	584	-	-	-	-	-	-
ULB's	5,992	221	878	883	888	894	900	221	221	221	221	221	221
Other Funding	54,163	1,833	3,236	3,273	9,272	9,314	9,360	7,792	7,792	2,292	-	-	-
Metro and Transportation Cess	20,817	754	851	960	1,094	1,247	1,421	1,635	1,880	2,163	2,511	2,915	3,384
Infrastructure Fund Generation	58,549	1,882	1,985	2,398	2,554	3,114	3,316	4,806	5,167	6,359	6,899	9,625	10,444
Total Funds Available	**247,613**	**11,345**	**14,579**	**17,337**	**25,803**	**26,753**	**25,829**	**23,905**	**24,340**	**18,815**	**16,787**	**20,417**	**21,704**
Gap - Surplus / (Deficit) (C = B - A)	**23,264**	**1,830**	**(3,519)**	**(7,929)**	**(13,200)**	**(13,526)**	**(8,951)**	**(2,077)**	**6,347**	**10,585**	**12,470**	**19,974**	**21,262**
Cash Flow													
Opening Balance	-	-	1,830	(1,689)	(9,617)	(23,326)	(38,335)	(50,061)	(56,116)	(54,547)	(48,943)	(41,130)	(25,209)
Add: Gap to be Funded	**(79,399)**	-	(3,519)	(7,929)	(13,709)	(15,009)	(11,726)	(6,055)	(4,778)	(4,980)	(4,657)	(4,053)	(2,985)
Less: Repayment	**72,467**	1,830	-	-	-	-	-	-	6,347	10,585	12,470	19,974	21,262
Closing Balance		1,830	(1,689)	(9,617)	(23,326)	(38,335)	(50,061)	(56,116)	(54,547)	(48,943)	(41,130)	(25,209)	(6,933)
Interest on Debt (ROI - 9%)	**31,643**	-	-	509	1,482	2,775	3,978	4,778	4,980	4,657	4,053	2,985	1,446

Loan Outstanding at end of the 12 year period	(6,933)	Crs
Maximum Loan at any point of time	(56,116)	Crs

Total Expenditure Summary

Expenditure	Units	Total (Rs. Crs)	Funding Pattern								
			GOI - Metro & JnNURM	GOI / GOK	Railways	BBMP, BMRDA, BMTC,	BMRCL, PPP & BOT	Infra. Fund	Loan against Road	Deficit	Total
A MOBILITY AND TRANSPORT											
Road Infrastructure											
High Speed Connectivity (PRR, UG, Elevated, Radial)	461 Kms	33,049		11,483				17,642	2,061	1,863	33,049
City Road Improvement - Arterial & Sub-Arterial) - Tender SURE	1,940 Kms	13,406		4,658				7,156	836	756	13,406
Other City Roads - Tender SURE (Pavement, Road, Side Drains)	8,000 Kms	8,290		2,880				4,425	517	467	8,290
Land Acquisition for Roads		3,450		1,199				1,842	215	194	3,450
Satellite Town Ring Road	204 Kms	7,030		2,442				3,752	438	396	7,030
Mass Transport Corridors											
Metro Phase - II	72 Kms	26,667	4,000	8,000			14,667				26,667
Metro Phase - III	80 Kms	33,333	5,000	10,000			18,333				33,333
High Speed Rail Link to BIA	34 Kms	4,333					4,333				4,333
High Speed Rail to Mysore	130 Kms	25,000	3,750	7,500			13,750				25,000
Commuter Rail System	450 Kms	8,760		2,920	2,920	2,920					8,760
Improvement in City Bus System											
City Bus System		5,312	1,859	797		2,656					5,312
Grade Separators											
Grade Separators - Roads	12 Nos	540					540				540
Road Over Bridges / RUB's - Rail	32 Nos	1,217					1,217				1,217
Skyways / Subways	66 Nos	520					520				520
Parking Facilities		592					592				592
Integrated Freight Complexes	6 Nos	211					211				211
Transport System Management Measures		831	291	125		416					831
		172,541	14,900	52,004	2,920	5,992	54,163	34,818	4,068	3,676	172,541
B WATER											
Reduction of unaccounted for water	From 56% to 25%	2,551		886				1,362	159	144	2,551
Arresting Reservoir leakages		3,077		1,069				1,642	192	173	3,077
Upgradation of existing secondary treatment plants to tertiary treatment standards and laying dual pipeline		2,551		886				1,362	159	144	2,551
Segregation of sewage from storm water drain and treatment		957		332				511	60	54	957
Storm water drains - Primary & Secondary Drains	850 Kms	10,593		3,681				5,655	661	597	10,593
Water Testing Labs	10 Labs	54		19				29	3	3	54
Storage Reservoirs for excess stormwater runoff	5000 Acres	6,378		2,216				3,405	398	359	6,378
Water bodies & harvesting - Lake Rejuvenation	469 Lakes	6,378		2,216				3,405	398	359	6,378
		32,540		11,306				17,370	2,029	1,834	32,540
C Solid Waste Management (80% re-use)	5832 MT / Day	1,310		455				700	82	74	1,310
D Social Welfare Initiatives											
Public Sanitation Improvement Initiatives (1 per 150 population)	100,000 Toilet Seats / Urinals	1,788		621				955	112	101	1,788
Slum Re-development		2,473		859				1,320	154	139	2,473
Animal Welfare and Shelters		95		33				51	6	5	95
		4,356		1,514				2,325	272	246	4,356

Total Expenditure Summary

	Expenditure Allocation	Units	Total (Rs. Crs)	Funding Pattern								
				GOI - Metro & JnNURM	GOI / GOK	Railways	BBMP, BMRDA, BMTC, KSRTC	BMRCL, PPP & BOT	Infra. Fund	Loan against Road Tolls	Deficit	Total
E	Parks and Afforestation		1,854		644				990	116	105	1,854
F	Low Cost Housing Development - Land for 7,50,000 Dwelling Units	4500 Acres	4,272		1,484				2,281	266	241	4,272
	UTILITIES											
G	Electrical Infrastructure Upgradation Fund - Redundancy & Stability	3000 MW	2,775		964				1,481	173	156	2,775
H	Homeland Security - Police - 900 Junction Improvements	1000 Junctions	555		193				296	35	31	555
	Surveillance / Security - Arterial / Sub-Arterial Roads	1940 Kms	134		47				72	8	8	134
			689	-	239	-	-	-	368	43	39	689
I	Fire Department - Up-gradation	K-SAFE 2031 Program	499		174				267	31	28	499
J	Wi-Fi Connectivity	1300 Sq. Kms	829		288				443	52	47	829
K	Administration, Communication and DPR		2,681		932				1,431	167	151	2,681
	INTEREST											
L	Interest on borrowings @ 9% p.a.		31,643		10,995				16,892	1,974	1,783	31,643
	Total		255,992	14,900	81,000	2,920	5,992	54,163	79,365	9,272	8,379	255,992

Proposed Integrated Infrastructure Plan – 2020

13.1 Highlight Karnataka beyond IT services success

Branding is an important component of business and relationships. A brand is how others perceive an offering, a business Branding is an important component of business and relationships. A brand is how others perceive an offering, a business or a person and their inherent values. A brand is a kind of promise. Consumers, customers and associates relate and connect to the brand emotionally, looking forward to reaping all the benefits communicated by the brand. Inaccurate branding can make it difficult for people to grasp what Karnataka has to offer, especially in a changing global scenario. Two things have changed for Karnataka that also dictate that it must re-brand itself:

- The complexion of business has changed from being primarily centred on labour arbitrage and back office IT processes to high-end design, IP creation and product manufacturing.

- Globally, cities and states are judged on the parameters of productivity, infrastructure, quality of life, social equity and environmental sustainability

Karnataka needs to redefine itself as a strong brand with distinctive global characteristics. It must stand out as a state where new ideas, innovations and creativity thrive in the area of ESDM and ICT. In addition, it must incorporate the emerging parameters on which states and cities are judged in order to attract global talent and business.
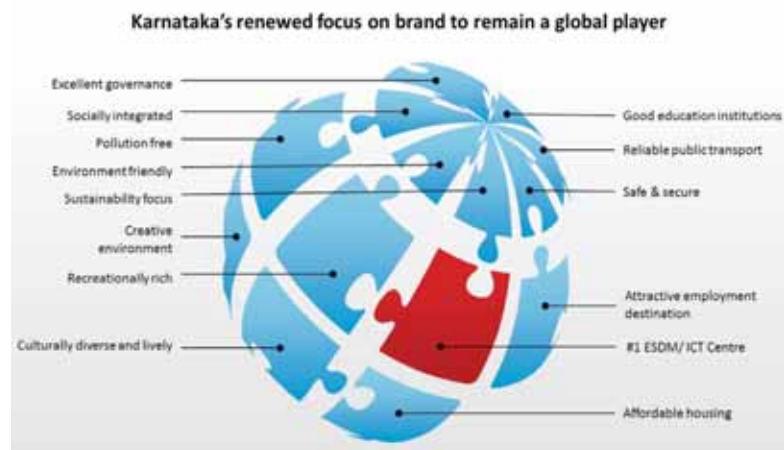
Targets

Key targets for Karnataka:

1. Create a Karnataka Brand Equity Fund (KBEF)
2. Rebrand and reposition Bangalore/ Karnataka

13.3 Recommendations

13.3.1 Create "Karnataka Brand Equity Fund"

Fund to be in line with India Brand Equity Foundation (IBEF) with the goal of promoting and creating international awareness of Karnataka's capabilities in ESDM/ ICT. KBEF to work with government/ industry to establish the credibility of Karnataka as a destination for quality products and services. KBEF to focus on talent, market, growth and opportunity to become knowledge centre for global investors, policy-makers and media to drive brand Karnataka.

- **Budget:** Rs 10 cr
- **Impact:** Brand Karnataka to get the right thrust

13.3.2 Reposition Brand Bangalore in the current scenario

Bangalore has become known as the Outsourcing Capital of the World and the Silicon Alley of India. The branding must change to ESDM/ ICT to show higher productive value.

13.3.3 Make use of the Bangalore Brand to develop the "Emerging ICT Clusters" in Karnataka

Once Brand Bangalore has been refreshed, use it to band emerging ICT clusters.

13.3.4 Reposition "Bangalore IT.BIZ"

Include Electronics/Products along with other sectors

13.3.5 Use "Green Bangalore" type Brand Mantras

Encourage/enforce carbon reduction in all the IT facilities in Bangalore

13.4 Recommendation Summary

Sl No	Recommendation	Budget (Rupees in Crores) 2013-2014	Budget In crores 2013-2020
1	Create "Karnataka Brand Equity Fund"	10	10
2	Reposition Brand Bangalore in the current scenario		
3	Make use of the Bangalore Brand to develop the "Emerging ICT Clusters" in Karnataka		
4	Reposition "Bangalore IT.BIZ"		
5	Use "Green Bangalore" type Brand Mantras		
	Grand Total	10	10

Implementation and Monitoring Mechanism

For achieving the above targets, we need a suitable implementation and monitoring mechanism.

This mechanism should be flexible enough to take care of the needs of all the stake holders, yet should have a mechanism which can be sustained over a long term. The implementation body and mechanism should be insulated from bureaucratic and political changes.

Since Industry promotion and integrated urban infrastructure development are two wings of the economic growth engine, we need to create focused organizations which will objectively take care of these two wings.

Proposed Organization Structure for Implementation
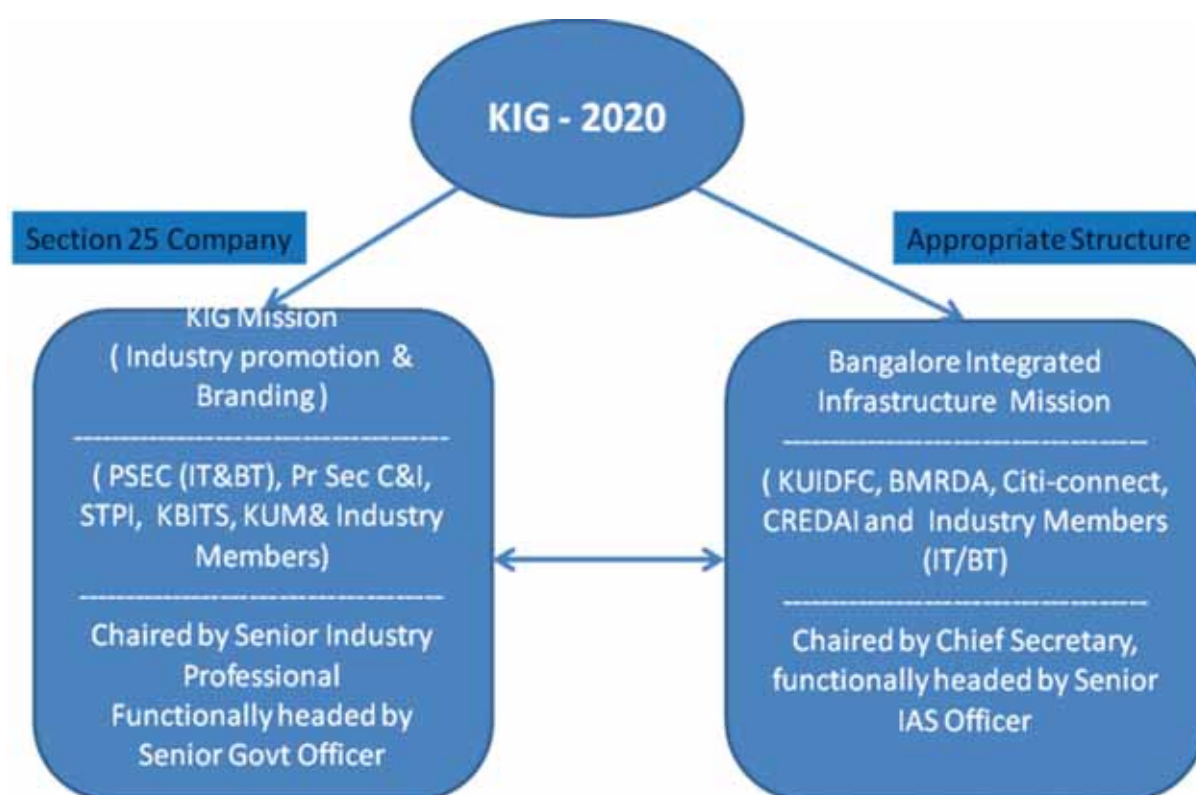
Proposed Organization Structure for ICT Promotion & Branding
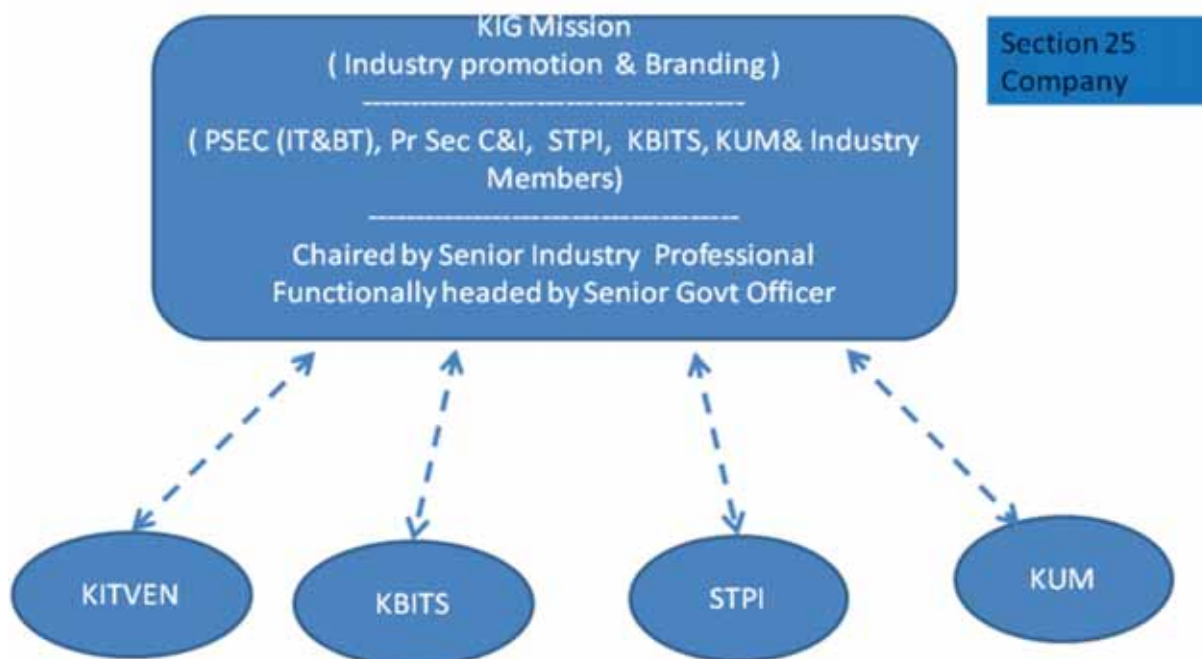
Proposed BIIM Organization Structure
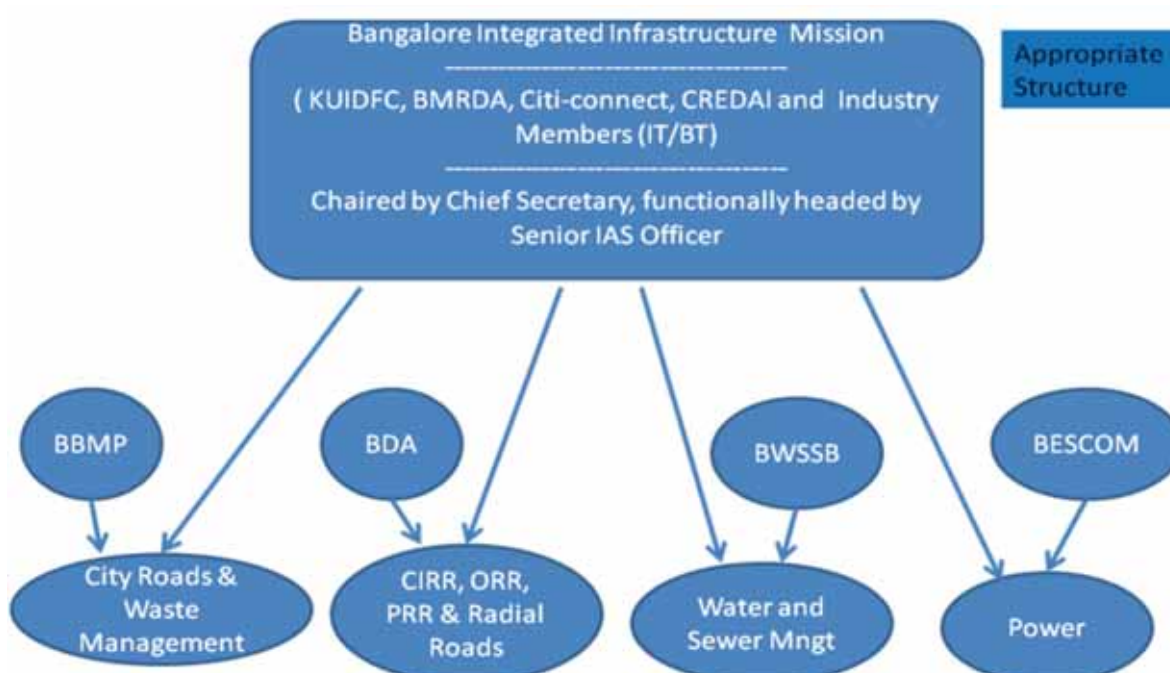
Schools				Remarks
Number of schools to Cover	7419	Number of Government/Aided Schools with SSLC out of total 12419 School		
Number of Students	1980316	Number of Student enrolled for SSLC for Government schools out of total 3300524 Students		825131
Number of Teachers	49508	One Teacher per 40 students		
Number of Classrooms	49508	40 Students Per Class		
Number of Labs	24754	1 Lab per three Classes		
Approximate Area	2 Acres			
	Numbers	Cost / Unit	Total Cost	
State-Wide Broadband (SWB)				Leveraging Current networks
Cost of 1 Gbps Fibre Optics Connection	1	100000	100000	
Local Campus Network (LCN)				
UTM	1	200000	200000	
Router	1	50000	50000	
Switches (1 GBPS, 48 Ports)	1	30000	30000	
WiFi APN	11	4000	44000	One APN per Classroom & Lab
Projectors	11	20000	220000	One Projector per Classroom & Lab
Interactive White Boards	11	20000	220000	One Board per Classroom & Lab
Server Cost	1	25000	25000	
Setup Cost	1	35000	35000	
Total Cost / School			9,24,000	
Total Infrastructure Cost for School (SWB + LCN)			6,85,51,56,000	
Central Data Farm (CDF)				
Central Data Farm (CDF)	6	1,00,00,000	6,00,00,000	
Cost of developing Software	1	50,00,00,000	50,00,00,000	
Total Infrastructure (SWB+LCN+CDF)			7,41,51,56,000	
Infrastructure Cost / School			9,99,482	
Variable Cost / Schoold				
Bandwidth / Maintenance	1	1,50,000	1,50,000	
End User Device (EUD)				
Number of Tablet PC's	2232807	5000	11,16,40,35,000	
Software Cost	2232807		50 11,16,40,358	Rs 50 Per student for LMS
Total Variable Cost (EUD)			11,27,56,75,350	
Total Variable Cost / Student			5,050	
Variable Cost / Student (INR) (SWB+LCN+CDF+EUD)			9,488	

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Schools				
Number of College to Cover	748	Number of Government College out of total 2355 Colleges		
Number of Students	96552	Number of Student in Government Colleges out of total 303984 Students		
Number of Teachers	1609	One Professor per 60 students		
Number of Classrooms	1609	60 Students Per Class		
Number of Labs	805	1 Lab per two Classes		
Approximate Area	5 Acres			
	Numbers	Cost / Unit	Total Cost	Remarks
State-Wide Broadband (SWB)				Leveraging Current networks
Cost of 1 Gbps Fibre Optics Connection	1	100000	100000	
Local Campus Network (LCN)				
Fiber Laying (In M)	1000	200	200000	
Firewall	1	200000	200000	
Router	1	50000	50000	
Switches (1 GBPS, 48 Ports)	2	30000	60000	
WiFi APN	8	4000	32000	Two APN per Classroom & Lab
Projectors	4	20000	80000	One Projector per Classroom & Lab
Interactive White Boards	4	20000	80000	One Board per Classroom & Lab
Server Cost	1	25000	25000	
Setup Cost	1	35000	35000	
Total Cost / School			8,62,000	
Total Infrastructure Cost for College (SWB + LCN)			64,47,76,000	
Central Data Farm (CDF)				
Central Data Farm (CDF)	4	10000000	4,00,00,000	
Cost of Developing Teaching Material/Software	1	50,00,00,000	50,00,00,000	
Total Infrastructure (SWB+LCN+CDF)			1,18,47,76,000	
Infrastructure Cost / College			15,83,925	
Variable Cost / Schoold				
Bandwidth / Maintenance	1	2,50,000	2,50,000	
End User Device (EUD)				
Number of Laptop PC's	107978	15000	1,61,96,70,000	
Software Cost	107978	50	53,98,900	Rs 50 Per student for LMS
Total Variable Cost (EUD)			1,62,50,68,900	
Variable Cost / Student			15,050	
Variable Cost / Student (SWB+LCN+CDF+ EUD)			29,102	

BUDGET FOR WI-FI IN BANGALORE

Bangalore Wi-Fi			
Total Area to be covered (Sq Km)	1,300		
Number of access Devices / Sq. Km	125		
Number of Users / Sq. Km	1,000		
Total Number of access Devices	1,62,500		
Total Numbers of Users Covered	13,00,000		
Cost of access Points (Device, Internet, Installation)	9,000		
Total Cost of Access Points + Infrastructure	**146**	**Crore**	
Simulatenous Accessing Users (15%)	1,95,000		
Bandwidth Required / User	1	MBPS	
Total Bankwidth Required	1,95,000	GBPS	
Cost of BW / MBPS (Year)	12,000		
Total Cost of Bandwidth / Year	**234**	**Crore**	
Total Cost of (1300 Sq. Km., 13 Lakh Users)	**380**		
Year 1	38	10%	
Year 2	76	30%	
Year 3	76	50%	
Year 4	95	75%	
Year 5	95	100%	
Year 6	95		per year
Year 7	95		per year
Usage (Rs. 500 / Year / User)	65,00,00,000		
Productivity Improvement / User / Day		Minutes	
	10		
Productivity Improvement / User / Year	42	Hours	
Benefit of productivity improvement	4,167	Rs/Year	100 Rs. / Hour
Total Benefit of productivity improvement	**542**	**Crores**	

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Number of Students in SSLC (9-12) Govt. Schools		1980316							
Number of Govt Supported SSLC Schools		7419							
Average Number of students / School (9- 12)		267							
Rate of Growth in enrollment / no of schools	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Total Schools To be covered		7419	7642	7871	8107	8350	8601	8859	9124	9398
Incremental Coverage of schools			20%	31%	42%	53%	64%	75%	86%	100%
Total schools covered			1528	2440	3405	4426	5504	6644	7847	9398
Additional schools to be covered every year			1528	912	965	1021	1079	1140	1203	1551
One time setup cost for schools (In Laks)	10.0		15,275	9,112	9,645	10,201	10,783	11,390	12,024	15,504
Annual recurring cost / School	1.50		2,292	3,660	5,107	6,638	8,257	9,966	11,771	14,097
Total Cost of school infrastructure + recurring Cost			17,568	12,772	14,752	16,840	19,039	21,356	23,794	29,601
Toatal Enrolled Students in Schools Covered			407945	651284	908857	1181297	1469267	1773451	2094563	2508605
Students to be covered every year			407945	243339	257572	272441	287969	304184	321113	414042
New Entrants in 9th Grade in already covered schools				101986	162821	227214	295324	367317	443363	523641
Total Students to be covered			407945	345326	420394	499655	583293	671501	764475	937682
Cost of covering the students (devices + contents)	0.0505		20601	17439	21230	25233	29456	33911	38606	47353
Total Cost Per year			38169	30211	35982	42072	48496	55267	62400	76954

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Total Number of Students in Govt. Colleges (Yr1-4)		386208							
Number of Govt Supported Colleges		748							
Average Number of students College		516							
Rate of Growth in number of colleges	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Total colleges To be covered	7419	7642	7871	8107	8350	8601	8859	9124	9398
Incremental Coverage of colleges		20%	31%	42%	53%	64%	75%	86%	100%
Total colleges covered		1528	2440	3405	4426	5504	6644	7847	9398
Additional colleges to be covered every year		1528	912	965	1021	1079	1140	1203	1551
One time setup cost for colleges (In Laks)	15.84	24,207	14,440	15,284	16,167	17,088	18,050	19,055	24,569
Annual recurring cost / college	2.50	3,821	6,100	8,512	11,064	13,761	16,610	19,618	23,495
Total Cost of college infrastructure + recurring Cost		28,028	20,540	23,797	27,231	30,849	34,660	38,672	48,065
Toatal Enrolled Students in colleges Covered		789100	1259799	1758029	2285019	2842046	3430439	4051577	4852470
Students to be covered every year		789100	470698	498230	526990	557027	588392	621138	800893
New Entrants in 1st Year of already covered colleges			197275	314950	439507	571255	710512	857610	1012894
Total Students to be covered		789100	667973	813180	966497	1128282	1298904	1478748	1813787
Cost of covering the students (devices + contents)	0.1505	118760	100530	122384	145458	169806	195485	222552	272975

	09-10	14-15	19-20
Consumption	45	125	400
CAGR		22.7%	26.2%
Domestic Production	20	85	320
CAGR		33.60%	30.40%
Domestic Production	20	42	104
CAGR		16%	20%
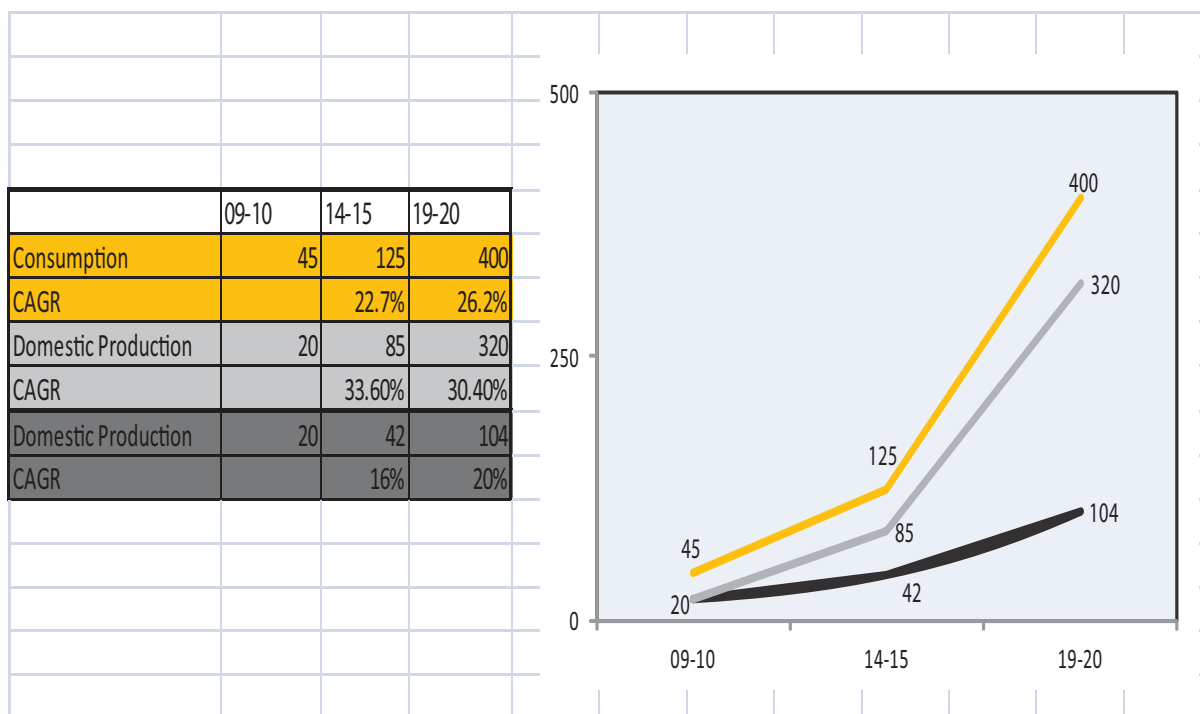
ASSUMPTIONS TO THE ESDM WORKINGS			
	Rs		
Karnataka Share of Total ESDM Industry in India by Year 2020	10%		This is minimum; Actual numbers can be much higher
% of Karnataka Demand Meeting Value Addition Norms	20%		
Domestic sales revenue as % of total revenue	70%		
Domestic sales revenue in Karnataka as % of domestic revenue	20%		
Export sales as % of total reveue	30%		
Average Revenue / Employee - Rs	46,47,500		USD 130,000 for Product Companies; USD 65000 for EMS Companies; Ratio 30% Product; 70% EMS
Number of employee / Crore of Revenue	2.2		
Average Salary / Direct Employee - Rs. Crs	0.069		USD 30,000 for Product companies; USD 5000 for EMS companies; Ratio 30% product; 70% EMS
Average Salary / Indirect Employee - Rs. Crs	0.017		
Number of Indirect jobs / Direct Job	2		Since most of the direct employment is lost cost; indirect employment is kept at 2
Income Tax paid by direct employees	20%		
Income Tax Paid by indirect employees	5%		Most of the indirect employess will not come under tax bracket
State's share of Income Tax	1.5%		
Net Income from Domestic Sales	15%		
Net income from exports	20%		
MAT Tax % on export Sales	**15%**		
State Share of the MAT	1.5%		
Corporate Tax on net income from domestic sales	33%		
State's share of corporate income tax	1.5%		
Service Tax	12.36%		
State's share of Service Tax	**1.5%**		

Parameters for Different programs	Rs		
Capex as % of Revenue	10%		Need to Validate
Opex as % of revenue	15%		Opex which is applicable for Service Tax
Capital Expense Subsidy as a % of total Capex	10%		
Performance incentives for Export Revenue	5%		
Performance incentives for Domestic Revenue	2.5%		
% of VAT/GST on ESDM & IT Products in Karnataka	5.50%		
VAT applicable on total industry sales	10.00%		
% of VAT/GST/ST on ESDM & IT Exports	0.00%		
Average % of VAT/GST on Employee spends	5.50%		
% amount of salary spent by employee attracting VAT or Service Tax	50%		
- % attracting VAT of employee spends	30%		
- % attracting NIL Tax of employee spends	30%		
- % attracting Service Tax of employee spends	40%		
IT Segment			
Average YOY growth rate	10%		
% of Export Sales	80%		
% of Domestic Sales	20%		
% of Domestic Sales attracting Service Tax	50%		
% of Domestic Sales attracting VAT and sold in Karnataka	10%		
Interest-free loan as % of VAT/GST/ST	100%		
Period of interest free loan (Years)	5		Existing policy
Cost of Indian Patent filing (USD)	2,75,000		Patent reimbursment is an existing policy; Changes needed in thresholds

ESDM Analysis									
		All Numbers are in Rs. Crs							
FY Year		13-14	14-15	15-16	16-17	17-18	18-19	19-20	
CAGR		22.7%		26.2%					
Total ESDM Demand		5,60,988	6,88,332	8,68,675	10,96,268	13,83,490	17,45,965	22,03,407	
	10%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	
Karnataka ESDM Industry Size		56,099	68,833	86,868	1,09,627	1,38,349	1,74,596	2,20,341	
Total Employment Direct	2.2	1,20,707	1,48,108	1,86,912	2,35,883	2,97,685	3,75,678	4,74,106	
Incremental Direct Employment		22,331	27,401	38,804	48,971	61,801	77,993	98,428	
Total Employment Indirect	2	2,41,415	2,96,216	3,73,825	4,71,767	5,95,370	7,51,356	9,48,212	
Incremental InDirect Employment		44,663	54,801	77,609	97,942	1,23,603	1,55,987	1,96,855	
Direct Employee Salaries	0.07	8,299	10,182	12,850	16,217	20,466	25,828	32,595	
Indirect Employee Salaries	0.02	3,983	4,888	6,168	7,784	9,824	12,397	15,645	
Total Salaries		12,282	15,070	19,018	24,001	30,289	38,225	48,240	
Total Income Tax on Direct salaries	20%	1,660	2,036	2,570	3,243	4,093	5,166	6,519	
Total Income Tax on Indirect Salaries	5%	199	244	308	389	491	620	782	
Total Income Tax (Direct + Indirect Employees)		1,859	2,281	2,878	3,633	4,584	5,785	7,301	
State's share of Tax on salaries	1.50%	28	34	43	54	69	87	110	425
Domestic Sales	70%	39,269	48,183	60,807	76,739	96,844	1,22,218	1,54,239	
Net Income of Industry from Domestics Sales	15%	5,890	7,227	9,121	11,511	14,527	18,333	23,136	
Total corporate Income Tax from Domestic sales	33%	1,944	2,385	3,010	3,799	4,794	6,050	7,635	
State's share of corporate income tax	1.50%	29	36	45	57	72	91	115	444
Total Op-ex subjected to Service Tax	15%	8,415	10,325	13,030	16,444	20,752	26,189	33,051	
Service Tax by corporate on Op-ex	12.36%	1,040	1,276	1,611	2,032	2,565	3,237	4,085	
Service Tax by employee on his spends in local markets	2.47%	304	373	470	593	749	945	1,192	
Total Service Tax		1,344	1,649	2,081	2,626	3,314	4,182	5,278	
State's Share of service tax	1.50%	20	25	31	39	50	63	79	307
VAT									
Applicable on % total industry demand	10.00%	56,099	68,833	86,868	1,09,627	1,38,349	1,74,596	2,20,341	
VAT on industry demand	5.50%	3,085	3,786	4,778	6,029	7,609	9,603	12,119	47,009
On Export Sales as % of revenue	0.00%	-	-	-	-	-	-	-	-
On Employee consumption on his spends in local market	0.83%	101	124	157	198	250	315	398	1,544
Total		3,187	3,910	4,939	6,227	7,859	9,918	12,517	48,553
Export as percentage of total Karnataka ESDM reveue	30%	16,830	20,650	26,060	32,888	41,505	52,379	66,102	
Export Revenue from companies meeting value addition norms	20%	3,366	4,130	5,212	6,578	8,301	10,476	13,220	
Net profit from Export sales	20%	673	826	1,042	1,316	1,660	2,095	2,644	
Total MAT from export sales	15%	101	124	156	197	249	314	397	
State share of MAT	1.50%	2	2	2	3	4	5	6	23
Total Govt Revenue to Karnataka		3,265	4,007	5,056	6,381	8,053	10,163	12,826	49,752
Total Govt Revenue in % to Karnataka	%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	5.8%	
				Total Karnataka Revenue (INR Cr.)					49,752
				Total Karnataka Revenue - (USD Millions)					9,046

RECOMMENDATIONS FOR ESDM SEGMENT										
All Numbers are in Rs. Crores										
FY Year		13-14	14-15	15-16	16-17	17-18	18-19	19-20	Total for 5 Yrs	Total - FY 14 to FY 20
CAGR		22.7%		26.2%						
Total ESDM Demand		5,60,988	6,88,332	8,68,675	10,96,268	13,83,490	17,45,965	22,03,407		
		10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%		
Karnataka ESDM Demand		56,099	68,833	86,868	1,09,627	1,38,349	1,74,596	2,20,341		
Revenue from Products meeting Value addition norms	20%	11,220	13,767	17,374	21,925	27,670	34,919	44,068		
Cap-ex % of the total Revenue in Line 7	10%	1,122	1,377	1,737	2,193	2,767	3,492	4,407		
Capital Subsidy provided (Recommendation xxx)	10%	112	138	174	219	277	349	441	920	1,709
Export as percentage of total Karnataka ESDM reveue	30%	16,830	20,650	26,060	32,888	41,505	52,379	66,102		
Export Revenue from companies meeting value addition norms	20%	3,366	4,130	5,212	6,578	8,301	10,476	13,220		
Export Incentives	5%	168	206	261	329	415	524	661	1,379	2,564
Domestic Revenue	70%	39,269	48,183	60,807	76,739	96,844	1,22,218	1,54,239		
Domestic Revenue from companies meeting value norms	20%	7,854	9,637	12,161	15,348	19,369	24,444	30,848		
Deemed export incentives on domestic production	2.5%	196	241	304	384	484	611	771	1,609	2,991
R&D Grant not to exceed 2% of revenue (K'taka, Value added)	1%	117	143	181	228	288	363	458	956	1,778
Domestic Patents		150	250	350	450	550	650	750		
Internaltional Patents		100	150	200	250	300	350	400		
Incentives for Domestic Patents	0.015	2.32	3.87	5.41	6.96	8.51	10.05	11.60		
Incentives for Interational Patents	0.062	6.19	9.28	12.38	15.47	18.56	21.66	24.75		
Total Incentives for Patent Filing		8.51	13.15	17.79	22.43	27.07	31.71	36.35	89	157
No. of Electronics Manufacturing Clusters			2	2	3					
Cost of Incentives for setting up manufacturing clusters	27.5		55	55	83	-	-	-	193	193
No. of ESDM Resource / Innovation Centers			2	2	3					
Cost of setting up ESDM resource Centers	15.0		30	30	45	-	-	-	105	105
Total Cost of recommendations (Rs. Crs)									5,251	9,497
Revenue to Karnataka Government in taxes (ESDM Segment)									26,763	49,752
Net Surplus / (Deficit)									21,512	40,255
Revenue to Karnataka government as a % of Karnataka ESDM Demand									6%	6%

ESDM Summary

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	Initial (Y13/14)	5-Years	7-Years
	INR - Cr	INR - Cr	INR-Cr
Promotional Incentives			
Patent Filing Incentives	9	89	**157**
Semiconductor I/P & Fabless Fund	50	150	**150**
Brand Building, Marketing & Promotion	10	50	**50**
Capability Building			
3 ESDM Innovation Centers	30	90	**90**
Post performance (on investment commitment)			
Incentive for Capital investment in ESDM	112	920	**1709**
Electronics Manufacturing Clusters	55	193	**193**
Post Performance Incentives(on Operations)			
R&D Grant	117	956	**1778**
Export Incentives	168	1,379	**2564**
Deemed Export Incentives	196	1,609	**2991**
Total	**747**	**5,436**	**9,682**
Total ESDM Revenue in Karnataka	**56,099**	**4,59,775**	**8,54,713**
Total income increase for Karnataka	**3,265**	**26,763**	**49752**

Total Tax Income of the Karnataka Government - FY 2014 to FY 2020								
Heads of Taxes	**IT/ITES (Rs. Crs)**	**ESDM (Rs. Crs)**	**Total (Rs. Crs)**					
Income Tax on Salaries	2,712	425	3,137					
VAT	36,663	48,553	85,216					
Income Tax on Corporate Income (Domestic Sales)	239	444	683					
Service Tax	566	307	873					
MAT	579	23	602					
Total	**40,758**	**49,752**	**90,510**					
Tax Summary for the period FY 2012 to FY 2020								
	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2018	FY 2020	Total till - FY 2020
	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs
From IT / ITES Segment	4,296	4,726	5,198	5,718	6,290	6,919	7,611	40,758
From ESDM Segment	3,265	4,007	5,056	6,381	8,053	10,163	12,826	49,752
Total	**7,562**	**8,732**	**10,255**	**12,099**	**14,343**	**17,082**	**20,437**	**90,510**

IT Summary		All Numbers are in Rs. Crores									
FY Year		11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	
Average Growth Rate						10.0%					
IT Industry Revenue - Rs. Crs - Growth year-on-year		1,40,000	1,54,000	1,69,400	1,86,340	2,04,974	2,25,471	2,48,019	2,72,820	3,00,102	
Employment Data - in Lacs		8,50,000	9,35,000	10,28,500	11,31,350	12,44,485	13,68,934	15,05,827	16,56,410	18,22,050	
Average Revenue per person p.a - Rs (increase considered in revenue)		16,47,059	16,47,059	16,47,059	16,47,059	16,47,059	16,47,059	16,47,059	16,47,059	16,47,059	
Average Revenue per person in USD	50	32,941	32,941	32,941	32,941	32,941	32,941	32,941	32,941	32,941	
Average Revenue per person - Rate per hour	160	17.16	17.16	17.16	17.16	17.16	17.16	17.16	17.16	17.16	
Total Direct Employment		8,50,000	9,35,000	10,28,500	11,31,350	12,44,485	13,68,934	15,05,827	16,56,410	18,22,050	
Total Indirect Employment	3	25,50,000	28,05,000	30,85,500	33,94,050	37,33,455	41,06,801	45,17,481	49,69,229	54,66,151	
Total Employment (No of People)		**34,00,000**	**37,40,000**	**41,14,000**	**45,25,400**	**49,77,940**	**54,75,734**	**60,23,307**	**66,25,638**	**72,88,202**	
Direct Employee Salaries - % of IT Industry Revenue - Rs. Crs	40%	56,000	61,600	67,760	74,536	81,990	90,189	99,207	1,09,128	1,20,041	
Indirect Employee Salaries - Avg of Rs. 3 Lacs per person p.a - Rs. Crs	5%	7,000	7,700	8,470	9,317	10,249	11,274	12,401	13,641	15,005	
Total Salaries - Rs. Crs		**63,000**	**69,300**	**76,230**	**83,853**	**92,238**	**1,01,462**	**1,11,608**	**1,22,769**	**1,35,046**	
Total Income Tax on Direct salaries - Rs. Crs	20%	12,600	13,860	15,246	16,771	18,448	20,292	22,322	24,554	27,009	
Total Income Tax on Indirect Salaries - Rs. Crs	5%	3,150	3,465	3,812	4,193	4,612	5,073	5,580	6,138	6,752	
Total Income Tax (Direc + Indirect Employees) - Rs. Crs		**15,750**	**17,325**	**19,058**	**20,963**	**23,060**	**25,366**	**27,902**	**30,692**	**33,762**	
State's share of Tax on salaries - Rs. Crs	1.50%			286	314	346	380	419	460	506	2,712
Domestic Sales	20%	28,000	30,800	33,880	37,268	40,995	45,094	49,604	54,564	60,020	
Net Income from Domestics Sales	15%	4,200	4,620	5,082	5,590	6,149	6,764	7,441	8,185	9,003	
Total corporate Income Tax from Domestic sales	33%	1,386	1,525	1,677	1,845	2,029	2,232	2,455	2,701	2,971	
State's share of corporate income	1.50%			25	28	30	33	37	41	45	239
Domestic Sales subjected to Service Tax	50%	14,000	15,400	16,940	18,634	20,497	22,547	24,802	27,282	30,010	
Service Tax by corporate on Domestic Revenue	12.36%	1,730	1,903	2,094	2,303	2,533	2,787	3,066	3,372	3,709	
Service Tax by employee on spends in local markets)	2.47%	1,557	1,713	1,884	2,073	2,280	2,508	2,759	3,035	3,338	
Total Service Tax		**3,288**	**3,617**	**3,978**	**4,376**	**4,814**	**5,295**	**5,824**	**6,407**	**7,048**	
State's Share of service tax	1.50%			60	66	72	79	87	96	106	566
VAT											
Domestic Sales in Karnataka	10%	2,800	3,080	3,388	3,727	4,099	4,509	4,960	5,456	6,002	
Domestic Sales outside Karnataka	90%	25,200	27,720	30,492	33,541	36,895	40,585	44,643	49,108	54,018	
VAT on domestic sales in Karnataka	5.50%			186	205	225	248	273	300	330	1,768
VAT on domestic sales outside Karnataka	10.00%			3,049	3,354	3,690	4,058	4,464	4,911	5,402	28,928
VAT on export sales	0.00%			-	-	-	-	-	-	-	-
On Employee consumption on his spends in local market	0.83%			629	692	761	837	921	1,013	1,114	5,966
Total Share of VAT to the State				**3,864**	**4,251**	**4,676**	**5,144**	**5,658**	**6,224**	**6,846**	**36,663**
Export as percentage of total revenue	80%	1,12,000	1,23,200	1,35,520	1,49,072	1,63,979	1,80,377	1,98,415	2,18,256	2,40,082	
Export Revenue from companies meeting value addition norms											
Net profit from Export sales	20%	22,400	24,640	27,104	29,814	32,796	36,075	39,683	43,651	48,016	
Total MAT from export sales	15%	3,360	3,696	4,066	4,472	4,919	5,411	5,952	6,548	7,202	
State share of MAT	1.50%			61	67	74	81	89	98	108	579
Total Govt Revenue to Karnataka		-	-	4,296	4,726	5,198	5,718	6,290	6,919	7,611	40,758
Total Govt Revenue in % to Karnataka	%	0%	0%	3%	3%	3%	3%	3%	3%	3%	

Total Karnataka Revenue (INR Cr.)	40,758
Total Karnataka Revenue (USD Millions)	8,152

	India	China	Comments
Sale Value	100	100	
Assumed Value Addition	50	50	Assuming 50% Value addition
Sale revenue after deducting CST	98	100	CST of 2% in India
Raw Material	48	48	Same
CST on raw material	0.48	0	2% CST on 50% of raw materials
Raw Material support + Logistics	2.5	1	
Power	5	2	
Finance	5	2.5	
Marketing & Others	15.5	15.5	
People Cost	12	12	
Total Investment	80	80	
Profit	9.52	19	
Return on Investment	11.90%	23.75%	
Refund on VAT	0	8.5	17% VAT refund on value addition
ROI Total	11.9%	34.4%	
Total profitability	9.52%	27.50%	

ICT Innovation Fund (ICTIF)

Need for Setting up of ICT Innovation Fund under KITVEN

In order to achieve Rs 400,000 cr of the ICT industry along with increased composition of the ESDM sector, it is recommended that a Rs 1,000 cr ICT Innovation Fund (ICTIF) be set up. The primary goals of this fund will include:

- Increase innovation in ICT/ ESDM sector
- Increase the number of products created by ICT/ ESDM sector
- Create and support 1,000 new entrepreneurs by 2020 in ICT/ ESDM sector

The secondary goals of the fund will be to indirectly boost GDP, generate employment, modernize industry processes and enable inclusive growth. The fund will nurture an appropriate eco-system with government facilitation, domestic innovation, KPMA and new products from Karnataka (expected contribution to national GDP: 20% by 2020). The larger economic impact of this growth will be felt across other cities as employment opportunities are created by the 1,000 new entrepreneurs.

ICTIF - Overview

Unlike the software services industry, the ICT product/ESDM ecosystem is capital intensive. Financial needs and complexities vary at different stages of the value chain in the sector. There are no startup/seed funds available in the country to encourage the product development. In order to encourage young talent and new age entrepreneurs the government needs to incentivize R&D, innovation and high tech manufacturing through various schemes.

In view of this requirement, to extend government incentives to the overall ICT sector, including ESDM, and to address the seed fund, equity and debt needs of the ESDM sector, a focused fund under the KITVEN has become necessary. Hence it is recommended that an ICT Innovation Fund is created which can act as a single point of contact for all the financial needs of this industry.

ICTIF can be modelled along the lines of successful global financial institutions. In order to encourage R&D and innovations, models such as the successful Matimop program of Israel can be used.

The ICTIF should be structured in a manner that it promotes the government's incentive plans and policies. ICTIF should also ensure that it sustains its own success as a commercial organization.

Overall financial Requirement of this industry segment based on growth estimates projected in this report:
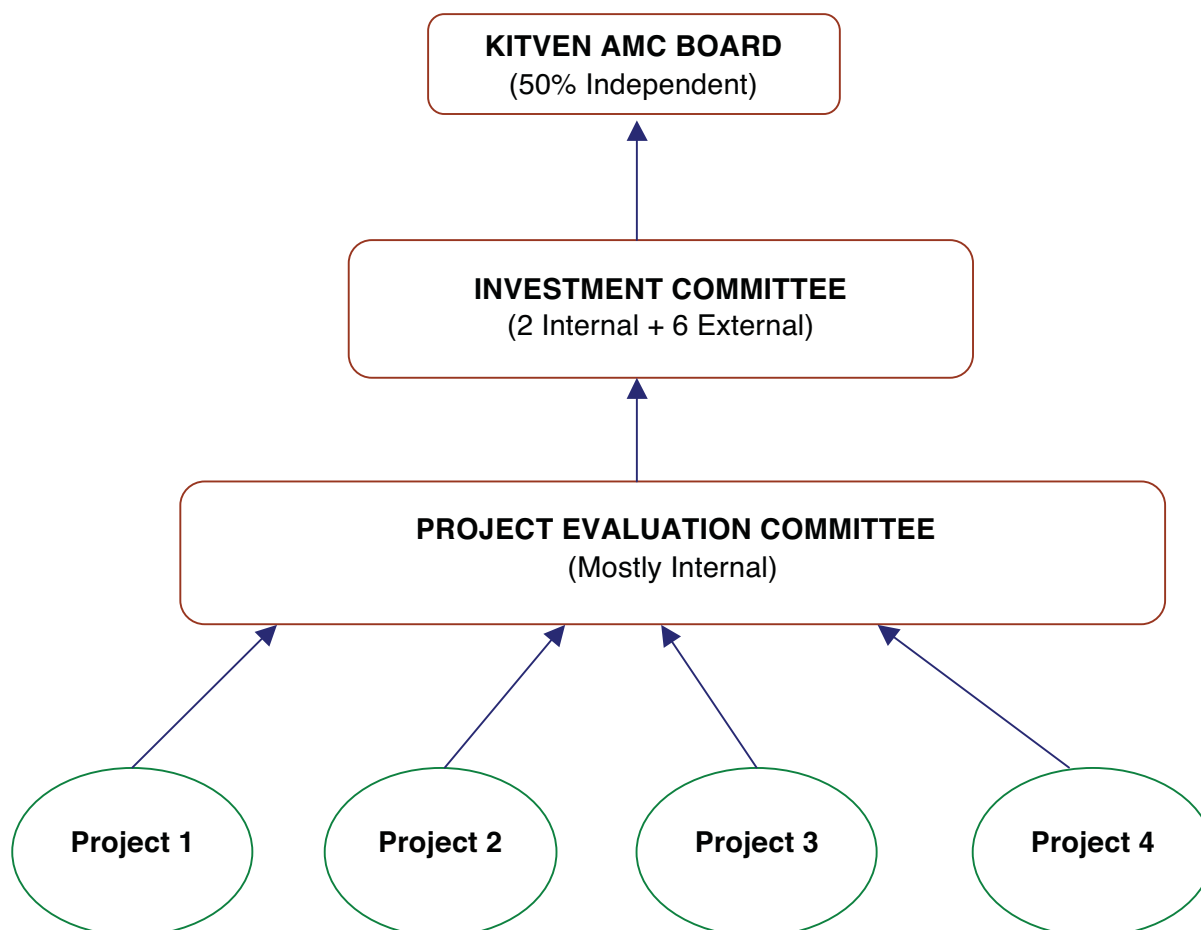
Overall Size of the Fund :   Rs 1,000 cr
GOK Contribution   :   Rs   300 cr
GOI Contribution   :   Rs   300 cr
Other Banks/PE Funds   :   Rs   400 cr

ICTIF Proposed Structure
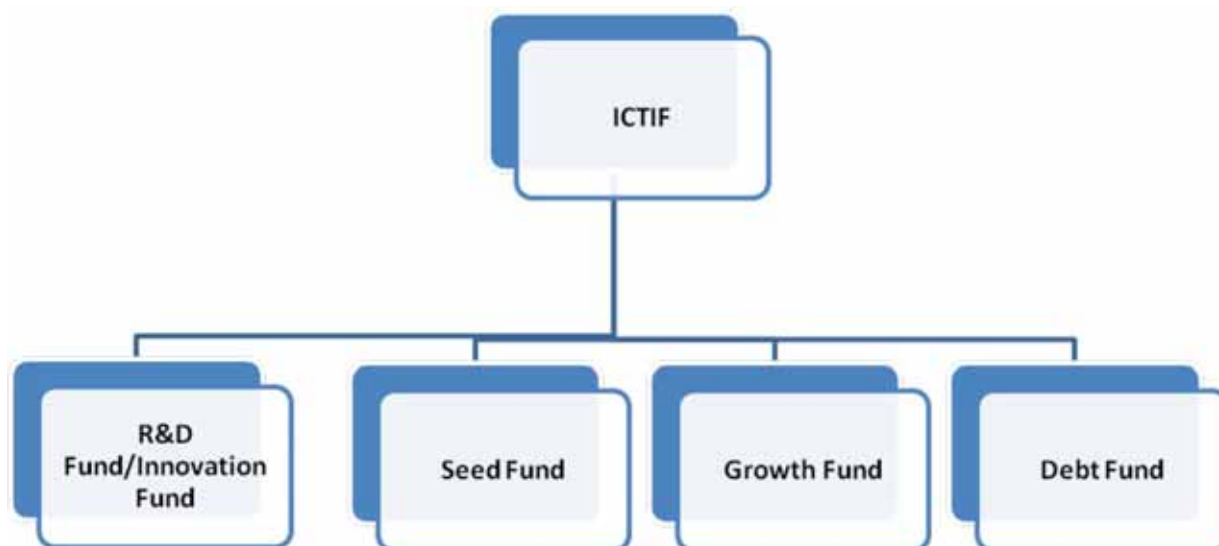
- While the overall Asset Management Company (AMC) can be under the KITVEN, the AMC can be structured so as the government holds at least 45% of the equity while the remaining 55% could be subscribed by other financial institutions. The government should at all times be the single largest shareholder of the company.

- ICTIF should be allowed to raise the money directly in to the different funds operated. ICTIF should operate these funds that are set up like any other Venture Capital fund, having independent fund managers and investment committees

- The equity of the ICTIF AMC can be small; however the equity holders should have minimum commitment to participate in the various funds of their interest operated under ICTIF.

- To ensure that the strategic interests of the government are taken care of, it can nominate representatives like bureaucrats, academicians, professionals in the ICT industry and ensure the effective management of funds.

Governance for investment evaluation

```
                    ┌──────────────────────────┐
                    │     KITVEN AMC BOARD      │
                    │    (50% Independent)      │
                    └──────────────────────────┘
                                 ▲
                    ┌──────────────────────────┐
                    │  INVESTMENT COMMITTEE     │
                    │  (2 Internal + 6 External)│
                    └──────────────────────────┘
                                 ▲
          ┌────────────────────────────────────────────────┐
          │       PROJECT EVALUATION COMMITTEE              │
          │            (Mostly Internal)                    │
          └────────────────────────────────────────────────┘
            ▲          ▲           ▲              ▲
         (Project 1) (Project 2) (Project 3)  (Project 4)
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Various funds and their structures

R&D FUND

While we have good models in India to follow for Growth (PE) Funds and Debt Funds, there are no successful models for R&D Fund and Seed Fund. To encourage Indian innovation and product manufacturing with Indian IP, we need to set up a viable financial system that is suited to the Indian environment.

R&D/Innovation Fund/Govt Equities

- The objective of this fund is to manage the government grants for research and innovation and incentives under various government policies.
- Some % of the overall "ICT Innovation Fund (ICTIF)" can be put in to this fund.
- This fund should also attract any global development funds/bilateral funds which may be available for encouraging technology relationship/trade relationship
- It will be operated by independent fund managers.

Some Key Investment Features:

Increase the success of government incentives /grants channelized though this fund.
Fund would get some upside from returns in the case of successful projects.
R&D grants can also be monitored for upside through royalties of successful IPs.

Seed fund

Seed money is typically used to pay for such preliminary operations as market research and product development.
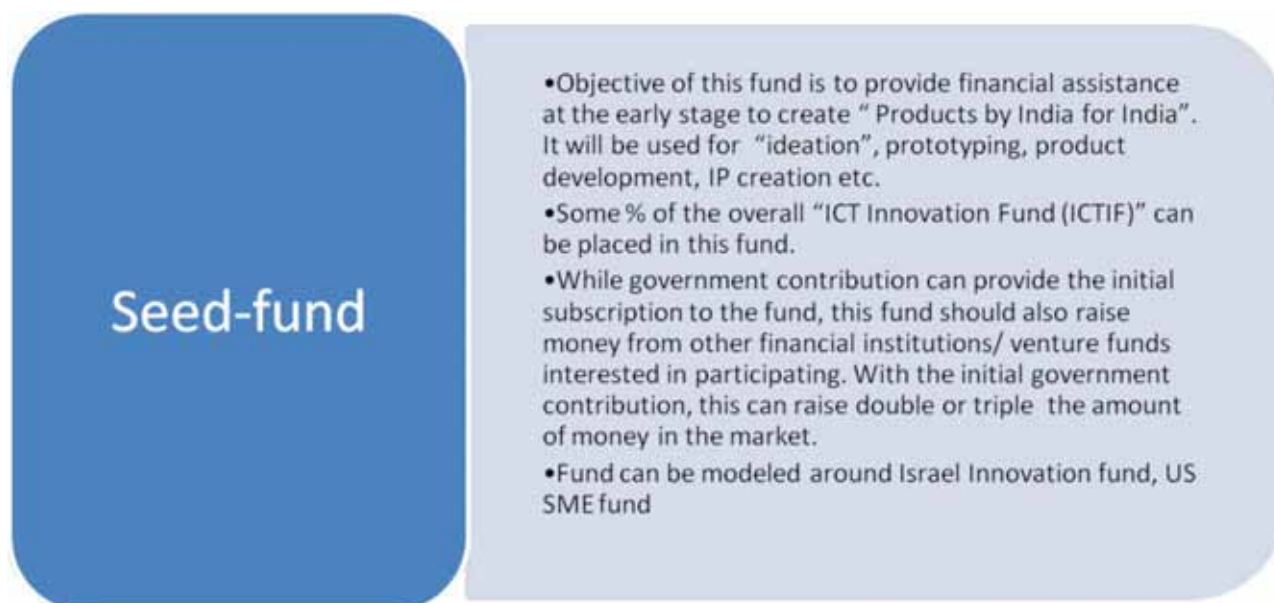
Seed capital is not necessarily a large amount of money. Many people start new business ventures with US$50,000 or less. Seed capital can be distinguished from venture capital in that venture capital investments tend to involve significantly more money, an arm's length transaction, and much greater complexity in the contracts and corporate structure that accompany the investment. Seed funding involves a higher risk than normal venture capital funding since the investor does not see any existing project to evaluate for funding. Hence the investments made are usually lower (in the tens of thousands to the hundreds of thousands of dollars range) as against normal venture capital investment (in the hundreds of thousands to the millions of dollars range), for similar levels of stake in the company.

The Investment Committee can make its decision whether to fund a project based on the perceived strength of the idea and the capabilities, skills and past history of the founders.

Growth fund

There are several established PE/ VC models in India to help set functioning and governance processes for such funds.

Debt fund

There are several established debt fund models in India to help set functioning and governance processes for such funds.

Introduction

The concept of a Karnataka Knowledge Network (KKN) is that of a broadband infrastructure linking the schools & colleges community to each other, to the wider educational sector and to services that support teaching and learning with the defined objective of increasing the standards of educational outcomes. It will provide a key tool to the learner, teacher and educational administrator in schools of the future.

KKN will be a major element in Karnataka's future education system, bringing together teachers, learners, and administrators across the educational sector through innovative and collaborative applications to enhance the process of learning and to provide simple, safe and secure anywhere, anytime access to content and tools that support the needs of the individual. The vision is for an ecosystem transparently connecting schools to each other, to high quality learning materials from a global spectrum of providers, to provide administrative support to the local and national government agencies ultimately responsible for delivering the highest possible standards in school education.

The Internet is powerful but it is not a single network, not secured from unauthorized use, not safe and secure for the user, and does not have the same capability as a private network to deliver the quality of service requirements. It cannot be managed as a single network and therefore the quality of delivery is dependent on a range of network providers carrying traffic between the content source and its end user.

However we can use the power of the Internet by combining it with regional broadband to provide managed, safe, secure and fast broadband services to schools.

The Need for Common Standards

Transparent network delivered in collaboration with multiple stake holders require standards at all levels – Local, Cluster, Zonal & Regional. Delivery of state wide broadband dependent services and learning content will be greatly simplified and made more cost effective, through the adoption of common networking standards and protocols.

The need for a secure, reliable broadband network allowing access to high quality information and services across education, founded on standards and compliance is therefore the underlying requirement for a Knowledge Network.

The development of what in effect will be an extended Wide Area Network, providing schools Intranet as an extension to their local area networks with integrated state-wide and local services is a challenging demand in terms of moving to a more homogeneous infrastructure, providing sufficient bandwidth to support an ever increasing demand, and developing those services and environments that will ensure that ICT has a continued and marked influence in improved educational standards. Only through a standards based deployment, such a network can be made scalable and sustainable for a long term.

The Range of Standards

The standards that are required across such a Network must therefore include:

- Connectivity to the State-wide Backbone
- Delivery of the regional components (Structure and Security)
- School & college LANs to take advantage of integrated content and services
- Single Authentication, Authorization and Accounting infrastructure framework.
- Standards for Content, Services and Tools hosting as part of the integrated network

KKN Ecosystem

The design for the network ecosystem plays an important part, as it ultimately affects the overall deliverables of the project. The ecosystem should be modular, hierarchal and scalable. The design shall be flexibility and must be capable of evolving with changing network usage and service demands. This dictates the requirement for a scalable design.

Predictability and consistency in performance, resilience and scalability is a characteristic of a well-designed ecosystem.

The KKN ecosystem shall consist of the following elements:

- Content
- Central Data Farm
- State-wide Broadband
- Local Campus Network
- End User Device

Conceptual Design

The Central Data Farm should be connected to the Local Campus Network through State-Wide Broadband. The end user hand held device should be connected to Local Campus Network. The Internet should be connected to the Central Data Farm.

Content

One of the major objectives of this ecosystem is that of delivering safe and secure anywhere anytime access for the individual to their work, content and learning programmes, whether this is at school or college. Content may be provided by Commercial providers, Government Agencies, Schools, IITs, IIMs, NITS, IIITs, other universities and colleges. Standards adopted in the presentation and delivery of content coupled with network standards used throughout the KKN will enable cost effective development and delivery and the widest availability across the ecosystem.

The delivery of content will be accompanied by a Learning Management System (LMS) which can enable student profiling, tracking an individual's learning, development and results throughout their life and moving with them through the various stages of learning (primary and secondary education, further and higher education and lifelong learning and development).
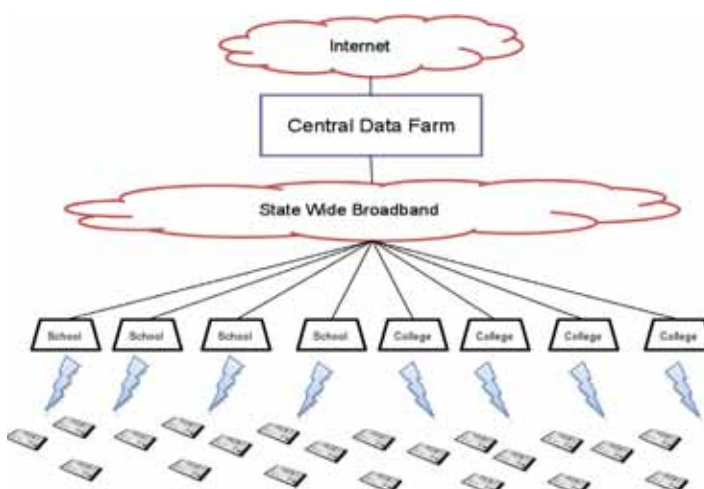
Central Data Farm (CDF)

The Central Data Farm is a group of networked appliances housed at one central location. The infrastructure shall include servers & nodes of several services, applications and contents. It shall also have redundant or backup power supplies, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices.

Key appliances that can be present in the Central Data Farm can be:

LMS Server

A relevant LMS that combines Computer-based Training (CBT) and Web-based Education System is mandatory. LMS shall provide students and teachers with the best standards in online and virtual study environments in the form of holistic content administration tools, guided tutorials, multimedia-enabled lectures, automated reporting, and personalized teacher-pupil interaction facilities.

LMS shall enable schools and colleges to effectively and uniquely deliver educational content by creating a virtual classroom. It shall offer the opportunity to maximize the potential of the Internet/Intranet in delivering and managing academic learning.

The LMS shall be capable of:

- Uploading Content
- Interactive Content Delivery
- Testing and Evaluation
- Auto-Grading of Tests
- Course Scheduling
- Results and Report Cards
- Student and Teacher Profiling

Network Management Server

Network Management System (NMS) shall be present to monitor and administer the network and network elements. NMS shall support FCAPS functionalities. FCAPS is an acronym for Fault, Configuration, Accounting, Performance, Security, management categories into which the network management tasks are defined. This facilitates a centralized administration, control and real-time health view of the network to state and regional level administrators.

Gateway to Internet

Central Data Farm should work as a gateway to the Internet. This requires a network node equipped for interfacing with the Internet that uses different protocols. The gateway shall contain devices such as protocol translators, impedance matching devices, rate converters, fault isolators, or signal translators as necessary to provide system interoperability. It also requires the establishment of mutually acceptable administrative procedures between both State-wide Network Education Network and the Internet.

Network Security Node

Network Security Node shall be deployed in front of the data centre facing State-Wide Broadband. Node shall form an impenetrable shield to unauthorized users, based on identity or group. Acting as an identity-based firewall, Node shall filter out traffic so that critical servers are completely cloaked from unauthorized users and rogue processes so that they cannot even be located or probed for. In addition, Security Node shall keep malware threats out of the data centre through its intrusion prevention capability, identifying and stopping worms and other threats in milliseconds.

RADIUS & Directory Server

Remote Authentication Dial In User Service (RADIUS) is a networking protocol that provides centralized Authentication, Authorization, and Accounting (AAA) management for computers to connect and use a network service. RADIUS shall serve the following three functions:
- to authenticate users or devices before granting them access to a network,
- to authorize those users or devices for certain network services
- to account for usage of those services.

Conceptual Design
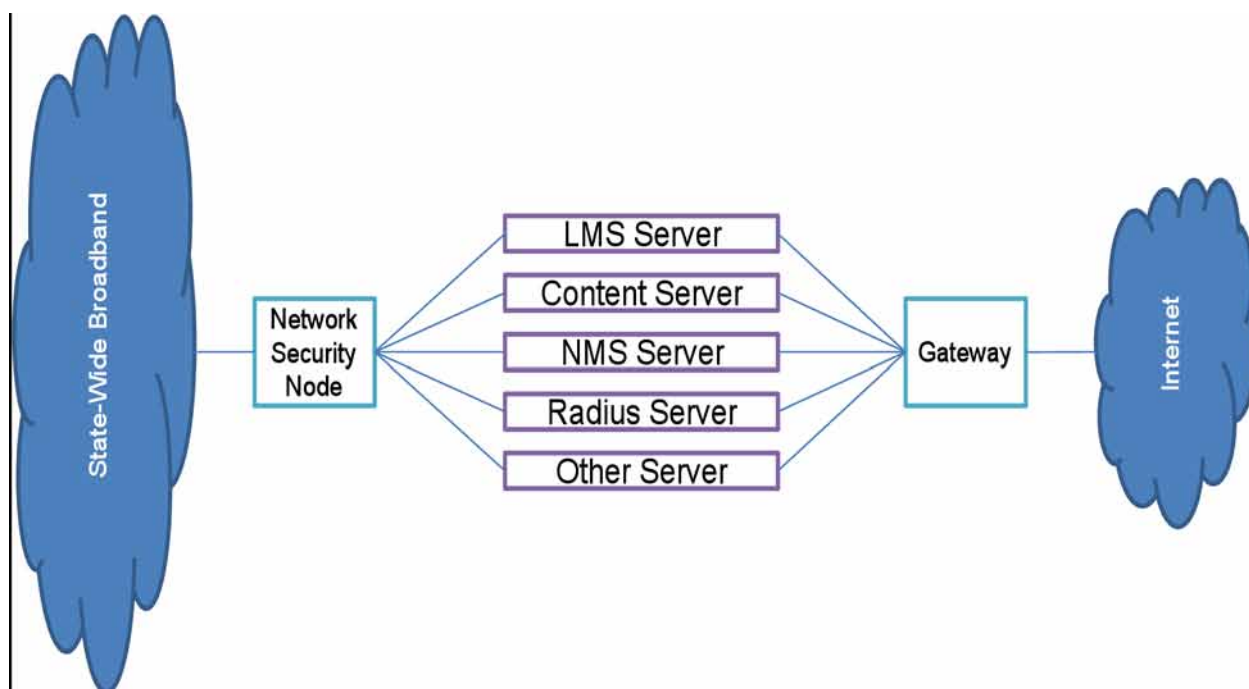
State-Wide Broadband (SWB)

The State-Wide Broadband connects the Central Data Farm with all the schools and colleges in a modular design on a hierarchical topology.

The distinct layers that can be defined for the purposes of a SWB design are:

• **Core Backbone**

Core Backbone connects all Regions, providing optimized, highly resilient and high performance interconnects between CDF and Zones.

• **Aggregation layer**

Aggregation layer connects all the Zones in a Region, providing optimized, resilient and high performance Access layer interconnects to Core Backbone.

• **Access layer**

An Access layer which connects all Clusters in a Zone providing connectivity, security, and traffic management and application/network services to Local Campus Network.

Cluster (C)

Cluster is a collection of Schools.

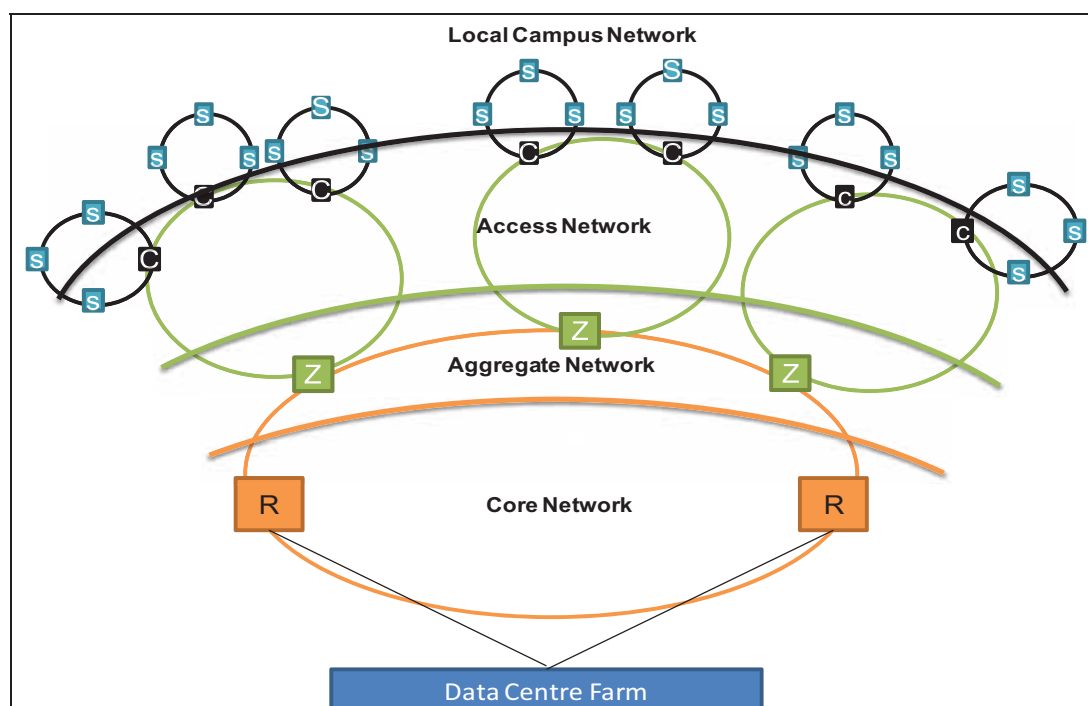**Zone (Z)**

Zone is a collection of Clusters.

Region (R)

Region is a collection of Zones.

• **Connectivity**

All the elements shall be connected by optical fibre connectivity. Optical fibres offer higher bandwidth with interference free communication.

Conceptual Design

Local Campus Network (LCN)

Local Campus Network is the network within the schools and colleges. Local Campus Network consists of:

Packet Switching Network

The packet switching network shall be the used to optimize utilization of available link capacity, minimize response times and increase the robustness of communication. The Packet Switching network shall include:

- L3 routers based central ring to providing connectivity from SWB.
- L2 switch based access ring providing last mile wired and wireless connectivity
- Optical Fibre Media connectivity for above rings

Wireless LAN

Wireless LAN fulfils needs of mobility while cost-effectively addressing the requirements of students, faculty, staff, administrators, and visitors. Wireless LAN shall include:
- Wi-Fi Access Points: The proliferation of IEEE 802.11 wireless technology has enabled much greater mobility for campus LAN clients and higher productivity. We shall use new IEEE 802.11n standard which is also backward compatible with prior devices but can run on a 5 GHZ frequency with at a maximum data rate of 600 Mbps for 802.11n devices.
- Wi-Fi Controller: Wi-Fi Controllers enable advanced functionality for access points, including centralized and distributed traffic forwarding, plug-and-play access point deployment, IPsec-encrypted tunnelling, enhanced management, access point load balancing, and Remote Site Survivability (RSS) to ensure continuous coverage in the event of failure.

Network Security Appliance

Having a universal & fast student campus network is great for students, teachers, researchers and professors with expectations of secure and seamless connectivity to their applications. The network Security Appliance at schools and colleges shall include:

- Packet inspection stateful filter & identity based application layer Firewall
- Intrusion Detection/prevention System to block the Worm/ Trojan and other kinds of malicious traffic.
- Selective user-wise blocking of applications, which consume very high network bandwidth i.e. Bittorrent, eMule, eDonkey etc.
- End point integrity checks prior to connecting over the network for laptops/ desktops, and only clean endpoints shall be allowed to connect to the network
- Extensive 360 degrees GUI based reporting for complete view of network usage and resources.

Local Data Centre

Local Data Centre is a group of networked appliances required at school and college levels. Local Data Centre shall include:
- DHCP servers for IP assignments
- LPAD servers & Local Radius Servers
- Local Storage for Institution

Conceptual Design
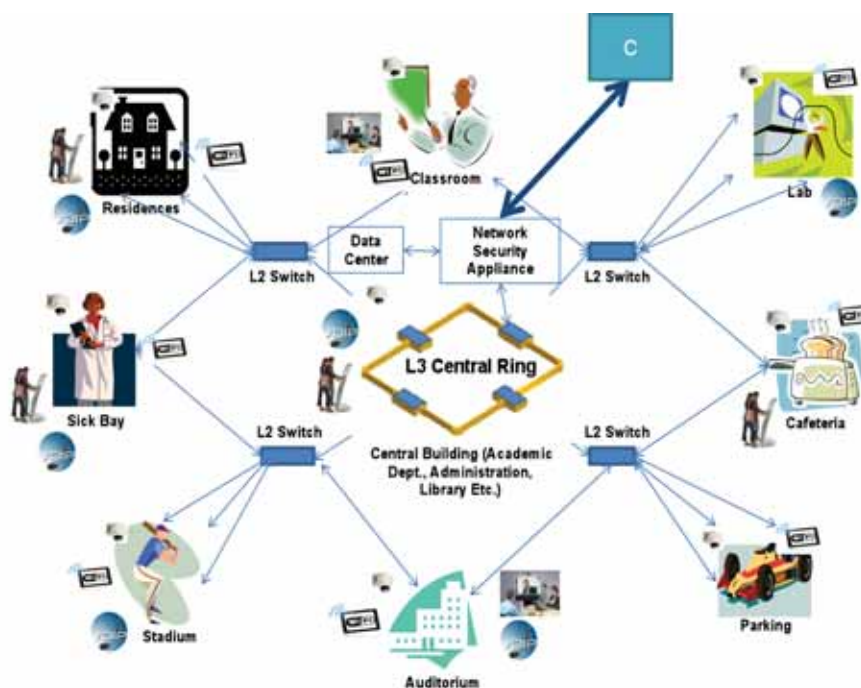
End User Device

End User Device shall be a tablet, slate, tablet computer or device, a type of portable all in one computer in a form factor similar in size to a notebook or netbook computer. Due to this, the device resembles a 'slate' or 'tablet' and features a touch-screen interface and on certain models a stylus for input purposes.

Hardware

The Tablet shall be with a minimum of the following specifications:

- High Sensitive Capacitive 7"/10.1" Touch screen with Gorilla Glass
- Slate Function
- Alteast dual core processor Cortex-A9 or higher processor
- Wifi connective with 802.11a/b/g/n
- Built-in 3G connectivity
- RAM – 1GB or Higher
- SD card support for 4 GB to 1 TB
- Nand Flash Memory of 8 GB
- Micro USB port
- Microphone 3.5 jack and speaker
- Front 1.3 Megapixel Camera for Video Conferencing
- Optional 5 mega pixel back camera.
- Bluetooth Version-3 for remote connectivity
- Built GPS for student locator

Software

The Tablet shall support the following features:

- OS -Android 4.xxx
- Should come with inbuilt LMS application which shall support following:
  a. Student login
  b. Security
  c. Testing with GPS and Monitoring control
  d. E-Reader for all the reading content
  e. Auto-Synchronization with LMS Server

Urban India service provider issues

- A growing Bangalore and India needs and has a vibrant services economy
- These services are provided by people who very often come from low income backgrounds and may not have had the benefit of good educational grounding or social skills
- Lack of basic education leads to several negatives wrt the services they provide. This is due to:
  - Lack of comprehensive skills in their chosen profession
  - Poor quality/ standards
  - Lack of commitment
  - Under delivery and non-delivery
- The service provider individual also probably faces:
  - Low self esteem
  - A lack of social capabilities

SERVICE Provider Constituencies

- **Transport Sector**
  - Auto rickshaw drivers
  - BPO Cab drivers
  - Taxi Cab drivers
  - Personal Car/corporate drivers/ drivers for hire
- **Corporate**
  - Housekeeping
  - Security
  - Canteen services
  - Hospitality staff
  - Gardening staff
  - Equipment / General maintenance
  - Retail sales
  - Office boys/ courier boys
  - Data entry operators/ transcriptionists
- **Home Services**
  - Household help
  - Security Personnel
  - Electricians
  - Plumbers
  - Gardeners
  - Childcare staff
  - Cooks
  - Household appliance Maintenance

Statistics

Assuming the creation of 1.2 million IT jobs and 800,000 existing IT jobs, we will:

- need to cater to the skill-set development for 3 million new non-IT jobs resulting in certification
- need to up skill existing service providers in non-IT jobs also resulting in certification of the individuals

Resulting in:

- a need to make the basic certification of all such skills mandatory
- a need to create a premium for these skills

How will the certification work: Existing Service Providers?

- Each applicant will be tested for functional skills
- If they pass, they do not have to re-do the functional skills, they will get a certificate for that depending on scores
- For all other courses, they will have to go through the curriculum
- Each course will grades within the certification (Basic, Intermediate and Advanced certifications) thus clearly indicating the path of growth
- Employers should pay 60% of the fees with a 6-month post certification stay-on agreement or payment to the employer of fees incurred
- Employees pay 40% of fees (arrangements made for loan) with the possibility of employer giving a loan for the 40% and recovering that over a 3-year period
- Employers to create a visible difference to compensation for successful overall certification
- Individuals can directly enrol for the program and pay fees as individuals (arrangements made for loan)

The Skilling model

For freshers (16 – 20 years old)

- Vocational courses will be offered in schools, colleges etc.
- Incorporate the 3-month Basic certificate curriculum into their school/college vocational curriculum over two years
- Attendance to be made mandatory for all students and part of their final gradation
- When they pass out, they will be job ready
- 20% of fees will be borne by the student. The government will provide soft loans/fee reimbursement to facilitate this
- 80% fee for the course will have to be paid for by the government/government body as part of Sahyog
  NB: Non 10th standard pass can enrol in an education institution and do this basic diploma

For existing service providers

- Set up/identify a not-for-profit organization that will create programs and give the certification for institutions & organizations.
- Delivery of programs by organizations that are certified to do so (e.g. Manipal, NIIT, various government institutes, private organizations)
- Fees will be paid as indicated earlier
- The education partner would have to provide the infrastructure
- Technology (audio, video) will be used to deliver courses, more experiential, mix of weekend classroom & offline learning
- The experienced person can give a test and skip modules that they pass

Financials

Average Estimated Costs

- Basic = 3 month diploma program over weekends = Rs 12,000 (Inclusive of certification exam fee)
- Intermediate = 3 month diploma program over weekends = Rs 20,000 (Inclusive of certification exam fee)
- Advanced = Intermediate Diploma + 2 month diploma program over weekends = Rs 10,000
- Certification exam fee (stand alone) for functional expertise = Rs 1,500
- For Freshers: Basic Diploma - Rs 15,000

Benefits

Benefits for corporates

- Corporates and individuals would have a structured method to grow people/themselves, change careers etc. It is also a structured method for income growth for individuals in organizations
- Corporates would see a productivity increase due to the vocational training in this cadre of employees
- Corporates can expect and get a certain level of expertise from their employees and vendor partners
- Corporates would get employees motivated to go to the next level of skilling for income growth

Benefits for service providers

- Corporates and individuals would have a structured method to grow people/themselves, change careers etc. It is also a structured method for income growth for individuals in organizations
- People would benefit from the economic bounty thus leading to social agenda achievement of all sections partaking in the economic prosperity of the state
- As an educated services workforce they would be able to handle their jobs and lives much better

Benefits for society

- The overall literacy of the city would increase leading to a true knowledge economy
- People would benefit from the economic bounty thus leading to social agenda achievement of all sections partaking in the economic prosperity of the state
- As jobs and opportunities increase, crime rates would go down
- As an indirect effect road safety and discipline could go up substantially in cities
- Citizens would also benefit as they would worry less about being cheated, or treated badly
- Citizens could expect and get a certain level of knowledge and skills when they utilized these services

Suggested roll out

This needs to be rolled out in its entirety:

- By 2015 December, all vocational category employees of the (>500 employees) organization and Vendor Service providers to those organizations should be certified
- From 2016, anyone employing more than 100 people should have their vocational employees certified
- From 2016, organizations should hire only certified vocational category employees (or certify them within 6 months of joining)
- From 2017, all organizations (including the below 100 category) will have to have certified vocational category employees

METRO AND TRANSPORTATION CESS AS PER GOVERNMENT ORDER

Infrastructure Fund - Base Rate - change the rate every 3rd		7%												
Residential			Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023	Y2024
Zone A	Rs/ Sft	5,500	179	191	205	219	234	251	268	287	307	329	352	376
Zone B	Rs/ Sft	3,500	114	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Zone C	Rs/ Sft	2,500	81	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Zone D	Rs/ Sft	1,500	49	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Non Residential														
Zone A	Rs/ Sft	5,500	179	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500	3,500
Zone B	Rs/ Sft	3,500	114	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Zone C	Rs/ Sft	2,500	81	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Zone D	Rs/ Sft	1,500	49	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500

Infrastructure Fund - Base Rate (Rs. Crs)	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs	Rs. Crs
Zone A	147	166	187	214	243	277	319	367	422	490	569	661	4,063
Zone B	418	472	533	607	692	788	907	1,043	1,200	1,393	1,617	1,877	11,546
Zone C	184	208	234	267	304	347	399	459	528	613	711	826	5,078
Zone D	5	5	6	7	8	9	10	12	14	16	18	21	130
Total	754	851	960	1,094	1,247	1,421	1,635	1,880	2,163	2,511	2,915	3,384	20,817

INFRASTRUCTURE FUND - PREMIUM RATE

Area on which Premium FSI is charged

Infrastructure Fund - Premium FSI Collection			% area opted													
Non Residential																
Zone A		Rs in Crs	0	0	0	0	0	0	0	0	0	0	0	0	0.13	0.87
Zone B		Rs in Crs	0	0	0	0	0	0	0	0	0	0	0	0	0.47	3.10
Zone C		Rs in Crs	0	0	0	0	0	0	0	0	0	0	0	0	0.22	1.43
				0	0	0	0	0	0	1	1	1	1	0.82	5.40
Residential																
Zone A		Rs. Crs	0	0	0	0	0	0	0	0	0	0	0	1	0.60	3.03
Zone B		Rs. Crs	0	0	0	1	1	1	1	1	1	1	1	2	2.00	10.14
Zone C		Rs. Crs	0	0	0	0	0	0	0	0	0	0	0	1	0.82	4.16
				1	1	1	1	1	1	1	1	1	3	3.42	17.33
Total Fund Collection on Premium FSI	(B)			1	1	1	1	1	1	2	2	2	4	4.24	22.73

Infrastructure Fund - Premium Rate - change every 3rd year				Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023	Y2024
Non Residential															
Zone A	Rs/ Sft			2,500	2,500	2,862	2,862	3,277	3,277	3,752	3,752	4,295	4,295	4,918	4,918
Zone B	Rs/ Sft	Discount	1	1,000	1,000	1,145	1,145	1,311	1,311	1,501	1,501	1,718	1,718	1,967	1,967
Zone C	Rs/ Sft	Discount		640	640	733	733	839	839	960	960	1,100	1,100	1,259	1,259
Residential	Discount														
Zone A	Rs/ Sft	20% office & comm area		2,000	2,000	2,290	2,290	2,622	2,622	3,001	3,001	3,436	3,436	3,934	3,934
Zone B	Rs/ Sft	20% office & comm area		800	800	916	916	1,049	1,049	1,201	1,201	1,375	1,375	1,574	1,574
Zone C	Rs/ Sft	20% office & comm area		512	512	586	586	671	671	768	768	880	880	1,007	1,007

Infrastructure Fund - Premium FSI Collection			% area opted													
Non Residential																
Zone A		Rs in Crs	0	77	81	98	105	128	136	167	180	221	240	298	324	2,056
Zone B		Rs in Crs	0	110	116	140	150	182	194	239	257	316	343	426	463	2,938
Zone C		Rs in Crs	0	33	34	42	44	54	57	71	76	94	101	126	137	869
				220	232	280	299	364	388	477	513	631	685	851	923	5,863
Residential																
Zone A		Rs. Crs	0	280	295	357	380	463	493	607	652	803	871	1,082	1,174	7,457
Zone B		Rs. Crs	0	375	395	478	509	620	661	813	874	1,076	1,167	1,450	1,573	9,990
Zone C		Rs. Crs	0	98	104	125	134	163	174	214	230	283	307	381	413	2,625
				753	795	960	1,022	1,246	1,327	1,634	1,756	2,161	2,345	2,913	3,161	20,072
Total Fund Collection on Premium FSI	(B)			973	1,027	1,240	1,321	1,610	1,715	2,111	2,269	2,793	3,030	3,764	4,084	25,935

Infrastructure Fund Generation

Fee Basis		Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023	Y2024	Total
Base Rate per FSI	Rs./Crs	909	959	1,158	1,233	1,504	1,601	2,695	2,898	3,566	3,869	5,862	6,360	32,613
Premium Rate per FSI	Rs./Crs	973	1,027	1,240	1,321	1,610	1,715	2,111	2,269	2,793	3,030	3,764	4,084	25,935
Metro & Transportation Cess per FSI	Rs./Crs	754	851	960	1,094	1,247	1,421	1,635	1,880	2,163	2,511	2,915	3,384	20,817
		2,635	2,836	3,358	3,648	4,361	4,737	6,441	7,047	8,522	9,410	12,541	13,828	79,365

Combined Rate for Builders - Base Rate & Metro/Infrastructure Cess

Residential		Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023	Y2024
Zone A	Rs/ Sft	304	316	348	362	398	415	576	595	659	681	883	908
Zone B	Rs/ Sft	239	247	273	282	313	323	438	450	502	515	660	676
Zone C	Rs/ Sft	206	212	236	243	270	278	350	358	400	410	501	512
Zone D	Rs/ Sft	174	177	199	203	228	232	261	266	299	304	342	349

Non Residential		Y2013	Y2014	Y2015	Y2016	Y2017	Y2018	Y2019	Y2020	Y2021	Y2022	Y2023	Y2024
Zone A	Rs/ Sft	354	366	405	419	464	480	681	700	780	801	1,053	1,078
Zone B	Rs/ Sft	289	297	331	340	378	389	533	545	611	624	806	822
Zone C	Rs/ Sft	256	262	293	300	336	343	435	443	498	507	623	634
Zone D	Rs/ Sft	224	227	256	260	293	298	336	341	384	390	440	447

PROPOSED ROAD INFRASTRUCTURE WORKS FOR BANGALORE CITY

SL NO	SECTION	FROM	TO	ROUTE	PROPOSAL TYPE	PHASE	LENGTHS,Km
				PERIPHERAL RING ROAD			
14	Peripheral Ring Road Phase-1	Madanayakanahali	Hoskur Gate	Solaramanahli,Nagarahall, Thanisandra Road,Adun, Chikkananahali Road Harohalli Gunjur Lane & Avvalahali	Surface Level Development	I	65.13
15	Peripheral Ring Road Phase-2	Hoskur Gate	Madanayakanahali	Golpark, CK Palya,Begarapura Dodo,Bannerganta Banjarpalya, Anchw Palya & Bybastalli	Surface Level Development	III	52.72
							117.85
				CORE RING ROAD			
12	Core Ring Road	Dairy Circle	Dairy Circle	Lalbagh, Corbaspet Malleshwaram,Jayamahal Road,St Jhons Road,Trinity Circle Vellara Junction & Wooz Factory	Elevated Road	III	27.87
							27.87
				RADIAL ELEVATED ROADS (CONNECTING CORE RING ROAD & OUTER RING ROAD)			
1	Magadi Road-Chord Road	Sujatha Theatre	Summanahalli Junction	Sujatha Theatre Rajorajapet 6th main Toll Gate & KHB Colony	Elevated Road	III	6.47
2	Bellary Road	Mekhri Circle	Hebbal Flyover	Sanjay Nagar Junction University of Agricultural Science	Elevated Road	III	3.26
3	Bonasandi Main Road	St Jhons Church Road	Hosmrawa Junction	Sindhi Colony/ITC Flyover Cox Town & Chakra Banaswadi	Elevated Road	III	5.75
4	Old Airport Road	Trinity Circle	Marathali Junction	Domlur,HAL Factory & Marathali	Elevated Road	I	9.60
5	Hosur Main Road	Dairy Circle	Central Silk Board Junction	Christ College Forum Mall,Wilson Underpass	Elevated Road	I	3.25
6	KR Road	Majestasara Junction	Kasiwanahali Junction	Urva Theatre Ravishakina Ashrama,Gandhi Bazar,KR Road,Minsi Tree,Yarab Nagar	Elevated Road	III	6.45
							34.97
				RADIAL ELEVATED ROADS (CONNECTING OUTER RING ROAD & PERIPHERAL RING ROAD)			
7	Magadi Road	Summanahali Junction	Sigatali Junction	Sumadasatte Beclampur, BMCP Intersection	Elevated Road	I	8.36
8	Thanisandra Main Road	Nagavara Junction	Chanaptri Hopolai	MS Ramaiah City, Thanisantra K Narajanpura Main Road & Devin Paradise Enclave	Elevated Road	III	5.16
9	Varthur Main Road	Marathali Junction	Varthur Kodi (SH-35 Junction)	Marathali Karumatinya,Lake View Farm,Ramagostanahali	Elevated Road	I	4.85
10	Sarjapura Main Road	Bisar Junction	Dommasandra Junction	Wipro Corporate Office Kaitastanahall Sulakante Cross	Elevated Road	III	10.42
							28.79
				OTHER ROADS			
18	Varthur Hosalots	Varthur Kodi	NH-4	Varthur Kodi White Field,Chansantra Cross Govigere Cross & NH-4	Elevated Road	I	11.20
19	SH-35	Varthur Kodi	Attbele	Varthur Kodi Varthur,Gunjur,Dommasandra Sarjapura & Attbele	Surface Level Improvement	I	23.92
20	Magadi Road	Sigatali	Veda Vijnana Gurukulam Cross	Acharyan Institute	Surface Level Improvement	III	1.87
21	Thannasandra- Begalur Road	Kanakana College	Yedranka Air Force Base	Piesi Institute of Technology	Surface Level Improvement	I	6.57
							43.26
				NORTH - SOUTH / EAST WEST ELEVATED CORRIDOR			
16	North South Corridor	Hebbal junction	CBB junction	Mekhri circle, Jayamahal, wheelers road, BRV grounds, Vellara junction	Elevated Road	I	13.29
17	East West Corridor	Varthur Kodi	Nayandanali	Marathali, Suranjan Das road, Ullasar, Palaw theatre, srisi crital, BHEL	Elevated Road	I	29.85
							43.14
				INNER RING ROAD			
11	Inner Ring Road	Madiwala (Ayyappa Swamy Temple)	Domlur Flyover	Koramangala 3rd Block Sony World Signal,Ejipura Junction & EGL	Surface Level Improvement	I	5.47
							5.47
				OUTER RING ROAD			
13	Outer Ring Road	Goragunte Palya	Goragunte Palya	Bel Circle, Hebbal, Nagawara, Ranuthy Nagar Banaswadi Marathahalli Kadubeesanahalli Ibbalur,HSR Layout Central Silk Board Jalyadree Flyover Puttenahali Uttarpara Kashisinahali Hosakerehalli Nayastanali Sunerreranahli & Kantereana Studio	Surface Level Improvement	I	65.04
							65.04
				CUMMULATIVE LENGTH			366.47

Sl. No	Source of Water	Department Responsible for Implementation	Item of work	Time Frame										Implementation Method	Monitoring	Present Status
				Year 2012	Year 2013	Year 2014	Year 2015	Year 2016	Year 2017	Year 2018	Year 2019	Year 2020	Year 2021			
1	Reduction of Unaccounted for Water (UFW)	BWSSB	· Study · Replacement of Old pipes and Valves · Removal/regularisation of illegal connections. · 24 x 7 water supply											Performance based Contract	High Power Committee	Study Report is prepared by BW SSB
2	Upgradation of Existing Secondary Treatment Plants to Tertiary Treatment Standards and laying dual pipeline	BWSSB	· Preparation of Master Plan for implentation of tertiary treatment Plant · Implementation of Tertiary treatment plants at identified locations · Laying Dual pipelines in new BBMP areas/ CMC · Conducting IEC activities											Performance based Contract	High Power Committee	Demand study for recycled water and Master Plan needs to be prepared by BW SSB.
3	Segregation of Sewage from Storm water drain and treatment	BWSSB	· Preparation of DPR for 300 MLD STP at V.Valley · Rehabilitation of Sewer and relaying the sewer outside SWD as per EAP-C · Construction of 300 MLD V.Valley STP and Other STPs under Cauvery project. · Laying of Sewer network in new BBMP areas / CMC											· Item rate contract for Rehabilitation of sewers · Turnkey for STP	High Power Committee	· Study report and DPR for segregation of sewage from Storm water drain is with BW SSB. · DPR for V.Valley STP needs to be prepared by BW SSB. · For Cauvery projects DPRs are with BW SSB
4	Storm Water Drains	BBMP in BBMP areas. BDA in BDA Areas	· Study for BDA area drains / Raja Kaluve · Removal of Encroachment · Procurement of Land for Service Corridor. · Remodel Raja Kaluve / Drains											Item Rate Contract	High Power Committee	· Storm W ater Master paln and DPR for BBMP area ready with BBMP · For BDA and BMRDA areas Master Plan needs to be prepared.
5	Water Bodies & Harvesting	BDA and BBMP	· Preparation of Master Plan · Preparation of DPR · Restoration / Rejuvenation of W ater Bodies · Construction of Sewage Treatment Plant for lakes											· Item rate contract for Restoration of water bodies · Turnkey for Lake	High Power Committee	· BDA and BBMP have DPR for 75 lakes out of around 475 lakes · STP master plan is available with BW SSB prepared for BBMP SWD Master plan.
6	Storage pond for storm Runoff water	BW SSB / W ater resources Department	· Hydrological Study and EIA Study · Land Acquisition · Construction of Impounding reservoir. · Construction of W ater Treatment Plant and											· Item Rate Contract for reservoir. · Turnkey for WTP	High Power Committee	Study done for BBMP Storm water drain needs to be extended to cover catchment area.

ADDITIONAL WATER SOURCE TO MEET BANGALORE WATER DEMAND

S. No	Source of Water	Details	Cost (Rs. in Crore)	Additional water availability	Add. Qty
1	Reduction of Unaccounted for Water (UFW)	Based on BWSSB earlier study for 65000 connections with an expenditure of Rs.50.00 Crore, to extend for 650000 connections the present day cost is	1,250	By reducing UFW from 45% to 25%, additional quantity of water available will be 20% of 950 MLD	190 MLD
2	Upgradation of Existing Secondary Treatment Plants to Tertiary Treatment Standards and laying dual pipeline	Providing tertiary treatment to secondary treated sewage a Rs. 2Crore/MLD, laying dual pipeline and metering and supplying tertiary treated water a Rs. 2000 dapita	2,000	Present supply of Cauvey water of 200 MLD to industries can be replaced with recycled water and for new BBMP zones for secondary purpose 300 MLD of tertiary treated water can be supplied	500 MLD
3	Segregation of Sewage from Storm water drain and treatment	As per BWSSB EAP-C report estimated Cost for segregation of sewage from Storm Water Drains -Rs.400 crore. For upgradation of 500 MLD V Valley STP- Rs.350 crore	750	Segregation of sewage and construction of 500 MLD STP at V Valley for which funding needs to be tied up	
4	Storm Water Drains	Estimated Project Cost As per SWD Master Plan (Including procurement of land for formation of service corridor on either side) - Rs.7500 crores And for Drains in BDA and BMRDA area Rs.2500 crores	10,000	Area- 2000 sq.km (Drainage area), Avg. Rainfall- 500mm (available for few), Runoff- 20% (after filing entire area)	500 MLD
5	Storage pond for storm Runoff water	Collection of rain water at the end of the valley, Provide storage/ impounding reservoir, Treatment and supply to existing BWSSB storage reservoirs	5,000	Land requirement for creating storage pond	
6	Water Bodies & Harvesting	Total area of lakes in BDA &BBMP=10000 acres, Total waterbody area in BMRDA= 58000 acres	5,000	Ground water recharge and available in borewell	200 MLD
	Total		24,000		1390 MLD

|	
Additional water availability	1390 MLD
Water available from Cauvery	1450 MLD
Total availability of water	2790 MLD
Total water availability after 85 % loss	2090 MLD
Industries Water Demand	300 MLD
Total Water available for domestic purpose	1790 MLD
Population covered with 150 LPCD	120 Lakhs

Advantages of Implementation of the above schemes:

1. Multiple water source is available incase of failure of any source
2. Operation cost reduces drastically, bringing down the water rate, making the above projects self sustaining and financially viable. The pumping cost reduces by Rs.400 cores annualy.
3. The above projects enhances the quality of water bodies and drains /raja kaluves which will be free from sewage, improving the environment.
4. Prevents encroachment of lakes and raja kaluves
5. Provides clean environment for people living in and around water bodies and educes waterborne problems and improves the health of populace
6. The entire city sewage get streated to tertiary standard
7. Developed lakes and drains reduces flooding problems in the city
8. Tertiary treatment and dual piping may be taken up on Performance based contract to reduce the capital expenditure
9. Investment of Rs.24000 crores at present rate is required over a period of next 10 years for the above will be cheaper solution both in capital as well as operation cost compared to other obtain source schemes.
10. With central govt. grant and some of the component under Performance based, the initial investment required may be reduced considerably.

Proposed Sub-urban Commuter Rail Network
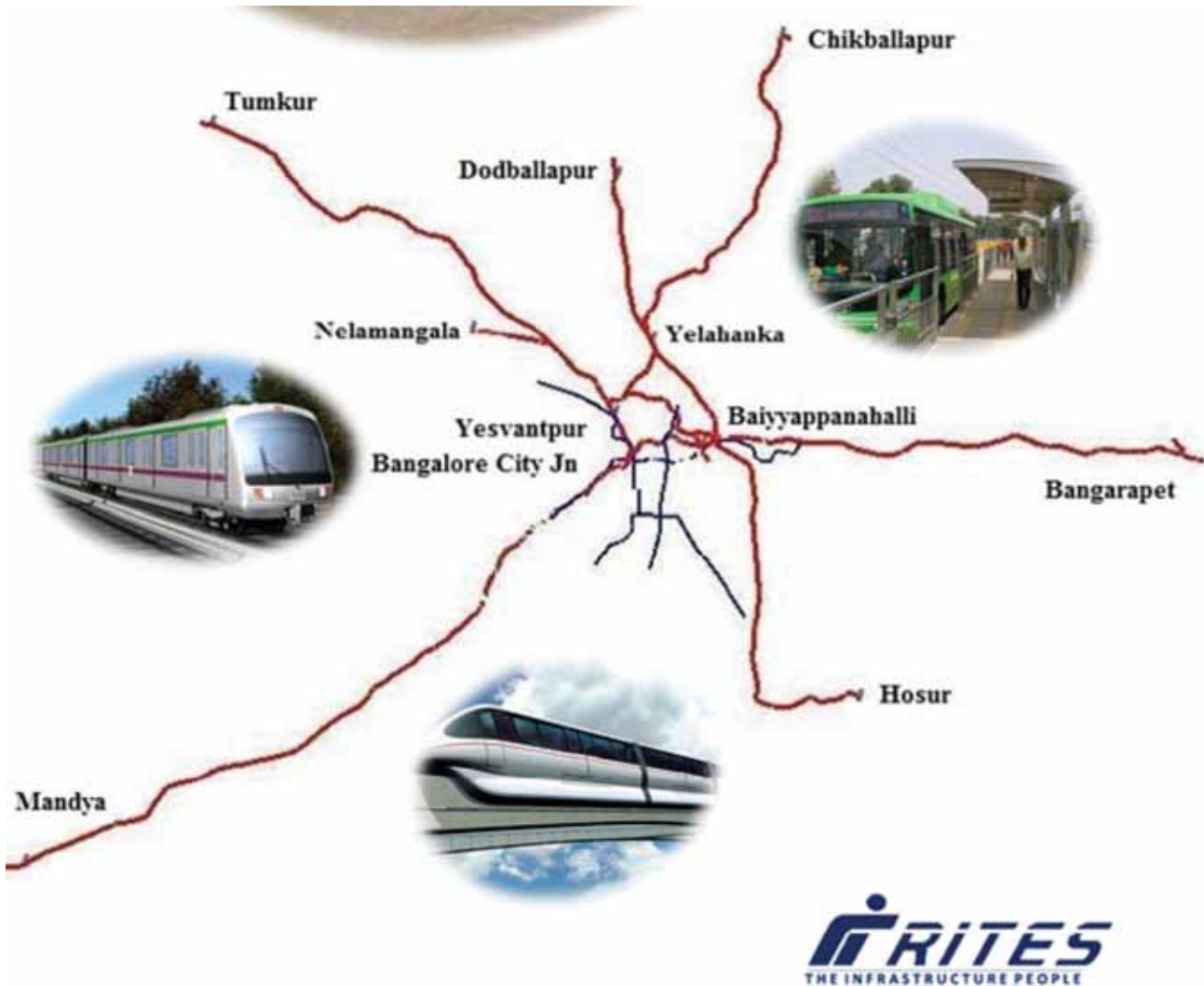
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Acknowledgements

1.	Shri I S N Prasad	Principal Secretary, IT/ BT	Govt of Karnataka
2.	Shri Rajneesh Goel	Commissioner	Bengaluru Mahanagara Palike
3.	Shri Gaurav Gupta	Chairman	BWSSB
4.	Shri Shivasailam	MD	BMRCL
5.	Shri Manivannan	MD	BESCOM
6.	Shri Praveen Sood	ADGP	Police Computer Wing & Commissioner for Traffic & Road Safety
7.	Ms V Manjula	Commissioner	Urban Land Transport, Urban Development Department, GOK
8.	Shri Ajay Seth	Principal Secretary Finance	Govt of Karnataka
9.	Shri B G Changappa	Director	KSFES
10.	Dr Mahendra	Additional Director of Town & Country Planning	BMRDA
11.	Shri T Venkataraju	Engineer-in-Chief	BWSSB
12.	Shri. K Ramakrishna	Director	Technical, BESCOM
13.	Shri A J Hosamani	Chief Engineer (Electricity) (P&C)	KPTCL
14.	Shri Mahadev	Chief Engineer	BESCOM
15.	Shri H M Ravindra	Dy Chief Engineer (M)	BWSSB
16.	Shri D Rasheed	Deputy Director	KSFES
17.	Shri Basavaraj Kabade	Executive Engineer (Major Roads)	BBMP
18.	Shri N P Sharma	Chief Engineer (D & UG)	BMRCL
19.	Shri V Prakash	Dy GM (O & M)	BESCOM
20.	Shri Arun Kumar	Additional Commissioner	Commercial Taxes, GOK
21.	Shri Sushil Mantri	Chairman & Managing Director	Mantri Developers Pvt Ltd
22.	Shri Irfan Razack	Chairman & Managing Director	Prestige Group
23.	Shri M N Thippeswamy	Retd Chief Engineer	BWSSB
24.	Shri R H Sawkar	Secretary	Geological Society of India
25.	Shri A T Samuel	Director	STUP Consultants, Bengaluru
26.	Shri Sunil Dutt	Associate Exec Director (Business Development)	STUP Mumbai
27.	Shri Y D Manmohan	Chief Consultant	STUP Consultants, Bengaluru
28.	Shri T V Rajeev	Principal Consultant	STUP Consultants, Bengaluru
29.	Shri Vijayan Menon	CSHARP	
30.	Dr Ashwin Mahesh	ABIDe	
31.	Ms Harini Nagendra	ATREE Consulting	
32.	Shri K K Pradeep	Coordinator & Member	State Disaster Management Advisory Committee
33.	Shri Vedavyasa Rao	VP	SBI Capital Markets

Karnataka Rural Technology & Business Operations (RTB-Ops) Policy

Background

- In the last 10 years , India has created 1.1 million jobs in the BPO sector
- By 2022, according to NSDC, 3.8 million additional jobs to be created in BPO in India (Exports & Domestic)
- Rising costs, higher attrition and war for talent are the challenges for the BPO growth story in the current model
- Rural BPOs are touted to have all the advantages – low costs, low attrition and improved infrastructure. However, despite all the hype, there are < 10,000 seats in semi-urban/rural India today

In a survey of Rural BPO entrepreneurs, the key challenges they face in scaling up rural BPOs are:

- Generating Leads, Clients and Account Management
- Process, Quality Standards and Technology to deliver quality
- Access to trained talent pool in Tier III/IV cities
- Reliable Infrastructure – power & connectivity

How can Karnataka enable an environment where rural BPOs can thrive?

Objectives

- To train and employ rural youth (ideally from very poor socio- economic backgrounds) in & around the villages itself, thereby reducing migration to cities
- Target to generate employment for 50,000 youth in next 5 years and scale it up to 300,000 in the next 10 years
- To use the cost effective service delivery of rural BPOs for appropriate e-Governance & business process activities and generate additional revenue of 1500 crores, cumulatively over the next 5 years
- Create at least 100 RTB-Ops Entrepreneurs in rural Karnataka

Definitions of "Rural" location

In accordance with the Industrial Policy of Karnakata 2009 – 14, the current zoning approach for incentives could be leveraged. It is suggested that the following Zones be defined as "Rural Locations" for purposes of the RTB – Ops Policy

1. Zone – 1 (Most Backward Taluks)
2. Zone – 2 (More Backward Taluks)
3. Zone – 3 (Backward Taluks)

Zone – 4 (Industrially Developed Taluks) can be classified as areas where the RTB – Ops Policy benefits / incentives would not be applicable.

The key elements that we need to address, to enable this environment:

1. **Infrastructure:** how can we create reasonable infrastructure with uninterrupted power and bandwidth?
2. **Talent Pool:** how do we train 100,000 rural youth (including zero-educated and school drop-outs) for a career in RTB-Ops?
3. **Generate business:** how can we kick-start transition of work to such rural centres and build the brand of Karnataka RTB-Ops?
4. **Incentivize entrepreneurs:** what incentive structures do we create to encourage entrepreneurs to set-up RTB-Ops centers?

Ideas to bring each of the elements into play:

1.   Infrastructure

- To accommodate 50,000 people, we will need approximately 20 lakh sft of infrastructure spread across 6 regions in Karnataka (South, South-east, West, North-west, North, Central)
- Idea:
    - For every contract taken up by a builder in Bangalore city, the builder has to create 10% (?) of the contracted sq.ft in any "rural" locations (as identified above) as office space for RTB-Ops. This infrastructure has to be as per certain defined specifications, including uninterrupted power and bandwidth. The state Government could share the map of fibre optic coverage with these builders so that they can appropriately plan their rural office spaces. Also, once an office space has been built in a Taluk, additional building of office space should not be allowed, since this could (a) lead to a concentration of RBPOs and limit the spread and (b) the shortage of locally available manpower could result in others migrating from adjacent taluks, creating pressure on the taluk where the office space has been built.
    - This infrastructure can be leased out to RTB-Ops at a reasonable rate/month on a plug-n-play basis. As a benchmark, this could be done at a cost + 8% return basis over a 10 year period.

2.   Talent Pool

- To train 100,000 rural youth between 17-21 years of age on English, Computer Skills and basic traits required to work in RTB-Ops. A section of the youth will be between school dropouts so that we can target to bring them into the mainstream.
- For an intensive training program, it is estimated to take between 5-6 months and cost approximately Rs.15,000/- . The total cost of such training over 5 years will be approximately 150 crores.
- Idea:
    - For all registered training providers, the Government subsidizes 50% of the training cost (with certain entry/exit criteria and audits). Banks provide education/vocational loan to the students for the remaining 50% which is then repaid by the trainee post placement
    - Enable a talent exchange platform for RTB-Ops where all the trainee data can reside and registered RTB-Ops providers can access this database exclusively

3.   Generate business

- Idea:
    - In the first year, it is mandated that at least 30% of any Government transactions that are outsourced must be executed by vendors in a "rural location". This should grow progressively to 100% in the 5th year
    - Government engages with all the large BPO providers in the State and encourages (incentivizes? – tax breaks?) such entities to shift at least 10% of their workforce to rural locations over the next 5 years
    - Government funds setting up of Centers of Excellence in each of the 6 regions which showcases the best of RTB-Ops and this centers acts as nodal center for all RTB-Ops centers in that region.
- Estimated cost of setting up 6 centers: 15 crores
    - Government also creates a Brand/Marketing fund for RTB-Ops of 10 crores which is used to organise road-shows, conferences in India and US, and also to fund participation of RTB-Ops in global conferences world-wide

        RTB-Ops entities must be able to demonstrate capability and execute business from non- Government clients as well. The total amount of business from Government or related to Government work should not be allowed to exceed 50% of the work executed by the entity

4.   Incentivizing Entrepreneurs

- Ideas:
    - For all RTB-Ops entities >50 seats, Government reimburses PF/ESI contributions of employers on an annual basis – this reduces the cost of wages by around 10% for the entrepreneurs
    - Government ties up with a reputed global school (Wharton, IIM Bangalore) to create a specific curriculum to train RTB-Ops entrepreneurs and offers to fund the entire cost of the program for all entrepreneurs who register under this scheme (criteria to be defined – primarily to ensure that the entrepreneur stays the course, post training). This will help our entrepreneurs understand issues and challenges better and deal with it

VALIDATION OF REAL ESTATE RELATED WORKINGS OF KIG VISION 2020, KARNATAKA, INDIA

SUBMITTED BY

JONES LANG
LaSALLE®

EXECUTIVE SUMMARY

BBMP	BruhatBangaloreMahanagaraPalike
BDA	Bangalore Development Authority
BUA	Built-Up Area
CBD	Central Business District
DCR	Development Controls & Regulations
DRC	Development Rights Certificate
FAR	Floor Area Ratio
FSI	Floor Space Index
INR	Indian National Rupees
IT	Information Technology
ITES	IT enabled Services
KIG	Karnataka ICT Vision Group
km	Kilo-metre
NH	National Highway
ORR	Outer Ring Road
PBD	Peripheral Business District
PRR	Peripheral Ring Road
RMP-2015	Revised Master Plan - 2015
SBD	Secondary Business District
sq. ft.	square feet
sq. m	square metre
TDR	Transfer of Development Rights
Y-o-Y	Year-on-Year

Conversion of Units

1 hectare	2.4711 acres
1 acre	43559.66 sq. ft.
1 acre	4046.9 sq. m
1 sq. km	247.11 acres
1 sq. m	1.196 sq. yards
1 sq. m	10.764 sq. ft.
1 meter	1.0936 yards
1 meter	3.28 ft.
1 cent	435.6 sq. ft.
1 acre	40 guntas

Preamble

Karnataka ICT Vision Group (KIG) is working on certain infrastructure recommendations, in consultation with various expert consultants across the various domains. In this regard, KIG has prepared the projections and workings along with certain workings on the Infrastructure of Bangalore due to the ICT (Information, Communication Technology) Industry and the recommendations to mitigate the same. Since this workings are being submitted to the Government of Karnataka, as a part of a high level group as a White Paper, KIG wishes to validate these assumptions and projections from certain Industry specialists.

Accordingly, KIG has commissioned Jones Lang LaSalle through Velankani Group, to validate real estate related workings to substantiate these projections and suggest any recommendations for the improvement of City of Bangalore.

Jones Lang LaSalle is one of India's leading international property consultants, specializes in providing real estate advice to corporates and institutions, offer full line of real estate services, i.e., Consulting, Research, Agency, Valuation, Project Management, Facilities Management, Property Maintenance & Investment Consultancy.

Advantage Bangalore

Bangalore being the capital city and the largest city of the Karnataka,is popularly known as the 'Silicon Valley of India' and has become one of Asia's fastest growing.The growth of IT in the city, which is the largest contributor to India's software exports, is now regarded as a high-tech city with office or development centres of number of mega software companies having wholly owned subsidiaries or joint ventures in Bangalore, including IBM, Hewlett-Packard, Texas Instruments, Oracle, Novell, Fujitsu, and Digital Equipment. Bangalore is also headquarters to a large number of Indian software companies. In a short time, Bangalore has experienced rapid growth and international recognition in the field of software development. This has resulted in placing the city at a promising position in the international market for software. Presently with area of just 500 sq. km, the city offers the opportunity of lesser travel time and travel distance but at the same time offers opportunities similar to Delhi or Mumbai.

The city also attracts people from all over the world for its excellent schools and universities, such as the Indian Institute of Science, National Institute of Mental Health and Neuro-Physics, the Indian Space Research Organization, Indian Institute of Management and Indian Institute of Aero-physics. Bangalore is even gaining the status of the 'Floriculture Capital' due to the present boost of the flower export from the city. Due to the rich stone resources Bangalore is also known the 'Stone City', especially for its granite deposits. The city is also known as the aviation/aerospace hub with large number of aviation and precession engineering companies preferring Bangalore as their headquarters.

Bangalore City has IT-ITES sector, knowledge based sectors and other industries as key economic drivers, which have been witnessing healthy growth over last decade and expected to continue to improve over the coming years. Further, Bangalore City is dotted with several educational institutes, research colleges, etc., which are resulting in large immigrant white collar population to the city. This large influx of working population has opened avenues for many real estate developers to build large scale developments across the city-commercial, residential, retail, hospitality, etc. to cater to the growing demand.

In the last decade, Bangalore has gained a special significance in the real estate market. With IT-boom supporting the overall city development, the city planners now feel that it will be one of the international metropolitan cities in the next 5-7 years. Other than IT and ITES, other sectors like bio-tech, aerospace, automobile, garments, finance and real estate also have shown phenomenal growth in the past 5 years. The growth in commercial sector has led to growth in residential, hospitality and retail sector too. The spur of activities led to increase in spread of city catchment.

The Bangalore real estate market is one of the fastest growing markets in India with a greater stress on quality developments. The market is seeing exponential growth with the support from the growth of IT-ITES and other knowledge based sector. In a nutshell, Bangalore real estate market is fast emerging as one of the sustainable markets, compared to all the cities in South India.

Built Potential Estimate of BDA Jurisdiction

As part of the suggestions and/or recommendations of the KIG on infrastructure development for the Bangalore City, one of the key objectives is to explore the need for developing a new area/location in the form of the neighborhood and/or an integrated self-sustaining township. In this regard, the built potential of the Bangalore City is assessed, more specifically within the developed area, i.e. the administrative jurisdiction of the Bangalore Development Authority (BDA) as it is felt that developing a neighborhood and/or an integrated self-sustaining township will be more challenging from land acquisition and infrastructure development than augmenting infrastructure in developed areas so as to improve the carrying capacity of the developed areas to take high-density development without negatively impacting the quality of life of the people and the business.

In this regard, an assessment was carried out to estimate total built potential of the Bangalore City (within the administrative jurisdiction of the BDA) based on the Zoning Regulations and other development controls & regulations (DCR) outlined in the Revised Master Plan - 2015 (RMP-2015) of the BDA. The objective of this assessment is to first explore future built potential of the city and evaluate the need for expansion (in the form of the neighborhood and/or an integrated self-sustaining township) considering the real estate space demand over next 10-12 years.

For the purpose of assessment of built potential, all Planning Districts numbered in 100 series are compiled under Central Business District (CBD) while those numbered in 200 and 300 series are categorized under Secondary Business District (SBD) and Peripheral Business District (PBD) respectively. As a whole, there are 7 Planning Districts under 100 series, 18 Planning Districts under 200 series and 22 Planning Districts under 300 series. There are 3 Planning Districts in the PBD (Hesaragatta, Bettaalasuru and Dommasandra), which have only non-developable uses (primarily agriculture use) and thus not factored under the developable uses.

Considering various assumptions and limitations mentioned in the Section 3.2 of this report, the table below presents zone-wise summary of built potential based on the developable area and average applicable FAR.

Sl. No.	Zone / Planning Districts	Estimated Development Potential (Million sq. ft.)			
		Residential	*Non-Residential*	*Total*	*Percentage*
1.	CBD (100 Series)	65.73	138.01	203.73	1.87%
2.	SBD (200 Series)	1,731.11	398.95	2,130.07	19.50%
3.	PBD (300 Series)	6,794.21	1,795.10	8,589.31	78.63%
	Total / Average	**8,591.05**	**2,332.06**	**10,923.11**	**100.00%**

Source: Volumes2, 3 & 4; Revised Master Plan - 2012; Bangalore Development Authority

Since the utilization of permissible Floor Area Ratio (FAR) is dependent on other DCR like plot coverage, setback regulations, height of the building and parking requirements, three scenarios are developed with varying percentage of utilization of total built potential estimated based on the above, to ascertain probability of utilizable built potential under different scenarios. Accordingly, three scenarios with assumed utilization of 40% (conservative scenario), 50% (optimal scenario) and 60%(aggressive scenario) of total estimated built potential have been worked out.

Total estimated present stock in the city is 2,181.09 million sq. ft., which comprises of 2,092.88 million sq. ft. under residential and balance 88.22 million sq. ft. under non-residential use. The table below presents probability of utilizable built potential under three scenarios after factoring the existing supply.

Sl. No.	Zone / Planning Districts	Total Estimated Development Potential (Million sq. ft.)	Scenarios - Potential Utilization of Built Potential		
			Conservative Scenario (40% Utilization)	*Optimal Scenario (50% Utilization)*	*Aggressive Scenario (60% Utilization)*
1.	CBD (100 Series)	203.73	81.49	101.87	122.24
2.	SBD (200 Series)	2,130.07	852.03	1,065.03	1,278.04
3.	PBD (300 Series)	8,589.31	3,435.72	4,294.65	5,153.58
	Total Built Potential <u>before</u> deducting Existing Stock	**10,923.11**	**4,369.24**	**5,461.55**	**6,553.86**
	Deduct: Present Estimated Stock	2,181.09	2,181.09	2,181.09	2,181.09
	Total Built Potential <u>after</u> deducting Existing Stock	**8,742.02**	**2,188.15**	**3,280.46**	**4,372.77**

Based on the above table, it may be observed that the Bangalore City (within the administrative jurisdiction of the BDA) has a total unutilized built potential of 8,742.02 million sq. ft. after deducting the existing stock. Under different scenarios, the Conservative Scenario presents unutilized potential of about 2,188.15 million sq. ft. while that of the Aggressive Scenario is about 4,372.77 million sq. ft.

Based on the above table, considering the Optimal Scenario, the unutilized built potential is estimated at about 3,280.46 million sq. ft. after deducting the existing stock. Accordingly, there may not be a need to develop a new area/location in the form of the neighborhood and/or an integrated self-sustaining township till this unutilized built potential is consumed in terms of development.

Built-up Area Projections For Bangalore City

Key infrastructure recommendations are based on the potential future real estate supply and its contribution to the proposed infrastructure financing mechanism. Thus, it is very important to have holistic and comprehensive assessment and projections to estimate potential future supply over next 10-15 years (horizon year of 2024) considering the potential demand for the core economic activities and resultant demand across different types of real estate asset classes like commercial/office, retail, hospitality, institutional (education, healthcare, etc.), industrial/manufacturing, residential, etc.

The future supply projections for different asset-classes are computed based on the 'Regression Analysis'. Regression analysis is a statistical tool used to find relationships among a set of variables. In regression analysis, there is a dependent variable, which is to be derived and one or more independent variables that are related to it. For each asset class, there are few independent variables that have been chosen which are closely related to the dependent variable. Real estate demand is estimated individually for different asset-classes using key parameters, which determines the demand for respective asset classes. The total projected demand / supply is summation of projected demand / supply of individual asset classes like Commercial / Office, Retail, Hospitality and Residential. The table below presents summary of future projection of built-up area for the entire city.

Year	Asset Class-wise Distribution of Space in Bangalore City (Million sq. ft.)				Summary of Residential and Non-Residential Space in Bangalore City (Million sq. ft.)		
	Residential	*Commercial / Office*	*Retail*	*Hospitality*	*Residential*	*Non-Residential*	*Total*
2011-12	476.77	79.46	9.84	5.92	476.77	95.22	571.99
2012-13	528.73	88.12	12.27	7.59	528.73	107.98	636.71
2013-14	587.86	97.98	14.90	8.44	587.86	121.31	709.17
2014-15	650.80	108.47	17.11	9.11	650.80	134.68	785.48
2015-16	713.31	118.89	19.49	9.82	713.31	148.19	861.50
2016-17	783.26	130.54	21.88	10.51	783.26	162.93	946.19
2017-18	857.90	142.98	24.33	11.01	857.90	178.32	1,036.23
2018-19	939.64	156.61	26.79	11.51	939.64	194.91	1,134.55
2019-20	1,023.82	170.64	29.38	12.06	1,023.82	212.08	1,235.90
2020-21	1,115.57	185.93	31.99	13.01	1,115.57	230.93	1,346.50
2021-22	1,211.16	201.86	34.71	14.13	1,211.16	250.70	1,461.86
2022-23	1,314.92	219.15	37.48	15.34	1,314.92	271.97	1,586.89
2023-24	1,419.66	236.61	40.46	16.56	1,419.66	293.63	1,713.29
2024-25	1,532.76	255.46	43.49	17.88	1,532.76	316.84	1,849.60

The table below presents incremental demand/supply for future years under Residential and Non-Residential space in the city.

Year	Projection of Residential and Non-Residential Space in Bangalore City (Cumulative - Million sq. ft.)			Projection of Residential and Non-Residential Space in Bangalore City (Incremental - Million sq. ft.)		
	Residential	*Non-Residential*	*Total*	*Residential*	*Non-Residential*	*Total*
2013-14	587.86	121.31	709.17	59.13	13.33	72.46
2014-15	650.80	134.68	785.48	62.94	13.37	76.31
2015-16	713.31	148.19	861.50	62.51	13.51	76.02
2016-17	783.26	162.93	946.19	69.95	14.73	84.68
2017-18	857.90	178.32	1,036.23	74.65	15.40	90.04
2018-19	939.64	194.91	1,134.55	81.74	16.59	98.32
2019-20	1,023.82	212.08	1,235.90	84.18	17.17	101.35
2020-21	1,115.57	230.93	1,346.50	91.75	18.85	110.60
2021-22	1,211.16	250.70	1,461.86	95.59	19.77	115.36
2022-23	1,314.92	271.97	1,586.89	103.76	21.27	125.02
2023-24	1,419.66	293.63	1,713.29	104.75	21.66	126.41
2024-25	1,532.76	316.84	1,849.60	113.10	23.21	136.30
Average (from 2013-14 to 2024-25)				83.67	17.40	101.07
Total (from 2013-14 to 2024-25)				1,004.03	208.86	1,212.89

Based on the above table, incremental supply under the residential space will be about 1,004.03 million sq. ft., which translates into approximately 83.67 million sq. ft. per annum over next 12 years (till 2024). Similarly, incremental supply under the non-residential space will be about 208.86 million sq. ft., which translates into approximately 17.40 million sq. ft. per annum over next 12 years (till 2024). Total incremental supply (combined of both residential and non-residential space) is estimated to be 1,212.89 million sq. ft., which works out to 101.07 million sq. ft. per annum.

Further, based on discussions with key players in the real estate market like developers, transaction advisors, consultants/experts and investors, distribution of projected demand / supply of real estate spaces under individual asset classes like Commercial / Office, Retail, Hospitality and Residential is worked out in four zones, viz. CBD, SBD, Outer Ring Road (ORR) to Peripheral Ring Road (PRR) and beyond PRR. The table below summarizes zone-wise distribution of projected built-up area on incremental basis for the period from 2013-14 to 2024-25

Zone	Residential Development		Non-Residential Development		Total	
	Built-Up Area (Million sq. ft.)	*Percentage*	*Built-Up Area (Million sq. ft.)*	*Percentage*	*Built-Up Area (Million sq. ft.)*	*Percentage*
CBD	77.41	7.71%	20.99	10.05%	98.40	8.11%
SBD	384.15	38.26%	72.38	34.65%	456.53	37.64%
ORR to PRR	512.08	51.00%	107.42	51.43%	619.50	51.08%
Beyond PRR	30.39	3.03%	8.08	3.87%	38.46	3.17%
Total	**1,004.03**	**100.00%**	**208.86**	**100.00%**	**1,212.89**	**100.00%**

Based on the assessment of the unutilized built potential for the Bangalore City (within the administrative jurisdiction of the BDA), the city has a total unutilized built potential of 8,742.02 million sq. ft. after deducting the existing stock. Under different scenarios, the Conservative Scenario presents unutilized potential of about 2,188.15 million sq. ft. while that of the Aggressive Scenario is about 4,372.77 million sq. ft.Estimated / projected built-up area till the year 2024 presents 1,212.89 million sq. ft., which is about 45% of unutilized built potential under the Conservative Scenario. Based on this assessment, it can be concluded that there may not be a need to develop a new area/location in the form of the neighborhood and/or an integrated self-sustaining township to cater to the incremental demand over next 12 years.

Assessment of Resource Mobilization Concepts

There are various resource mobilization (from land & building permits) enabling statutory powersunder different Acts for both Urban Local Bodies and Supra-Local Bodies. Some of these fees and charges include building permit fees, development charges, betterment charges, etc. in the context of present assignment, following three resource mobilization concepts from land & building permits are assessed in detail:

- Development Rights Certificate (DRC) / Transfer of Development Rights (TDR)
- Impact Fees
- Premium Floor Area Ratio

For the purpose of evaluating effectiveness of resource mobilization concepts, the three resource mobilization concepts are evaluated as per the five criteria on which quality of a governing tool, viz. effectiveness, efficiency, equity, manageability and legitimacy& political feasibility. Criteria & parameters considered for assessment along with comparison of 3 concepts with respect to these criteria/parameters are summarized in the table in the following page:

Sl.	Criteria and Parameter	DRC / TDR	Impact Fee	Premium FAR/FSI
1.	**Effectiveness** (in terms of achieving its intended objectives of regulation and compensation)	▪ Will not substitute for planning and zoning, rather require strong zoning to regulate development as there is no zoning restrictions on receiving plot ▪ Success largely depends on strict implementation of the DCR and non-compounding provisions for the violations/variations in the utilization of the FAR ▪ Most effective in cities facing strong development pressure, where planning authorities or local body believe it would be difficult to successfully implement traditional zoning restrictions to achieve development goals, e.g. Mumbai. ▪ As the prices are market driven and speculative, non-regulated nature of the markets can make it difficult for realizing the appropriate value for TDR when sold in the open market	▪ Can be used to regulate the development by identifying select zones / corridors, which are permitted for high-density development ▪ Development can also be regulated by specifying eligibility / entitlement depending on zoning, plot size and road width ▪ Charges to be indexed to the land costs to ensure orderly development and to make higher utilization of FAR/FSI financially feasible ▪ Effective in cities having high volume of development wherein the scarcity of land makes paying impact fee feasible	▪ Can be used to regulate the development by identifying select zones / corridors, which are permitted for high-density development ▪ Development can also be regulated by specifying eligibility / entitlement depending on zoning, plot size and road width ▪ Charges to be indexed to the land costs to ensure orderly development and to make higher utilization of FAR/FSI financially feasible ▪ Effective in cities have concentric development where the land values in the core are significantly higher than the suburbs and encourage/facilitate densification of core to optimize utilization of infrastructure / services.
2.	**Efficiency** (in terms of cost of administration)	▪ Costly and difficult to administer compared to typical zoning as planning authorities or local body must oversee (or contract out) regulation of the market, complex operation for such an unusual good	▪ Cost effective only when there is significant volume ▪ Ease of assessment and administration depends upon simplification of calculation	▪ Cost effective as proposal can be evaluated on application basis ▪ Assessment and administration is easy as these charges are typically flat or linked to the Market Value of land
3.	**Equity** (in terms of fairness for the receiving property owners and to the local governments issuing it)	▪ As the prices are market driven and speculative, non-regulated nature of the markets can make it difficult for realizing the appropriate value for TDR when sold in the open market ▪ Creating a TDR bank and facilitating fair price for transaction of TDR can make administration complex to ensure fair price in the market -- local governments to have cash to manage the fair price by responding to demand-supply situation	▪ Program can be successful only if charges are indexed to the land costs so that higher utilization of FAR/FSI is financially feasible ▪ Local government will be under pressure to augment infrastructure and incur significant expenditure even if there is a lesser volume	▪ Since the prices for premium FAR/FSI is linked to the market value and/or flat rates, which are typically less than the market value of FAR/FSI in the open market, it makes business & financial sense for utilization ▪ Pre-defined eligibility parameters for utilizing premium FAR/FSI will facilitate local governments to plan for infrastructure augmentation to required capacity as part of the master plan program
4.	Manageability (in terms of creating appropriate market)	▪ Very difficult as the prices are market driven and speculative, non-regulated nature of the markets can make it difficult for realizing the appropriate value for TDR when sold in the open market ▪ Local government to have cash to appropriately keep the price of TDR fair and stable by responding to demand-supply situation	▪ Management will be easier only when there is a significant volume (and realization), which commensurate with the capital expenditure plan on infrastructure augmentation plan of the local government	▪ Less complex as the concept is non-speculative and market driven ▪ Pre-defined capital expenditure plan on infrastructure augmentation plan of the local government can encourage higher utilization of FAR/FSI
5.	Legitimacy and Political Feasibility (in terms of will & commitment of local government)	▪ Consistency and long-term commitment of the program is critical for community/citizen buy-in and political feasibility	▪ Consistency and long-term commitment of the program and appropriate infrastructure augmentation where impact fee is already realized are critical for community/citizen buy-in and political feasibility	▪ Holistic, consistent and long-term commitment of the infrastructure augmentation plan will automatically drive the program due to appreciation of the market value of the land

Based on the above comparison and assessment, it is evident that Premium FAR/FSI is more suitable and easy to implement resource mobilization concept among others for the following reasons:

- Premium FAR/FSI concept can be effectively used to regulate the development by identifying select zones / corridors, which are permitted for high-density development, by specifying eligibility / entitlement depending on zoning, plot size and road width;
- Premium FAR/FSI concept can be successful as the charges / premium for FAR/FSI is typically indexed to the land costs, which ensures orderly development and make higher utilization of FAR/FSI financially feasible as well;
- Effective in cities have concentric development like Bangalore as the land values in the core are significantly higher than the suburbs and this is an effective tool to encourage/facilitate densification of core to optimize utilization of infrastructure / services;
- Assessment and administration of premium FAR/FSI toll is easy as these charges are typically flat or linked to the Market Value of land. From the local government perspective, the program is cost effective as proposal can be evaluated on application basis;
- The program is less complex in terms of management as the concept is non-speculative and market driven. Pre-defined eligibility parameters for utilizing premium FAR/FSI will facilitate local governments to plan for infrastructure augmentation to required capacity as part of the master plan program and pre-defined capital expenditure plan on infrastructure augmentation plan of the local government can encourage higher utilization of FAR/FSI; and
- Holistic, consistent and long-term commitment of the infrastructure augmentation plan will automatically drive the program due to appreciation of the market value of the land

Premium FAR/FSI concept has a definitive advantage over DRC/TDR and Impact Fee on all five quality assessment criteria of effectiveness, efficiency, equity, manageability and legitimacy & political feasibility. However, it is important for the local government to conceptualize and implement the concept in a holistic and transparent format so that the concept has community/citizen buy-in and political feasibility with rewarding aspects for both the recipients and local governments. The scheme should have in-built pre-defined mechanism to manage the demand-supply situation so that the scheme will remain consistent and local governments can plan for the long-term infrastructure augmentation plan with reasonable economic benefits both to the community and to the local government.