Tamil Nadu: The Path to Becoming India’s Leading State
A Strategic Analysis of Health, Education, Biotechnology and Tourism

Lydie Ehouman
Sandra Fried
Theresa Mann
Haroon Ullah

A study conducted for the Government of Tamil Nadu
Center for International Development
Kennedy School of Government
Harvard University

May 2002
# Tamil Nadu: A New Era of Fiscal Consolidation

*Executive Summary*

---

# Biotechnology

- Biotechnology Cluster
- Policy Recommendations
- Conclusion

---

# Tourism in Tamil Nadu

- Introduction/Importance of Tourism
- State of Tourism in India
- State of Tourism in Tamil Nadu
- Looking Ahead: Strategic Analysis
- Human Capital Implications

---

# Health: The Global Health Fund and Rural Preventative Care

- Accessing the Global Health Fund for HIV/AIDS, Tuberculosis and Malaria
- Tamil Nadu and Health
- The Local Reality
- The Global Health Fund
- Tamil Nadu: Accessing the Global Health Fund

---

- Rural Communities and Preventative Health Care
  - Objective of Immunization Project in Tamil Nadu
  - Impediments to Immunization in Rural Tamil Nadu
  - Tamil Nadu Vaccination Program Design
  - Recommended Actions to Increase Immunization Coverage
  - The Long Range Benefits of a Tamil Nadu Vaccination Program

---

# Primary Education: Enrolment, Retention and Quality

- High Enrolment
- Low Retention
- School Education Department Policy for 2002-2003
- Current Situation
- Recommendations

---

# Appendix: Tamil Nadu Budget and Health Allocations

---

# References
Tamil Nadu: A New Era of Fiscal Consolidation

I wish to invite investors to Tamil Nadu - the land of great opportunity, endowed with immense potential. On this significant occasion, I would like to reiterate the commitment of my Government to establish a strong and vibrant Tamil Nadu, as a new growth model among the Indian States.

-- Chief Minister Jayalalithaa, Tamil Nadu

Tamil Nadu stands at the crossroads of its socio-economic development. The state has a legacy of achievement, with high economic growth rates and a burgeoning IT sector. With the recent economic recession and a fiscal crisis, the state faces budgetary constraints and the prioritization of sectoral spending. Added to this climate, is the dynamics of the two key political parties (AIADMK & DMK) and sensitive reform issues surrounding agricultural and power sectors among others. In its goals to become India’s leading state, Tamil Nadu has to make a firm commitment to fiscal reforms, prioritize sectoral programs in health and education and tap into its existing competitive advantages in tourism and biotechnology.

Executive Summary

In this environment of fiscal consolidation, four areas of critical importance to Tamil Nadu are health, education, tourism and biotechnology. Health issues such as TB and AIDS have come to the forefront of the state’s needs. TB has become the leading killer among communicable diseases while HIV/AIDS cases have steadily increased over the last few years. Tamil Nadu’s HIV/AIDS now represents over half of India’s new AIDS cases. Tied to health is the need for continued primary education, building upon the National “Education for All” program. The education sector faces issues of enrollment, retention and enhancement of skill sets. These social sector issues are critical to having a healthy and educated population viable for sustained economic growth.

Complementing these two social infrastructure investments, are two sectors that represent an enormous potential for employment generation in Tamil Nadu: tourism and biotechnology. Tamil Nadu has a large array of natural resources and national monuments, with over 100 miles of prime beachfront scenery and 300 religious temples. The tourism industry has the ability to attract increased private sector investments and bring in much-needed foreign capital through increased international visitors. Moreover, the tourism industry has the ability to employ human capital and create employment opportunities for people in rural areas. Improving infrastructure, marketing campaigns and involving the private sector are key components in expanding this cluster.

Biotechnology is an emerging field that could thrive in a skills-based region such as Tamil Nadu. With an increasing demand for genetically engineered products for health care, agriculture and the textiles industry, biotechnology represents a huge growth potential in the next 10-15 years. Biotechnology is a knowledge-based cluster and requires heavy investments in R&D activities. Tamil Nadu has taken positive steps in devising biotechnology friendly policies, and creating a BT park in Taramini. To complete the cluster, the government will have to create stronger linkages with Tamil Nadu’s university system, and address issues such as import tariffs, intellectual property and market access for private companies.
This strategy paper will begin with a general overlay of the challenges facing the state in this new era of fiscal consolidation, including the increases in revenue deficit, dismantling of the incremental budget and borrowing limits. The political climate including the two-party system (agro, power, subsidies) and critical needs of the scheduled castes (25% of Tamil Nadu’s population) will also be addressed. Following this prospectus, the strategy paper will discuss in greater detail each of the four main areas (biotechnology, tourism, health and education) for Tamil Nadu’s socio-economic development.

New Era of Fiscal Consolidation

Tamil Nadu faces severe budget constraints in the wake of fiscal reforms imposed by the central government. In previous years, the government funded existing and new schemes, and fill in the gaps in resources by borrowing capital. However, the federal government has significantly reduced the state's borrowing capabilities. Currently, the revenue expenditure deficit (of total expenditures) has hovered around 21 percent, as compared to 3.7 percent in 1995-1996.

In real terms, the revenue deficit has rose from Rs. 311 crores to Rs. 3922 crores in the last five years. Concurrently, the 16 percent annual rate of growth in revenue receipts during 1991-1996, declined to under 10 percent during the 1996-2001, without a commitment to reduce growth in revenue expenditure. The revenue expenditure for the state has more than doubled in the last five years. Much of this growth was attributed to growth in salaries of government officials and arrears. The government has openly stated that it hopes to reduce the revenue deficit to under 5 percent in the next 3-4 years. Complementing this rise in revenue expenditure has been a decrease in the average share of development expenditure in the budget, falling from 78 percent in 1992 to 56 percent in 2001. The dip in social sector spending is a dangerous trend for the health and education sectors.
Another obstacle in the budgetary analysis is that a significant portion of the state’s budget goes to virtually unchangeable components, namely interest rate payments on debt and pension program payments. The state has witnessed a significant increase in the outstanding debt, culminating with a loan of Rs. 242 crores from the Reserve Bank of India in 2000. In addition to the loan, there are unpaid liabilities of about Rs. 700 crores to suppliers, contractors and other agencies implementing state programs. Interest rate payments on debt and pension payments account for 18% of the absolute funds, leaving a relatively smaller share for discretionary use. With the steady increase in interest payments as a percentage of revenue receipts, debt servicing has become a cause for concern. Debt servicing as a ratio of fresh borrowings stands at 16 percent. Since borrowings are being employed to fund current expenditure and creation of low yield assets, the debt burden is further draining the state’s finances (stats, 20). Thus, when examining the percentage of funds spent on social investments, one has to look carefully at the total discretionary funds and not absolute funds.

Tied to the severe budget constraints in Tamil Nadu is the shift away from incremental budgets to sectoral prioritization. Previously, the Tamil Nadu government had relied on incremental budgets, simply increasing budgetary allowances within a certain 3-5 percent band. The fiscal reforms now force the Tamil Nadu government to radically change the allocation of funds. As stated by the Deputy Secretary (Budget) there was no prioritization of funds in previous budgets. Social sectors such as education or health were not specifically targeted or assigned priority. This relates to critical issues such as AIDS or tuberculosis, which might be funded on the same level as other schemes with less immediate relevance (ex. polio).
Creating a machinery to deal with the massive task of prioritizing funds will be a challenge for the Tamil Nadu government. The Chief Minister recognizes the obstacles of the budget constraints and recently announced a 15-point mission statement that outlines targeted areas for the state. The fifteen-point plan is quite comprehensive, ranging from security livelihood to technological leapfrogging principles. While the plan lays out a vision for the state, the details of actual mechanisms that will decide between spending Rs.100 crores in health as opposed to a program in education are unresolved.

**Strategic Fiscal Considerations**

While fiscal consolidation has been thrust on the state of Tamil Nadu, undergoing significant reforms requires shifts in spending, and new prioritization of fund dispersal. In the budgetary reform, there remain a number of politicized issues that threaten to derail meaningful reform. A prime example is agricultural subsidies, which constitute a whopping 5 percent of annual expenditures. The state heavily subsidizes agricultural staple products such as rice. There has been a steady growth in the food subsidies provided by the state. In fact, Tamil Nadu has the largest budget allocation towards food subsidy of any state in India. In addition, the state’s inability to issue ration cards, have made the subsidies available to all citizens of Tamil Nadu, regardless of household income. In 2000-2001, the government spent Rs.1540 crores on a variety of subsidies. Since the agricultural subsidies are not targeted they fail to create incentives for internal farmers, and external traders of rice.

Another reform issue concerns electricity, which is provided at no cost to agricultural farmers. Tamil Nadu is one of the only states in India that continue to free electricity to farmers. The electricity board has already incurred huge deficits because of low recovery rates. The overall loss to the Tamil Nadu Electricity Board (TNEB) on account of free power supply was Rs. 5000 crores in 2001. On account of subsidized power to domestic consumers, the 2001 revenue loss to the TNEB has been Rs. 1400 crores as compared to Rs. 250 in 1995-1996. The TNEB has been borrowing heavily to meet its revenue expenditure, incurring a cash deficit of Rs. 200 crores per month. The borrowing helps to meet its revenue expenditure on purchase of power, payment of salaries and interest payment. With the fiscal reforms, the electricity board threatens to default on existing
debt, if it has to continue giving agricultural subsidies. Since the government subsidizes the electricity board, the government needs to seriously consider power sector reform.

In addition, there is also a large question of mismanagement and corruption in the electricity sector. Line loss and electricity pilferage accounts for over 21 percent of electricity usage in Tamil Nadu. The annual line loss costs the state Rs. 2000 crores. Many members of the electricity board have questioned the high percentage attributed to line loss, claiming that much of that is actually due to entities stealing electricity. Giving more authority to the electricity board to investigate claims of electricity theft is necessary to minimize loss. Moreover, introducing further transparency in dissemination of information on transferred electricity is also crucial.

**Political issues**

Embedded in the fiscal challenges of the state are the political issues of scheduled castes and their social isolation in the development of the state. Over 80 percent of Tamil Nadu’s population lives in rural areas, and a majority of these people belong to scheduled castes such as the Dalits. The issue of uplifting their socio-economic conditions is complex and multi-faceted. The state has to continue providing development schemes that reinforce consensus and diversity rather than promote segregation along caste lines. A good example of this type of reform is in the self-help women groups in local communities. There are 300,000 self-help groups with over 70 members in each section. The self-help groups are comprised of 15-20 women and represent a cross-section of different castes. The ability of the self-help groups to break down barriers of the caste systems has been remarkable. In addition, the self-help groups have been successful in running development programs such as the clean water infrastructure scheme. In fact, they are so effective that the government, as well as NGO’s, have used the network of these groups to implement and improve sustainability of development programs. Continuing to play on the strengths of such self-help groups’ will help deal with the intense caste rivalry that threatens sustained development.
Tamil Nadu is a progressive state that has put a premium on developing high-tech, knowledge-based industries. In the IT sector, the state has propelled forward with a strategic plan to become a hub for PC/software innovation. The results are promising with immense growth in software export (as evidenced by total exports increasing by fifty times in the last seven years). The biotechnology cluster, a new cutting-edge industry, is on the horizon. Biotechnology has the potential to radically change the socio-economic structures of a region. Scientific advances allow the alteration and transfer of genes, which could be used to transform medical, industrial and agricultural sectors of a country. These new techniques and innovations could lead to exponential activity and growth in the next 20 years. For Tamil Nadu to fully maximize these opportunities, they need to have a strategic plan to develop a biotechnology cluster. Before delving into the cluster analysis, it is important to get a general idea of how the biotechnology cluster might fit into the business environment of Tamil Nadu.

Companies looking to invest and locate in Tamil Nadu are searching for a compelling business reason to justify their business venture. In attracting biotechnology firms, Tamil Nadu’s strongest characteristics are in its factor conditions, namely a skilled workforce, cheaper labor costs, and relatively good infrastructure with readily access to ports. Other important issues for Tamil Nadu to consider are intellectual property, market accessibility and regulatory issues (Friedman, I). In terms of Intellectual property rights, Tamil Nadu is currently making progress to strengthen patent and statutory law. Tamil Nadu (and India as a whole) just began a 10-year transition period to begin implementing full patents on pharmaceutical and biotechnology products. Despite these moves, many firms and industry organization (such as PhRMA, India’s Pharmaceutical cluster organization) have claimed that India’s slow reactions in the IP reform arena have hurt biotech investments. PhRMA estimates that the losses attributable to deficiencies in the India IP system to be approximately $500 million per year.

Regarding market access, Tamil Nadu will have to make substantial changes in lowering market barriers (such as pharma/biotech import tariffs, currently 44 percent) to attract biotech firms to locate in Madras. Tamil India is included within the jurisdiction of the Drug Price Control Order (DPCO), which maintains rigid control over pharma/biotech pricing. Many industry leaders emphasize that the DPCO makes Tamil Nadu less viable for research-based companies from a commercial standpoint, particularly if those companies were to consider placing the latest and best innovative drugs on the Indian market. Moreover, the intrusiveness of DPCO is exacerbated by there complex regulatory system. This presents additional barriers for biotechnology companies intending to market products.

While IP and market access present some challenges, Tamil Nadu can take steps to make their business environment more conducive for a biotechnology cluster. In developing a strategy for Tamil Nadu, the cluster approach is useful in outlining the areas that need to be put in place in order to strengthen the ‘compelling business reason’. The cluster is a collection of institutions and market mechanisms to drive an entire industry. Using Professor Michael Porter’s analysis, the cluster consists of four main vehicles,
Factor conditions, Related and Supporting Industries, Demand conditions and Firm, Strategy and Rivalry. For the biotechnology cluster in Tamil Nadu we add a fifth critical component--Institutions for Collaboration (IFC’s). As a knowledge-based industry, biotechnology relies heavily on dynamic cooperation between universities, institutes and the private sector. These knowledge-based institutions are the ‘incubators’ for product development and innovation. IFC’s are the central component of the biotechnology cluster. In this strategy paper, we will outline the main areas of the Tamil Nadu biotechnology cluster and present recommendations to improve the capacity of each cluster element.

**Biotechnology Cluster**

Biotechnology is a knowledge-based industry that requires government to play a unique role in facilitating public-private partnerships. Tamil Nadu has a progressive state that continues to emphasize positive steps in facilitating these relationships. Previous case studies of successful biotechnology/pharma clusters demonstrate the need for private sector companies to be closely linked with university sectors. Two critical elements of the Tamil Nadu biotechnology industry are TICEL and Genomics.

**TICEL**

TICEL is a project launched by TIDCO in developing a biotechnology park. TICEL aims at promoting life sciences initiatives in Tamil Nadu. The idea of a biotechnology park in a developing country is a

---


---
unique effort. In fact, there are no examples of biotechnology parks or thriving biotechnology industries in the developing world. In this context, TICEL hopes to be a groundbreaking life science park.

TICEL is under construction and hope to be in operation by December of 2002. The park has 900,000 sq feet of space to accommodate 50-60 biotechnology units. The concept of the park is built upon a new model that was devised with the Tamil Nadu Guidance (export bureau) and Cornell University. One major aspect of the park is its focus on sharing common resources of biological equipment. Biotechnology labs and equipment are extremely large investments, preventing smaller companies of shifting into the industry. In this respect the park is creating a shared lab system, where biotech units can perform research in a cost effective space. The park aims at attracting scientists, domestic firms, overseas companies and international research projects.

With an incubator center, a green house and germ plasma center, a training center and an animal testing center, the park will provide complete technical and other services under one umbrella.

The second major aspect of the park is the knowledge and mentor support. TIDCO has attracted top scientists to help supervise the park, including Dr. K.V. Raman and Dr. Ronnie Coffman. TICEL services will include technology transfer, mentoring, networking, contract research work, product validation, patent rights, documentation, commercialization and training for biotechnology companies. The park will explore the Indian genetic pool, exploit the germplasm base as available and leverage the existing pool of Indian biotechnology scientists and low cost local software skills.

The core of the TICEL project is its partnership with Cornell University. Research scholars have noted that biotechnology industries require intense university cooperation to stimulate R&D projects. Cornell University is one the world's leading universities, having recently been ranked #1 for research in the life sciences. The university boasts a top faculty, with over 27 Nobel Laureates. The university has one of the few research institutions with a wide expertise base in agriculture, food, animal and human health. Innovation in the biotechnology is key, especially as a gauge of product development and successful R&D. Cornell has an excellent record with a repository of 500 patents, one of the largest in the world. TICEL’s connection with Cornell will be able to build an international research mission and exchange of leading researchers, scientists and students.

Genomics

Genomics could be the driving force of the biotechnology industry in Tamil Nadu. Genomics refers to the mechanisms around sequencing genes, finding gene differences, detecting gene defects, and developing pharmaceutical drugs based on genes. The process of genome sequencing has quadrupled over the last five years, and seems to be on an exponential trajectory in the wake of gene breakthroughs and the completion of the genome project. Genomics represents the largest potential for employment generation in Tamil Nadu. Tamil Nadu has taken steps to facilitate this process by funding a genomics institute with Dr. Periannan Senapathy. (Graph, pg. 5)

The competitive advantages of Tamil Nadu in the field of genomics revolve around the skilled labor force and relatively low labor costs. Genomic sequencing requires high proficiency in computer skills. Assembling genome sequence data is performed with software applications and intricate compilation programs. Providing this functional genomics services is in high demand, and genomics in India could be a cost-leader in this field. Another important aspect is the Internet based global data-transfer and analysis of genomics. Tamil Nadu has an advantage in proximity to the Asian market, especially Japan, Taiwan, Singapore and China.
Genomics in Tamil Nadu can focus on employment generation by contracting out genome sequencing, computation and data interpretation. Similar to the set-up of call centers (American Express), and data back up systems (World Bank back offices), Tamil Nadu is a leader in low cost skilled labor. With the growth in genomics governments and private firms have begun to explore mechanisms to collect data. In this respect Tamil Nadu has the potential to reach a number of competitive stakeholders, such as pharma and health care companies (Pfizer, Dabur, Reliance). These companies look for value added genomics data. Seed and agricultural companies (Monsanto, Dupont, EID Parry), Animal farming companies (Infigen, ABS Global), Biotechnology firms (Celera Genomics, Insysyte Pharma) are all potential customers for the genomics industry in Tamil Nadu.

Another competitive advantage for Tamil Nadu in the field of genomics is ability to leverage the region’s IT clusters. Genomics relies heavily on the ability of global customers to access/transfer large volumes of data via broad-band connectivity. In this respect, TIDEL IT Park with a world-class brand connectivity is crucial. Since genomic products are only data related there are no physical products. This puts an emphasis on high electronic transmission capabilities with firms unable to use hard copies because of the large volumes. Genomic firms will be able to conduct data analysis via the Internet with databases and TIDEL software development.

Factor Conditions

Tamil Nadu has a strong framework for the Biotechnology cluster. Tamil Nadu’s excellent factor conditions include varied natural resources, a skilled labor work force and a strategic location (ports). Tamil Nadu has a rich combination of bio-resources. The variety of geographical terrains in the State is unique. Tamil Nadu has a biodiversity rarely seen in any other single State in India. Tamil Nadu has an intricate natural lakes system and over 18 inward rivers. In terms of parks, Tamil Nadu has 300 park reserves, and 8,000 sq km of arable land. The agricultural, plant and forest resource base of the State are both large and diverse and represent great market opportunity for biotechnology products. “There are more than 5,000 species of flowering plants and the forest cover in the State spreads over 22,500 sq.kms”. The State also has the second largest coastlines in India, which presents opportunities for marine biotechnology.

Tamil Nadu has one of the most skilled labor forces in India. This represents one of the strongest ‘compelling business’ reasons for companies to locate in Tamil Nadu. Tamil Nadu graduates the most

---

4 ibid
5 ibid
6 Rohn, 19
engineers of any state, with 25,000 graduates from public universities each year. Tamil Nadu has 110 public institutions of higher education, with 73 percent of those focused on sciences and engineering. **Biotechnology is a knowledge-based industry and the cluster places a premium on the number of experts and scientists conducting research and development.** Tamil Nadu also hosts a number of the top universities in India, such as the Indian Institute of Technology (Madras) and the Indian Institute of Management. The state is fortunate to have a host of experts in various areas of biotechnology with experience in commercialisation of biotech products. A prime example of the research experience is Mr Swaminathan, one of the leading agricultural experts in India. Mr Swaminathan is based in Tamil Nadu and was the creator of India's "green revolution", a scheme that massively increased crop yields in the late 1960s. Tamil Nadu is well placed in terms of human resources to exploit the opportunities in biotechnology.

**Related and Supported Industries**

Tamil Nadu has a number of important areas that will crucial to their biotechnology strategy. **There are four related industries that can benefit from linkages with the new biotechnology cluster.** These four elements include, Medical/Human and Animal Healthcare, Agriculture, Industrial products and IT.

1. **Medical**

Tamil Nadu presents an extremely attractive market for medical biotechnology products. In India, **Biotechnology products account for 11 percent of the pharmaceutical market**. Apart from penicillin manufacturing and a reasonably large number of loan licence formulation units, investment in this sector within the State has been low. These factors make the biotechnology cluster an ideal opportunity for Tamil Nadu to reverse this trend.

Innovative efforts to collaborate with strong institutes within the State will have to be encouraged. A good example of a collaborative effort is the TB Research Centre (Chennai),

---

7 ibid
9 Economic Intelligence Unit, India Profile, April 2001.
10 ibid
11 ibid
which is working on a cost-effective vaccine\textsuperscript{12}. The medical element in the biotechnology cluster also has the chance to focus on diagnostics, therapeutics (Interferon, Insulin) and Veterinary drugs\textsuperscript{13}.

2. Agriculture

Agriculture and food products are important to India’s domestic market and international export regime. \textit{Currently, agricultural products account for 26 percent of the domestic revenue for Tamil Nadu}\textsuperscript{14}. It is important to note that agricultural products such as rice are leading export goods, accounting for 18 percent of Tamil Nadu’s exports\textsuperscript{15}. Biotechnology presents opportunities to improve key food products like rice, coconut, sugarcane and tea. These products have a strong presence in Tamil Nadu and are important cash crops for the region. The Biotechnology cluster also has the potential to focus research on biopesticides, health care products (from medicinal plants) and animal feeds. These sectoral areas are of particular importance to agrarian populations, and the rural sector. Finding ways to improve productivity in the agriculture sector remains a top priority. Collaborative efforts in R&D are crucial and opportunities to work with the germplasm database through institutions like the Tamil Nadu Agricultural University (TNAU) and M S Swaminathan Research Foundation (MSSRF) will help facilitate product development\textsuperscript{16}.

3. Industry

Industrial production is central to the Tamil Nadu economy and accounts for over 21 percent of the domestic revenue\textsuperscript{17}. Tamil Nadu has the potential to create dynamic industrial activity in biotechnology. This path will move from first/second generation biotechnology products to modern biotechnology products involving recombinant, DNA-based products and bioinformatics. In Tamil Nadu, biotechnology is important in industrial sectors like leather and textiles. As Figure 2 illustrates, textiles are an important segment of Tamil Nadu’s export regime. The ability to develop to use biotechnology in this sector could create even higher exports. Moreover, more research will need to be conducted on classical fermentation products (anti-biotics, immuno modulators) biopolymers and industrial enzymes (papian, phytase, lipase). These enzymes are important in the production of rubber, and textiles, while biopolymers are crucial in construction materials (concrete, asphalt).

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufactures</td>
<td>75.4</td>
<td>74.5</td>
<td>76.7</td>
<td>78.6</td>
<td>77.5</td>
</tr>
<tr>
<td>Gems and Jewellery</td>
<td>16.6</td>
<td>14.2</td>
<td>15.3</td>
<td>17.8</td>
<td>20.3</td>
</tr>
<tr>
<td>Processed Minerals</td>
<td>1.0</td>
<td>1.0</td>
<td>0.8</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Garments</td>
<td>11.6</td>
<td>11.2</td>
<td>11.1</td>
<td>13.1</td>
<td>12.8</td>
</tr>
<tr>
<td>Cotton Textiles</td>
<td>8.1</td>
<td>9.3</td>
<td>8.3</td>
<td>8.3</td>
<td>8.3</td>
</tr>
</tbody>
</table>

\textsuperscript{12} ibid
\textsuperscript{13} ibid
\textsuperscript{14} TIDCO, Tamil Nadu Industrial Association Report, November 2001.
\textsuperscript{15} ibid
\textsuperscript{16} ibid
\textsuperscript{17} ibid
Focus will also be concentrated on environmental ways to bioremediation and waste management. Biotechnology has important contributions to make in developing microbial strains of cultures for waste management. There need to be strong linkages with institutes such as the Central Leather Research Institute (CLRI) to develop appropriate products.

4. Information Technology

Tamil Nadu has a booming IT sector, with a particular focus on IT parks, and software export promotion. The sector is central to Tamil Nadu's foreign position and accounts for over 80 percent of the total FDI into the state\textsuperscript{19}. The sector has maintained high growth rates that last five year (over 10 percent annually) and has a strong forecast\textsuperscript{20}. Biotechnology is an information intensive technology. Successful entry into the technology is highly dependent on a region’s ability to use and manage a growing body of scientific information in areas such as microbiology. The development of these techniques requires sophisticated information management systems. Tamil Nadu is well placed to exploit its leverage in the IT sector to these biotechnology management systems. Tamil Nadu has a relatively advanced technology infrastructure that is capable of searching, storing and managing scientific information. The cluster linkages rest on the institutions for collaboration and their ability effectively manage research activities.

5. Institutions for Collaboration (IFCs)

Institutions for Collaboration are the core of the biotechnology cluster. As a knowledge-based industry, biotechnology relies heavily on dynamic cooperation between universities, institutes and the private sector. Tamil Nadu has a strong network of institutes and universities to draw upon in India. These knowledge-based institutions are the ‘incubators’ for product development and innovation.

One of the strongest network of institutes is the Center for Biotechnology at the Jawaharlal Nehru University. The Center for Biotechnology at the Jawaharlal Nehru University was established in 1985 by the Government of India’s Department of Biotechnology\textsuperscript{21}. The Government of India through the Department of Biotechnology largely funds the Center. The Center’s mandates are to conduct research and provide training in new areas of biotechnology.

It is important for Tamil Nadu to establish a strong connection with the Center in Madras through the ITT system. With 10 accomplished scientists and several technicians, the Center is one of the leading public institutes for biotechnology R&D and training in

\textsuperscript{18} ibid
the developing world. Its research projects focus on agricultural and medical biotechnology with emphasis on genetic engineering. The center focuses on Master level training activities and puts emphasis on skills creation as opposed to mere education in biotechnology related sciences. Training covers such areas as physico-chemical aspects of biology, biochemistry, molecular biology, biostatics, biochemical engineering and immunotechnology.

The unique aspect of the Center rests in its ability to collaborate with local industry, and national agencies such as the National Institute of Immunology and All India Institute of Medical Sciences. Tamil Nadu can use these institute linkages to establish a chapter of the International Center for Genetic Engineering and Biotechnology (ICGEB) in Madras.

The second major element of the IFC’s is the newly envisioned Biotechnology park in Taramani (near Madras, Tamil Nadu). The BT Park is a unique partnership between Tamil Nadu Industrial Corporation (TIDCO) and Cornell University (College of Agricultural and Life Sciences). The BT Park hopes to host 50 biotech companies, focusing on small and medium enterprises. The BT Park is located close (~15 km) to Tamil Nadu’s already strong commercial bio manufacturing sector. The BT Park hopes to put a premium on luring SME’s from the Tamil Nadu region. The administration of the park has set-up a central institute to spur business development, improve access to technology and diffuse management techniques. The park is in the process of being created, and has the possibility of beginning to forge the types of necessary linkages between industry and R&D incubators (institutes, universities).

Demand Conditions

Demand conditions for biotechnology rely on local demand, foreign investors and costs of production. In Tamil Nadu, we find mixed results in reference to demand conditions. On the positive side, demand for pharmaceutical products has increased steadily over the past five years (12 percent). Kshema Technologies recently announced a $10 million partnership with MDS Sciex in bio-informatics and software solutions in biotechnology. Kshema is an exporting-oriented unit and executes three offshore projects on the ultra-trace chemical detection and mass-spectrometry techniques for MDS, the large IT Canadian firm. Tamil Nadu’s IT parks have increased the number of sophisticated customers and is a powerful signalling effect to foreign investors.

23 ibid
26 ibid
Conversely, we find weak local demand for biotechnology products in agriculture and industry. Biotechnology is still a relatively new industry and heavy investments have been made in R&D. However, product development and the introduction of goods on the market will help stimulate local demand.

Firm Strategy and Rivalry

Few foreign firms
Creating atmosphere for competition

Competition among firms is a new phenomenon in the biotechnology cluster. Only recently have major firms like Kshema Technologies entered the biotechnology market. Despite the weak local competition, this element is crucial for the long-term success of the biotechnology cluster. The questions of intellectual property and government protection are key issues within Firm Strategy and Rivalry.

In the context of stimulating firm rivalry, Tamil Nadu needs to consider the effects of possible ‘biopiracy’ in the new cluster. Multinational companies realize the huge potential of remedies in drug development. Tamil Nadu has a rich ecosystem, with many local plants used for ingredients in disease treatment. Overseas firms have often made quick moves to patent chemicals from natural sources. The importance of intellectual property is key to the future of the cluster. Currently, India does not have a patent system (like the U.S) for new inventions in the drug market. Foreign companies might be dissuaded from investing in Tamil Nadu if they fear that their new biotechnology products could be ‘pirated’. This could also severely alter the amount of R&D expenditures and the premium put on innovation in a heavily based knowledge industry like biotechnology. Moreover, currently transgenic products (such as food) are illegal to import into Tamil Nadu. These genetically modified products could be popular goods in the domestic market. Tamil Nadu will have to pay close attention to these intellectual property issues as they develop an environment for firms to compete in.

27 ibid
Policy Recommendations

While Tamil Nadu has the foundations for a powerful biotechnology cluster, there needs to be a number of initiatives to improve the cluster dynamics. **Figure 2 above demonstrates the futuristic biotechnology cluster and the interaction between the various elements.** Biotechnology clusters around the world (U.S, Europe) have illustrated that building a cluster requires sustained commitment. The knowledge transfer between research institutions and emerging companies can take upwards of 10-15 years. With this time frame and long-term approach, the following recommendations are crucial to making the cluster more complete.

Policy #1:

- Develop local R&D and innovation
  - Foster private sector links to university
  - Create ‘Cluster’ organizations to pool R&D resources

Institutions for Collaboration are the heart of the biotechnology cluster. As Figure 2 demonstrates, there are a variety of linkages between the private sector and these institutions. The cluster organizations,

---

such as TIDCO (Tamil Nadu Industrial Development), need to be focused on upgrading these institutes and linking them with world-class counterparts. A good example of this strategy is the new agreement between Cornell University and the new BT park in Taramini. Cornell University boasts one of the best agricultural and biological science departments in the world\(^{29}\). Their research exchange program with the Tamil Nadu BT park is crucial.

**A major untapped source for Tamil Nadu is the Indian Institute of Sciences (IIS).** The IIS system was founded in 1909 and is a long legacy of training India’s best scientists and research specialists\(^{30}\). The organization however does not have a major partnership with the private sector or with U.S based research institutions. The Tamil Nadu government needs to explore this possible linkage, as it could be a great source of R&D development for the biotechnology cluster. Research institutions play a critical role in technology transfer and spillover effects. In an in-depth study on the San Diego Biotechnology cluster, Professor Michael Porter finds a strong link between the cluster’s success and IFC’s. “Interviewees cite CONNECT [IFC’s] to the cluster’s success, not only because it links firms to research and talent inside the university, but also because it gave firms access to business knowledge and venture capitalists”\(^{31}\). Tamil Nadu case needs to cultivate a similar relationship between the CBJNU institutes and the private sector. Cluster organizations can play a great role in this respect, in organizing and pooling R&D resources.

**Policy #2:**

- **Promote local supplier linkages in Madras region**
  - Start database of industry requirements and local suppliers
  - Run "supplier fairs"

The biotechnology cluster has the potential to tap into the large pharmaceutical industry in India. Biotechnology products already accounts for 11 percent of the pharmaceutical market\(^{32}\). TIDCO needs to **promote local supplier links in the Madras region.** Currently, suppliers are weak in the Tamil Nadu region, with only 2 major suppliers located in Madras\(^{33}\). Good supply chains are crucial to delivering the products to regional customer bases as well as outside foreign customers.

**The pharmaceutical industry needs to be tightly linked to the biotechnology cluster because of the synergies between the two sectors.** Already, we see that pharmaceutical companies are attracted by the possibility of the new BT Park and the location of the IT cluster in Tamil Nadu. It is important for the IFC’s to promote supplier links and improve a database of industry needs. In this way, suppliers expectations will be matched with industry needs to deliver products to an increasing consumer demand.

---

\(^{29}\) ibid


\(^{32}\) Economic Intelligence Unit, India Profile, April 2001.

Policy #3:

In order to continue stimulating demand, the cluster needs to focus on branding new products. While the cluster is in its early stages, the ability of a company to market its recognizable product to the consumer base is critical. A good example in India is CIPLA, the second largest drug-maker in India. CIPLA specializes in a range of drugs and is a market leader in antibiotics and anti-asthmatics. CIPLA recently announced an alliance with a U.S based biotechnology firm, Biogenerics, to market biogeneric products in India. Dr. Hamid, the chairman and CEO of the company asserted: “We are thinking of marketing some Biogenerics products in India and also making some niche biotechnology products for them at our facilities here. . we are at a preliminary stage of talks, but products could include later generation drugs like the blood booster darbopoietin”. CIPLA’s focus on marketing and creating alliances with U.S firms is crucial. The key for the Tamil Nadu cluster is to attract companies like CIPLA to the region to create the synergies with the rest of the sector. The government needs to market there factor conditions and biotech friendly policies to potential companies. Also CIPLA’s marketing focus is a signaling effect to the biotechnology cluster in Tamil Nadu. To be successful in the emerging market, there is a premium on branding and company recognition. This is a key factor in attracting small and medium sized enterprises to locate in the new Taramani BT park. SME’s look for bigger companies to link with to provide specialized research and product development.

Policy #4:

Tamil Nadu has a strategic location with four major ports on its coastline. These factor conditions lay the groundwork for a solid exporting regime of biotechnology products. While the BT parks are a first step, Tamil Nadu needs to make strides in improving its infrastructure between its ports and the new BT park. Foreign companies focused on exporting put a premium on delivery chains and the ability to move products between end points. With slow demand condition, major resources need to be focused on building a regional sale base. The pharmaceutical industry is an important element in improving this base. Biotechnology cluster is heavily dependent on pharma-trading partners. These alliances need to be cultivated by actively promoting export friendly policies and research partnerships. The government must make an effort to provide tax

---

34http://www.cipla.com/
35 ibid
incentives for foreign companies willing to relocate in the new BT park. In addition, to tax incentives, the government has to be active in promoting the long-term vision of the cluster, and the CIPLA-type of links to U.S firms.

Conclusion

Tamil Nadu is a progressive state that has put a premium on developing high-tech, knowledge-based industries. Biotechnology has the potential of becoming a high-growth industry for Tamil Nadu. Tamil Nadu has an excellent set of factor conditions and related and supporting industries that could lay a solid foundation for the cluster. Biotechnology has the potential to radically change the socio-economic structures of a region. With this potential in mind, it is important for Tamil Nadu to think strategically about improving cluster organizations and attracting high-end pharma-companies to Madras. Tamil Nadu’s pro-active government and progressive trajectory in IT bodes well for the biotechnology cluster.
Tourism in Tamil Nadu

Introduction/Importance of Tourism

Most countries rightfully view tourism as part of their development strategy and as an economic alternative to traditional economic sectors such as agriculture and industry. Rapid development in the means of transport and communication has made the world into practically one single neighborhood. Indeed, there are several benefits to tourism. First and foremost, tourism plays a sizeable role in national prosperity. The foreign exchange profits earned by the industry increases foreign exchange reserves and positively affects the balance of payments role of countries. Indeed, tourism is an important sector in the Indian economy, “where it has become the third largest source of foreign exchange, after ready made garments and gems and jewelry. The foreign exchange earnings from tourism during 1997-1998 were estimated to be about Rs 1.1 trillion (US$ 3,173 million). The rate of growth in foreign exchange earnings from tourism is also high”36. The Ministry of Tourism of India estimates that the foreign exchange earned by tourism was 142,380,000,000 Rs during 2000-2001.

Tourism generates employment opportunities in many sectors, particularly in remote and backward areas. Because it is very labor intensive, it offers employment opportunities to skilled and unskilled workers alike. In other words, tourism has a tremendous employment potential, both direct (travel agents, transport operators, hotels, guides) and indirect (handicrafts, increased demands for foods, clothes, etc.). According to the WTO, total world employment in tourism is estimated at about 20 million. In the case of India as a whole, the Ministry of Tourism estimates that “Rs 1,000,000 invested in tourism created 47.5 jobs against 44.7 in agriculture and 12.6 in manufacturing. Today, the direct employment generated in tourism is estimated to be 16,450,000. Indirect employment is higher at 22,370,000. A sample survey by the World Tourism Council, which uses a methodology called Tourism Satellite Account, concludes that jobs generated by tourism could rise from today’s 2.4 percent to 6.8 percent in ten years, which means 8,000,000 new jobs.”37

Tourism can also stimulate investments in new infrastructure, much of which helps to improve the living conditions of local citizens. Tourism development forces the government to create infrastructure facilities on par with international standards. Proceeds from tourism helps maintain and develop already existing infrastructure. Indeed, tourism offers the enormous potential for properly maintaining monuments, palaces, natural attractions, etc.

In addition to the economic benefits, travel opportunities promote social and political understanding among nations and cultures. People belonging to different cultures and social backgrounds come together to break down prejudices, inhibitions that too often exist among ethnically and sociological diverse groups. This is extremely important for India, which has highly diverse ethnic and religious communities.

The benefits of tourism are especially important for a developing country like India. Both from economic and social points of view, tourism can play an important role in India’s development. The World Tourism Organization estimates that the total number of international tourist will reach about 1 billion in 2010. South Asia currently captures only 1 percent of this market, but the number of international tourists is

37 State Government of Tamil Nadu, Tourism Policy Note, p 4.
expected to growth by 7.7 percent per annum between 2000-2010. As the following table indicates, it is one of the regions where international tourism is expected to grow the fastest.

<table>
<thead>
<tr>
<th>WTO Tourism Vision: Forecast of Inbound Tourism, World by Regions</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Tourists Arrivals by Tourist Receiving Region (million)</td>
</tr>
<tr>
<td>Actual</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Africa</td>
</tr>
<tr>
<td>Americas</td>
</tr>
<tr>
<td>East Asia/Pacific</td>
</tr>
<tr>
<td>Europe</td>
</tr>
<tr>
<td>Middle East</td>
</tr>
<tr>
<td>South Asia</td>
</tr>
<tr>
<td>Source: World Tourism Organization (WTO)</td>
</tr>
</tbody>
</table>

This section of the paper proposes strategies to enhance productivity, income and employment opportunities, and alleviate poverty, through the medium of tourism development in the state of Tamil Nadu.

**State of Tourism in India**

Growth forecasts for both international and domestic tourism in India are positive. The World Tourism Organization estimates that the total number of international tourist will reach about 1 billion in 2010. Even though South Asia currently captures only 1 percent of the market, the number of international tourists is expected to growth by 7.7 percent per annum between 2000-2010. It is one of the regions where international tourism is expected to grow the fastest (refer to table above).

The subcontinent of India is a tourist's dream come true. It is a vast and diverse country, which has something to deliver to each category of international and domestic tourists. There are several factors that could make India the most favored destinations in the world: first of all, its landscape provides a wide range of natural beauty and climatic conditions. Its North is bordered by the world's highest mountain chain while its Southern regions have plateaus, tropical rain forests, sea beaches and sandy deserts. Secondly, India’s rich cultural heritage provides a wealth of attractions. “The wealth of cultural traditions extending over thousands of years, the natural surroundings, the architectural masterpieces, the music, dance, paintings, customs and languages—all these go to make India a tourist paradise. Few countries in the world provide such interests to a visitor”\(^{38}\). Last but not least,

---

India has developed over the years a vibrant technological sector. There are several cities in India vying for the title of "IT Capital" or "Silicon Valley of the East." Despite its very strong cultural, technological and natural assets, India has not succeeded in capturing a significant share of the tourist flow. A look at the traffic figures from the World Tourism Organization reveals that India attracts very few international tourists and is far from being one of the most favored destinations in the world. Although the international tourist traffic has increased, India’s share of tourism is insignificant (0.18 percent in 1995). India’s share is also small when compared with other Asian countries.

Six countries capture the international tourist market in India (see graph). 52 percent of international tourists reside in one of the following 6 countries: UK, USA, Japan, UK, France, Germany and Sri Lanka. Perhaps more importantly, tourism earnings are relatively low in India. According to Colliers Jardin, “while China, Indonesia and Philippines earned $7,323, $4,785 and $2,090 million respectively in 1994, India earned only $1,020 million. This directly reveals certain inadequacies restricting the flow of tourists.”

Roy and Tisdell explain the success of countries at the top in terms of tourism arrivals. In their opinion, well-developed transport and communications systems, increased leisure activities and improved education set these countries apart. “The poor performance of India… is mainly attributable to inadequate infrastructural support, poverty, terrorism, irregular air services, rigidity in customs clearance and foreign exchange formalities etc.”

State of Tourism in Tamil Nadu

The state of Tamil Nadu has the potential to become a preferred tourism destination world-wide. With an area of 130,058 sq. km and a population of over 55 million, Tamil Nadu is the eleventh largest populated and the third most industrialized state in India. It boasts successful tourism infrastructure in its Western border, Karnataka, and also enjoys a long unbroken coastline in the Bay of Bengal.

Tamil Nadu is a wonderful tourist place for many reasons. First, it has glorious culture and history. Tamil Nadu has one of the oldest civilizations of the world. It is the home of Dravidian art and culture, characterized by its distinctive music and dances, its amazingly decorated temples with their soaring towers and its plentiful and colorful festivals. There is at least one festival per month, celebrating various events: summer, mangos, teas, Hindu gods, dances, etc. Tamil Nadu is referred as the “Land of Temples” because there are more than 30,000 temples in this state. Secondly, its natural beauty is very attractive to tourists. The geographic features of Tamil Nadu are very diverse. They range from densely forested lands with abundant wildlife to large mountain ranges. It has excellent beaches and hill resorts, and its southern tip is well known for its beautiful sunrise and sunset. The land can be divided into five major physical divisions –

---

39 Ibid, p 14
40 Ibid, p29
41 Ibid, p 29
42 Tamil Nadu Tourism Development Corporation, www.tamiltourism.org
the Kurinji or mountainous region, the Mullai or forest region, the Palai Vor arid region, the Marudham or the fertile plains and the Neidhal or coastal region.43

Finally, Tamil Nadu has a vibrant IT sector and has become a major site for IT related activities. In this regard, Tamil Nadu has emerged in recent years as a major recipient of investments, particularly FDI in the IT sector. This burgeoning investment offers important opportunities for crossover of economic growth, from IT to tourism and other sectors of the economy.

According to the Department of Tourism, the number of tourists who visited Tamil Nadu has increased from 9,550,000 in 1991 to 24,585,000 in 2001. Although this is a tremendous growth, the tourism potential of Tamil Nadu is still untapped.

### Number of Tourists that visited Tamil Nadu

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic*</th>
<th>Foreign*</th>
<th>Total*</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>189.28</td>
<td>6.37</td>
<td>195.65</td>
<td>4</td>
</tr>
<tr>
<td>1998</td>
<td>204.13</td>
<td>6.36</td>
<td>210.49</td>
<td>7.6</td>
</tr>
<tr>
<td>1999</td>
<td>211.37</td>
<td>7.22</td>
<td>218.59</td>
<td>3.8</td>
</tr>
<tr>
<td>2000</td>
<td>229.82</td>
<td>7.86</td>
<td>237.68</td>
<td>8.7</td>
</tr>
<tr>
<td>2001</td>
<td>238.12</td>
<td>7.73</td>
<td>245.85</td>
<td>3.4</td>
</tr>
</tbody>
</table>

Source: Government of Tamil Nadu

(*) figures in 100,000

**Looking Ahead: Strategic Analysis**

Facing fiscal consolidation, the Government of Tamil Nadu acknowledges the vast potential and spin-off tourism has on other industries. It has vowed to make Tamil Nadu one of the most favored tourist destinations in India.44 The Government of government of Tamil Nadu has set ambitious goals for the tourism sector. It envisages a tourist growth rate of 10-12 percent in lieu of the current 7.9 percent, vows to increase the length of stay by at least 2-3 days and build good infrastructural facilities at tourist spots.

**Building Competitiveness**

Tourism relies on natural resources. However, over-dependence on basic advantages does not suffice to attract tourists because consumers are increasingly demanding infrastructure sophistication, and they have more and more such destinations from which to choose world-wide. The tourism industry therefore should have a strong focus on the customers. “Customer Service is important at a thousand separate points during a tourist visit to a particular site. Consequently, each company that interacts with tourists should make itself aware of what is more important to the tourist in terms of quality and comfort as they relate to its products and services. That means making choices about which segments to serve, and investing in understanding how to ensure that those customers are satisfied. Failing to do so only perpetuates the pattern of over-dependence on inherited factors”45.

---

44 State Government of Tamil Nadu, Tourism Policy Note, p 27
Effective tourism development strategy needs to be customer-driven and should revolve around customer knowledge. This involves profiling groups of customers and designing strategies about serving desirable segments. Targeting decisions such as: What types of customer do we want to attract/serve? should be undertaken. All of this information is essential for optimizing tourism benefits. Strategy decisions should be based on market segmentation analysis since each type of tourists has specific needs, demographics and trip patterns and can be reached through specific marketing channels.

**Fairs and Festivals:** One of the competitive advantages of Tamil Nadu is its year-round festivals. Since foreign tourists are attracted by the cultural richness of the state, the government sponsors several of these festivals throughout the state, in order to fulfill tourist aspirations:
- Summer festivals in May and June
- Harvest festivals in January and June
- Cultural fairs in February-March, December-January

The calendar of festivals is released in the form of a brochure, with the aspiration that tourists will prepare their itinerary around festivals of particular interest to them. Nonetheless, it is important that the calendar be set according to detailed market analysis. For instance, and as noted above, 52 percent of international tourists to Tamil Nadu reside in the one of 6 countries: UK, USA, Japan, France Germany and Sri Lanka. From the accompanying table, it can be seen that high spending tourists avoid Tamil Nadu during its hottest season and come to visit around December. Thus, the festivals should be organized precisely during these peak months: December through February.

<table>
<thead>
<tr>
<th>Country</th>
<th>Lean month</th>
<th>Peak month</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>April</td>
<td>December</td>
</tr>
<tr>
<td>Australia</td>
<td>June</td>
<td>December</td>
</tr>
<tr>
<td>UK</td>
<td>May</td>
<td>December</td>
</tr>
<tr>
<td>Canada</td>
<td>May</td>
<td>December</td>
</tr>
<tr>
<td>France</td>
<td>May</td>
<td>February</td>
</tr>
<tr>
<td>Germany</td>
<td>June</td>
<td>January</td>
</tr>
<tr>
<td>Italy</td>
<td>May</td>
<td>December</td>
</tr>
<tr>
<td>Japan</td>
<td>June</td>
<td>December</td>
</tr>
<tr>
<td>Malaysia</td>
<td>April</td>
<td>November</td>
</tr>
<tr>
<td>Singapore</td>
<td>September</td>
<td>November</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>June</td>
<td>March</td>
</tr>
</tbody>
</table>

Source: Government of Tamil Nadu

**Pilgrimage.** Pilgrimage tourism is of particular importance to Tamil Nadu since it holds so many of Southern India’s temple structures. Each year, pilgrims represent about 30 percent of total tourism arrivals. According to the Tamil Nadu Department of Tourism, these pilgrims are for the most part domestic Indian, of budget level, and of an older age group. Therefore, pilgrimage tourism strategy should encompass cheap guest houses and food near religious sites, luxury tax abatements, etc. Promotional fares should also be available during (internationally) lean months.

**Pilgrimage Tourist Arrivals in Tamil Nadu**

<table>
<thead>
<tr>
<th>Year</th>
<th>Domestic</th>
<th>Foreign</th>
<th>Total</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>5,362,016</td>
<td>60,936</td>
<td>5,422,952</td>
<td>4.6</td>
</tr>
<tr>
<td>1998</td>
<td>6,359,126</td>
<td>64,049</td>
<td>6,423,175</td>
<td>18.4</td>
</tr>
<tr>
<td>1999</td>
<td>6,580,239</td>
<td>74,904</td>
<td>6,655,143</td>
<td>3.6</td>
</tr>
<tr>
<td>2000</td>
<td>6,799,580</td>
<td>76,402</td>
<td>6,875,982</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Source: Government of Tamil Nadu

**Pilgrimage Tourist Share in Tamil Nadu (Total Tourist Arrivals)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Tourist Arrivals in Tamil Nadu*</th>
<th>Pilgrimage Tourist Arrivals*</th>
<th>% Share of Pilgrimage Tourists</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>196</td>
<td>54</td>
<td>27.6</td>
</tr>
<tr>
<td>1998</td>
<td>210</td>
<td>64</td>
<td>30.5</td>
</tr>
<tr>
<td>1999</td>
<td>218</td>
<td>67</td>
<td>30.7</td>
</tr>
<tr>
<td>2000</td>
<td>238</td>
<td>69</td>
<td>28.9</td>
</tr>
</tbody>
</table>

Source: Government of Tamil Nadu

(*) figures in 100,000
Benchmarking to Kerala

Over the past years, tourism grew significantly in the neighboring state of Kerala, converting it into the prime tourist hotspot in India. The National Geographic Traveler describes it as one of the 50 destinations of a lifetime. Tourism is now the fastest growing industry in Kerala, and revenue is expected to increase at 10 percent annually. International tourists arrivals are estimated to grow by 7 percent annually, while domestic arrivals are expected to growth by 9 percent annually.

There are many features that lie behind Kerala’s success in tourism:

- Like Tamil Nadu, Kerala has great potential for tourism. Strategically located at the South part of India, Kerala enjoys unique geographic features, which has made it one of the most sought after tourist destinations in Asia. The state has beautiful greenlands, beaches, backwaters, hill stations, waterfalls, historic monuments, spectacular arts, exotic wildlife and year-round festivals. All of these offer tourists a unique experience.

- Kerala has the most advanced society in India. It has 100 percent literacy; among Indian states, Kerala enjoys the lowest infant mortality rate, the highest life expectancy rate, the highest quality of life, etc. Kerala attracts foreign investors with these unique qualities, made possible by state investments since India’s independence in the fields of education, health care and human capital development.

- Tourism is primarily seen as a private sector activity by the state government, who functions simply as facilitator for the growth of tourism. More specifically, it deals with inter-government coordination and taxation policies; it regulates growth for sustainability, and provides safety to tourists. Moreover, it has a well-defined policy on joint ventures with the private sector, with the Government holding 26 per cent of the equity. These innovative policies have boosted private sector participation. As a result, the tourism infrastructure in Kerala has attracted over Rs 10 billion in investments. An important component for the development of Tourism in any state is the basic infrastructure facilities. The private sector has been the main actor in strengthening infrastructures in tourist spots throughout the state.

In Tamil Nadu, tourism is still highly dependent on the public sector. The state government is the main provider of infrastructure, including hotels. As a result, solely Rs. 50,000,000 were available for infrastructure development during 2001-2002. In order to boost private sector involvement in tourism, the government of Tamil Nadu gives out certain types of subsidies: capital subsidy for amusements parks, golf course, restaurants, coaches, one, two and three star hotels outside of Chennai, generator subsidy on purchase of a new generator, etc. These subsidies are very costly, especially during this time of fiscal consolidation. Therefore, the Kerala’s approach to rely strongly on the private sector appears the most appropriate.

Human Capital Implications

Human capital is an important component of a service industry like tourism. Human capital is the primary resource in tourism. The quality of human capital is crucial in the provision of tourism products and services. In that regard, the 2001 Global Competitiveness Report states that there is great disparity in education and health in India, where public schools are perceived to be in general of poor quality. Training

---

46 A significant part of this section was based on information from www.keralatourisminvestments.com/invest_inkerala/growth.html
and educational programs in math, science and information technology are strong, but appear to be available primarily to the elite.

According to the 2001 census, Tamil Nadu has a population of 62.1 million; out of India’s total 1.027 billion, Tamil Nadu accounts for only 6 percent of the population. It is also one of the few Indian states with more than 6 percent GDP growth. Consequently Tamil Nadu scores relatively well in terms of human capital, as compared to the rest of India. It has the third highest human resource development index according to the Center for Policy Research in New Delhi:

- Tamil Nadu has a high literacy rate of 73 percent, improving by over 10 points since 1991. This is due to the successful implementation of the Adult Literacy Program. The female literacy is at 64.55 percent whereas the national average is 54.36 percent.

- Infant mortality rate in Tamil Nadu was 52/10,000 in 1999, as compared to the national average of 71/10,000.

The state of Tamil Nadu invests highly on the social sectors. In the 2000-2001 expenditure budget, social services account for 36.83 percent of the total. Among the social services, allocation for education ranks first with 56 percent, followed by health with 15 percent, social welfare 8 percent and nutrition 7 percent.48 In short, the Tamil Nadu government is striving to implement an enabling environment for human capital development.

The number of trained manpower for the hospitality sector should be proportional to the number of international and domestic tourists arrivals. “It has been estimated that one man-year of employment is created for about every three foreign tourist arrivals. Similarly, one man-year of employment is created for about every 38 domestic tourist arrivals.”49 Based on these figures we can easily get an estimate of total employment in tourism-related activities: about 900,000 people in 2001. However, type of job opportunities, skill requirements and geographic distribution of employment should be estimated through survey methods. It should be also noted that not all tourist related jobs requires formal training.

However, there are two areas that need particular manpower training: (1) the hospitality and catering sector and (2) the travel trade and tourism sector. The Indian government-sponsored training facilities for the hospitality and catering sector, which include 20 institutes of hotel management and 15 food crafts institutes, produce about 6,000 trained personnel a year. State governments throughout India have their own colleges. Besides a three year diploma course in hotel management and catering technology, these institutes run one-year courses in front office, food production, bakery/confectionary, food /beverage service and housekeeping. These institutes provide good training for employees in the hospitality and catering sector. However, there are many institutes of dubious quality,50 which do not have the proper infrastructure and basic requirement to conduct quality theory or practical training. It is therefore important for the Tamil Nadu government to produce syllabi, accredit serious training institutes and attract skilled graduates into its hospitality sector. As for the travel trade sector (trade agents, guides, tour operators and transport operators), Tamil Nadu’s department of tourism should make sure that they operate according to the standards of the International Association of Travel Agents (IATA). Many travelers, both of international and domestic origin, expect to receive international level service. Currently, “most service providers are small family-based enterprises. The situation is made difficult by the fact that there are no commonly accepted codes of ethics or standards of service.” According to a survey in 1996, only 23 per

48 Government of Tamil Nadu
49 UN, p 12.
50 http://www.expresshotelierandcaterer.com/20020415/oncampus1.shtml
cent of IATA agencies and 39 per cent of non-IATA agencies had installed fax machines. Most agencies have only a few trained employees.\(^{51}\)

Curriculum should be updated regularly and developed in accordance to the World Tourism Organization standards and regulation. Tourism education and training should match the needs of all types of tourists. In this context, TEDQUAL (Tourism Education Quality) methodology, developed by WTO, should be used by the Tamil Nadu Tourism Development Corporation in their needs assessment and in the elaboration of training programs. Furthermore, Tamil Nadu should incorporate the Graduate Tourism Aptitude Test (GTAT) in its tourism training to foster standardization of curricula and make degrees in tourism more internationally comparable.

Language skills are very crucial in tourism. As English is becoming the world language, foreign tourists expect tourism professionals to be fluent at least in English. However, the educational system reinforces the prevalence of Tamil at the expense of English. Indeed primary education is free in Tamil and available in English only at a cost. As a result, English fluency is lacking in Tamil Nadu, at all levels of employment strata. Furthermore, there is intense political pressure to further formalize Tamil-language education. This trend appears to be particularly counterproductive in a time when American and European companies are outsourcing service jobs to English-speaking workers around the globe, with particular presence in the state of Tamil Nadu.

**Issues to be addressed in the strengthening of tourism in Tamil Nadu:**

1. **Cooperating with the already existing IT cluster**

The concept of a "cluster" was introduced by the American professor Michael Porter, who defines it as a geographic concentration of interconnected companies and institutions in a particular field, of unusual competitive success in particular fields.\(^{52}\)

Tamil Nadu has a very highly technically skilled manpower. It ranks first in India with 189 IT educational institutions, producing more than 61,000 engineering graduates per year, including 31,000 in computer science and software engineering. Having a relatively highly skilled manpower, Tamil Nadu can take many measures to attract more tourists by improving human capital for tourism related activities.

As previously mentioned, Tamil Nadu is emerging as a prominent IT region in the world. The state does possess a sufficiently strong array of interrelated key and supporting IT businesses to build future success and development of the tourism industry. The IT businessperson who stays at a 5-star hotel in Chennai, for example, would appreciate a fast internet connection at his/her hotel and a knowledgeable IT support team. Information and communication technology should be used for better management, organization, promotion and cost reduction of the tourism sector. Internet (tourism web sites, central reservation systems) offers the most promising means of achieving this. It is also crucial to incorporating highly skilled IT workers in the tourism management personnel. Also, the IT sector can help in hotel management education. There is a strong need for technology improvement and IT development for the tourism training faculty. “Between 1985 and 1991, most of the older hotel management institutes have received advanced equipment for training through a UNDP-assisted program to modernize hotel management education.”\(^{53}\) In this context, there is a strong need for the hotel management institutes to cooperate with the IT sector.

\(^{51}\) UN, p 20

\(^{52}\) Fairbanks, p 78

\(^{53}\) UN, p 16
There is a strong need to have the tourism department cooperate with TIDCO, the government organization in charge of attracting foreign investments to Tamil Nadu. There are now many TIDCO-affiliated industrial parks, and several foreign companies have set up part of their activities in Tamil Nadu (for example, the World Bank has just chosen Chennai as the locale for its back office).

Significant efforts should be done to enhance business travelers’ experience in Tamil Nadu, for many reasons. First, this type of travel constitutes a high spending base. Business peoples tend to spend more in stores and restaurants, because their hotels and plane tickets are often paid by their employers. Second, business travelers tend to make repeat vacation trips with their families when their traveling experience is good. Third, this type of travel is less seasonal and means a larger business travel base can be expected to help ease the boom-bust travel cycles associated with leisure travelers.

2. **Tourist Information Centres**

In order to disseminate information about tourism in Tamil Nadu, the State Government has opened 19 tourist information centers - 16 at local railway station and airports and 3 in other states. It is very important to make these centers truly available to tourists. Tourist offices should be opened 24 hours - 7 days a week - at airports and possibly railways.

3. **Price Discrimination**

It is a common practice in India to charge foreigners more for attractions than locals. For instance, visiting the temples in Mamallapuram costs 10 Rs for Indians and Rs 250 for foreigners. This price discrimination is done on the basis that locals, earning meager wages, are too poor to be charged high ticket prices, while international travelers can certainly afford the entrance fee due to the strength of their own currency. Although this explanation seems reasonable, it is important that foreigners should feel that they get some value out of the higher fees. This can be achieved by the following:

- Better upkeep of tourist attractions and surrounding areas. Many tourist centers are unclean and do not contain conveniences such as toilets and clean drinking water. Foreign tourists should be provided modern basic facilities and amenities.

- Increased supply of professional guides. Tourist centers that charge higher fees for foreigners should respond by providing site information to foreign tourists. Currently, there is virtually no published and/or posted information available at the site, nor are there enough guides to provide information about the tourist spots, in languages tourists understand. Each year, about 60 guides are trained through Anna Institute of Management in Chennai. The government should utilize the services of these well-qualified guides in key areas.

In conclusion, Tamil Nadu state natural and human resource attributes that could lead easily to a vibrant tourism industry. The government should assure this growth by adopting strategies to enhance private sector participation in tourism, as well as take advantage of resources available through the IT industry. Likewise, the state government should provide proper basic services and the academic environment for the proper training of tourism operators.
Health: The Global Health Fund and Rural Preventative Care

Accessing the Global Health Fund for HIV/AIDS, Tuberculosis and Malaria

“Improving the health and longevity of the poor is an end in itself, a fundamental goal of economic development. But it is also a means to achieving the other development goals relating to poverty reduction. The linkages of health to poverty reduction and to long-term economic growth are powerful, much stronger than is generally understood.”

-- Commission on Macroeconomics and Health
Geneva, December 2001

As has been described above, this paper seeks to offer strategies for improving the economic growth of Tamil Nadu. Focus has been given to biotechnology and tourism as two nascent industries with high economic potential. Nonetheless, successful development of these two sectors depends in large part on the quality of human capital; in a country like India, health is a critical factor in providing the best possible human resource for business development. As the Commission of Macroeconomics and Health has ascertained, improving health outcomes will also lead directly to increased poverty reduction.

The Global Health Fund could provide important resources to the health sector in the state of Tamil Nadu. This section will focus on strategies for accessing the Fund, with a necessary concentration on HIV/AIDS, tuberculosis and malaria.

Tamil Nadu and Health

Expenditures for health are, by Indian law, the responsibility of individual states. Funds originate primarily in excise, industry and other national taxes, which the government redistributes to states according to an agreed-upon allotment formula (taking into account size, population, need, and other variables). A smaller fraction of each state’s income comes from local sales and property taxes.

It is at the state level that primary decisions regarding the allocation of resources are made. For health in particular, the national government can influence expenditures through the use of earmarked grants, which comprise a small fraction of the state’s operating budgets. States can also access funding for health expenditures through private, unilateral and multilateral grants and/or loans, which are at times given directly to state governments and at times managed and distributed by the central government.

Health is a priority for the Tamil Nadu government. As the chart below depicts, spending on health as a percentage of total discretionary budget has dropped slightly in recent years, but it still remains well over 6 percent. Funding is further enhanced by the support of entities such as the World Bank, the US Agency for International Development, and the Center for Disease Control and several other international organizations. (See the appendix for details regarding Tamil Nadu’s operating budget and health allocations.)

55 Taken from conversation with Dr. Nirupam Bajpai, Director of CID’s India Program, 19 March 2002.
The Global Health Fund is one more resource that the state of Tamil Nadu could tap into. While many aspects of the health effort are important for Tamil Nadu state, HIV/AIDS and tuberculosis are at the forefront of concern for transmittable diseases. Moneys from the Fund could add offer important support for the battle against these deadly diseases.

### The Local Reality

India is one of the world’s focus regions of HIV/AIDS. The country has no systemic surveillance system, and even without it there are currently over 4 million registered HIV positive cases in the country. Though this number accounts for a relatively low prevalence rate (0.7 percent), India is at very high future risk, because of large internal migration and dense populations. Furthermore, the destructive link between HIV/AIDS contagion and tuberculosis is very worrisome, given that fifty percent of India’s population is infected with the tuberculosis bacterium, and more than 2 million people develop active tuberculosis each year.

Contrary to popular views, HIV/AIDS is not just a problem of high-risk populations in India. In the state of Maharashtra for example, over 2.5 percent of all women attending antenatal clinics tested positive. Furthermore, the sickness has important impacts beyond health and family welfare: UNAIDS estimates that the cumulative aggregate costs of AIDS by the end of 2000 were $11 billion – 5 percent of yearly GDP. The looming health crisis and the economic repercussions have impulsed the government of India to adopt strong policies to deal with HIV/AIDS. The National AIDS Control Organization (NACO) was established in 1992, with the mission of handling oversight of policy, prevention and control issues within India’s National AIDS Programme. That same year, NACO set up state AIDS bodies in 27 states and 7 union territories.

The state of Tamil Nadu suffers particularly strongly under the Indian AIDS epidemic. As reported by NACO, Tamil Nadu has the highest infection load in the country, followed in descending order by

---

58 Ibid.
The city of Chennai carries the ill-fated honor of being the discovery site of the first Indian AIDS case, in 1986. On the positive side however, Tamil Nadu is one of the richer states in the nation, and thus best equipped to take on the AIDS/HIV challenge. Furthermore, Tamil Nadu is especially well prepared for this endeavor, given that important local government and private efforts are already underway. Most notable among these efforts are the following:

1. The Tamil Nadu State AIDS Control Society is the state’s representative of NACO, and functions as the response branch of the Tamil Nadu government to the threat of HIV/AIDS. TNSACS’s mission is to “spread the awareness about the dreaded disease Acquired Immuno Deficiency Syndrome (AIDS) and to take care of the affected persons without getting discriminated or being ill-treated by the society in general. Its aim is to popularize the prevention of the disease, promotion of healthy living, to curtail false notions about the disease at large.” TNSACS works toward this goal by two distinct paths: it funds programs that train medical specialists and technologists in the care of HIV/AIDS patients and in the proper management of blood deposits. Regarding community outreach and education, TNSACS funnels most of its resources into the non-profit sector. It is TANSAC’s view that NGOs are best prepared to cover patients’ and family needs, as well as provide education and training, given that they already work on a grassroots level. These NGOs are therefore the ones who bear the ultimate burden of HIV/AIDS programming and consciousness-raising. In their entirety, the Tamil Nadu government’s efforts are aimed primarily at preventive measures and reducing the impact of sickness through the treatment of opportunistic infections. There is little to no consideration given to programs supporting life-extending medications (such as antiretrovirals).  

2. Outside of the government’s involvement in the anti-HIV/AIDS effort, Tamil Nadu has also been fortunate in receiving the support of multiple international actors in the field. Most notable in this regard is the program run since 1992 by the United States Agency for International Development (USAID). USAID’s presence in Tamil Nadu in large part mirrors the state’s efforts, except that funding goes exclusively to support preventive efforts. It provides grants to NGOs and training institutions, to “expand and improve the treatment and prevention of HIV/AIDS and sexually transmitted diseases (STDs). Forty-seven medium- and large-scale community-based activities aim to: 1) increase the use of condoms, 2) change high-risk behavior, and 3) improve treatment-seeking behavior for high-risk populations, e.g. commercial sex workers, their clients, and STD patients.” USAID also works with manufacturers to improve the distribution and quality of condoms, and strives to reduce the scope of tuberculosis contagion.

The nature of the HIV/AIDS effort in Tamil Nadu is well aligned with the funding objectives of the Global Health Fund, and the state could benefit immensely from funds made available through this new medium.

---

60 National AIDS Control Programme, India, AIDS Cases in India (reported to NACO) as of 31 December 2001. Provided by Mr. Christodas Gandhi, I.A.S., Project Director of the Tamil Nadu State AIDS Control Society. Figures for Tamil Nadu could be artificially high due to double-counting between different care centers, and because it boasts one of the better state-run hospitals for HIV/AIDS, so infected individuals from others states come to Tamil Nadu for treatment of opportunistic infections.


The Global Health Fund

Growing world recognition of the dimensions and impact of HIV/AIDS, tuberculosis and malaria has compelled the formation of a public-private partnership designed to strengthen cooperation and coordination of funds and research aimed at these three diseases. The overall aim is to improve health outcomes, which are important in their own right but also because of the understanding that good health is linked directly to economic growth.

The Global Health Fund attracts, manages and disburses resources to public, private and non-governmental programs, “respecting country-level public-private formulation and implementation processes, in support of technically sound and cost-effective interventions, for the prevention, treatment, care and support of the infected and directly affected.” The Fund supports activities such as: increased access to health services; provision of critical health products including drugs; training of personnel and community health workers; behavior change and outreach; and community-based programs, including care for the sick and orphans.

The GHF recently completed its first request for proposals, under which it awarded over US$1.6 billion to 58 programs in over 40 countries. Grants were awarded to national and local efforts, in amounts ranging from 3 million to tens of millions of US$. Disbursements for these programs will be made yearly, with moneys after the second year contingent on performance reviews. The Fund will soon be announcing a second round of financing, under which a potential request from the state of Tamil Nadu could be entered.

Critical aspects of the GHF application process:

1. Requests for and administration of funds must be made under coordinating mechanisms, either at the national, state or provincial level. Tamil Nadu would fit under the State Coordinating Mechanism (SMC) scheme. SMCs must by design include representatives from all relevant parties: NGOs, government, donors, academics, educators, civil society, people suffering from or directly affected by the diseases, etc.

2. The SMC must be able to respond to all the relevant state and donor-level constituencies, as well as manage the funds upon receipt. Thus, it must contain taskforces concentrating on each illness to be funded, and strong bodies dedicated to mentoring/evaluation and finances.

3. Once established, the SMC makes a statewide call for health operators to present projects for action. These projects would be compiled by the SMC into an overarching state strategy that confronts local health and resource priorities. This final strategy is then presented for approval to the Global Health Fund.

4. Proposals are evaluated by the GHF on the basis of:
   - Need, as exhibited both in terms of illness load and dearth of financing, as well as potential for success given pre-established efforts on the ground.
   - Soundness, as evidenced by clear and minutely detailed budget plans, and thorough evaluation procedures.

5. At this stage, proposals are a) accepted, with disbursements awarded on a yearly basis post evaluation results, b) returned for refinement and included in the next financing round, or c) rejected.

65 From conversation with Dr. Josh Ruxin, Access Project Director, Harvard’s Center for International Development, 30 April 2002.
Tamil Nadu: Accessing the Global Health Fund

Tamil Nadu is in an excellent position to apply for financing through the Global Health Fund. The ten years the government and international donors have dedicated to strengthening research centers, medical facilities and NGO service providers have created an environment ripe for the creation of an effective and representative State Coordinating Mechanism. Indeed, the state has already taken important strides to bring together civil society, the government and people directly affected by the disease. An example of this is present in the Nadu State AIDS Control Society, which currently has HIV+ individuals on its staff, to demonstrate its empathy with the cause. NGOs receiving funding from TNSACS are also required to engage at least one HIV+ person in the state-funded project.

It should be stated that India was awarded US$ 8.7 million during the first round of GHF disbursements. This funding was directed exclusively to tuberculosis, leaving HIV/AIDS and its linkage to tuberculosis visibly unfounded within GHF operations. This situation could well open up an opportunity for the state of Tamil Nadu, since HIV/AIDS is such an important issue for the state and the country as a whole.

Steps to be taken in the application process:

1. Create a State Coordinating Mechanism (SCM)

Tamil Nadu must create a truly representative SCM. Membership should be reflective of local realities and projects already in the field. It should include people affected by the diseases, research institutes and health centers/hospitals, health educators, civil society and government officials. It should also include representatives from international groups already involved as donors and/or service providers (such as the World Bank, USAID, CDC, Unicef, American Red Cross, WHO and UNAIDS).

2. Ascertain local needs

Once formed, the SCM should proceed to determine what Tamil Nadu’s most pressing needs are within the fields of HIV/AIDS, tuberculosis and malaria, given that GHF moneys can be directed at these illnesses singly or in any combination and share appropriate for the local reality. In conversations held in the field in May 2002, it appeared that malaria was less of a priority than HIV/AIDS and tuberculosis, since it only flares up seasonally and even then only in specific areas. By the same token, tuberculosis is already being met with extensive efforts on the ground, which are funded both by the Tamil Nadu government and the World Bank. It would seem thus that HIV/AIDS is the top priority for GHF financing.

If the SCM were also to arrive at the conclusion that HIV/AIDS is the optimal target for GHF funds, it would still have to ascertain the details of this need. According to T. Christodass Gandhi, Director of the Tamil Nadu State AIDS Control Society, over 90 percent of state HIV/AIDS funding currently goes to prevention efforts. While preventive communication still does not reach the entire state population, he views care as the most dire need. Specifically, he expressed the need for more HIV/AIDS clinics (to offer care of opportunistic infections), expanded home-based care, and nutrition programs for the afflicted. In his opinion, anti-retroviral drugs should not be considered, since the length of treatment and expense (around US$ 300/yr, per person) makes this a poor usage of resources. A better usage of these drugs would

---

67 J. Ruxin.
68 From conversation with Dr. K. Venkateswara Rao, Tuberculosis Medical Consultant, World Health Organization, Chennai, 7 May 2002.
be in preventing mother-to-child infection.\(^9\) While the Tamil Nadu State AIDS Control Society promotes this treatment, the disbursal of medication is virtually unavailable in the state health system.\(^70\)

According to Nancy Nay, Associate Director for Operations, CDC, Chennai, the principal priorities for HIV/AIDS in Tamil Nadu lie in the care available for women and children. Because of the stigma attached to HIV/AIDS, women are less able to access available treatment than their male counterparts, especially in rural areas, where the disease is more prevalent. Equally important is the issue of AIDS orphans, estimated to arise as a sizeable problem in the next 3 to 4 years.

3. **Elaborate a funding proposal**

Having established the concrete funding needs, the SCM must elaborate a proposal that meets the strictest requirements for thoroughness and accountability. Critical elements are the following:

- Clearly establishing program specifications.
- Describing concretely why those program specifications were chosen. The narration should show how those program objectives were arrived at, why they are priorities in the state, and funds can be used to support local initiatives already in place.
- Establishing a schedule and methodology for evaluation.
- Providing a detailed schedule and budget.

Creating a good proposal is vital. Not only does the Fund’s financing process depend on it, but also proper planning will ensure manageability on the ground and the best possible social results. Tamil Nadu’s SCM need not work alone at completing this comprehensive and demanding proposal. The Center for International Development at Harvard University established the *Access Project* in January 2002, in order to support countries, NGOs and other not-for-profits, and coalitions wishing to access the Global Health Fund. With financing provided by the Glaser Foundation, the Access Project provides “information, encouragement, technical advice, and networking with other experts (in the U.S. and abroad), in support of teams in developing countries.”\(^71\) Service to applying SCMs is free, and designed to help the group prepare the best proposal possible, for submittal to the Global Health Fund board. In order to request Access Project support, the Project must receive a request in the name of the highest health authority in the state. Access determines its time allocation based on need, as well as the exhibited motivation of the SCM to create the best possible proposal for the improvement of health outcomes for their people.

---

\(^9\) From conversation with T. Christodass Gandhi, Director of the Tamil Nadu State AIDS Control Society, Chennai, 7 May 2002.

\(^70\) From conversation with Nancy Hedemark Nay, Associate Director for Operations, CDC, Chennai, 9 May 2002.

Rural Communities and Preventative Health Care

Complementing the Global Health Fund issue is a pertinent challenge to Tamil Nadu’s development goals—improving the lot of citizens in rural areas. This section addresses that social policy issue (preventative health care, immunization) that is critical for Tamil Nadu’s future. Over the years, the Tamil Nadu government has been responsive to the needs of its people. While Tamil Nadu has been a successful Indian State case study of socio-economic mobility, they have a host of challenges in living up to Chief Minister Jayalalithaa’s social welfare commitment. Tamil Nadu needs to address the concern of improving vaccination efforts in rural areas. Vaccination prevents diseases, saves lives and provides cost-effective mechanisms. The first part of this paper outlines current efforts, challenges and impediments to vaccination in Tamil Nadu’s rural areas. The second part focuses on a SOS Vaccination program aimed at curbing under immunization and providing a sustainable framework for preventative health in Tamil Nadu.

Current Immunization Efforts in Tamil Nadu

Immunization efforts by the Tamil Nadu government have been largely unsuccessful in their goals of achieving comprehensive vaccination. Immunization coverage, for children under the age of six, has reached dangerously low levels (9-12 percent) in southern Salem and (11-15 percent) in northern Dindigul. In addition, there have been 40,000 cases of malaria, 75 percent of those coming from rural areas. Worsening health services affect people in densely populated areas as well as those living in remote areas with already difficult access. The first groups’ lack of access is caused by socioeconomic and cultural factors, but remote populations simply lack the possibility to visit health facilities because of distance or other geographic barriers. For example, over 100,000 children concentrated in three main rural areas (Sivagana, Erode, and Tirunelveli) fail to receive proper preventative health care ever year. By failing to provide these services, a child, moves into a high-risk population with substantially increased risks of infant morbidity and mortality.

Objective of Immunization Project in Tamil Nadu

The proposed Tamil Nadu Immunization project hopes to tackle this health development issue in Tamil Nadu. Over the course of three years, the Tamil Nadu project aims to vaccinate 80 percent of the 300,000 currently under immunized children (under the age of six) in ‘unreached’ populations. Jointly, Tamil Nadu hopes to mobilize resources through partnerships (with organizations such as the WHO), raise immunization awareness, and provide high visibility to the health sector.

---

73 ibid
74 ibid
Impediments to Immunization in Rural Tamil Nadu

Substantial problems plague immunization services in rural areas of Tamil Nadu. Parents face three main obstacles in their struggle to immunize their children. Misconceptions about the value of immunization, inconvenience and cost of immunization services persist.

1) Misconceptions—Parents resist vaccinating their children because immunization carries a negative stigma. In areas such as Dindigul (rural area), surveys have shown that parents think of vaccines as dangerous spells. For example, in Salem, parents are more apt to take their children to the local ‘medicine man’, than to registered health workers. Vaccines are thought to be treacherous, causing harmful side effects, illnesses and deaths.

2) Lack of Vaccines—Current health posts in rural areas are plagued by a severe lack of basic drugs and vaccines. In the fall of 1999, a major hospital in Neman, started an immunization program, and consequently ran out of vaccines in less than two weeks due to the overwhelming demand. While some delivering systems are in place (as in Karakial, and Chennai Central), the cost of importing vaccines is also a source of problems for many of these health agencies.

3) Inadequate Immunization services—In rural areas such as the Karur, the average distance to health posts is 10 miles. Families are less likely to travel that far to have their children immunized. Moreover, due to the scarcity of vaccine in rural areas, families seeking vaccination are forced to pay relatively high vaccination fees (40 percent of average monthly income).

---

76 ibid
77 ibid
Target ‘Unreached’ Populations in Tamil Nadu

In Tamil Nadu, large population groups receive no immunization at all, or receive only the first immunizations of the series and remain partially protected. These populations, ‘unreached’ by immunization services, fall into three distinct groups.

1) Populations living in semi-urban and other areas with usually good physical access to health services that shun contact with government services of all kinds. These populations are the ones that are most affected by the ‘Misconceptions’ impediment outlined above, since they characteristically fail to register their childbirths, and make no contact with routine immunization services.

2) Rural Populations (such as Karur) who simply live so far from the regional infrastructure that they make no contact with routine immunization services. In some areas health infrastructure exists. However, it is so skeletal or due to its remoteness functions so poorly, that it is of no value in providing services to the surrounding population.

3) Populations in Tamil Nadu rural and urban areas with good access to services who succeed in partially immunizing their children but drop out of the series before the schedule is completed. On average, this group would raise immunization coverage in Tamil Nadu by 20 percent if they completed the schedule correctly.

Tamil Nadu Vaccination Program Design

The vaccination programs in Tamil Nadu for people up to the age of six could be more effectively administered to accomplish their goal of preventing diseases. A useful strategy that has been employed in developing African countries is called Sustained Outreach Services (SOS). SOS is a strategy for reaching those segments of the ‘unreached’ populations that are too physically remote to be effectively reached by the present infrastructure of immunization services. There are several important elements of the Tamil Nadu SOS program.

1) Immunization Package, Malaria measures and Vitamin Supplementation

The immunization package need not necessarily by the overall standard for routine vaccination services. Instead the immunization coverage should be based on epidemiological, financial and operational criteria in the areas to be served. One important area is malaria prevention. While there are no perfect anti-malarial drugs, there are a number of measures that can be taken to decrease malaria incidence. These include the distribution of DEET (spray), protective sleeping nets, and drugs such as Aralin, Lariam, and Paludrine.

The priority steps attempt to concentrate efforts on the vaccines that will make the most impact in Tamil Nadu’s ‘unreached’ areas. In areas such as Dindigul or Salem the following guidelines are important. The following table, list the priority immunization preferences:

<table>
<thead>
<tr>
<th>Priority</th>
<th>Vaccine Issue</th>
<th>Rationale</th>
</tr>
</thead>
</table>

---

80 ibid
2) **Age Group**

The target age group for immunization is chosen on the basis of epidemiology and immunization history. Disease incidence in Tamil Nadu rural populations with low vaccination coverage is highest among children under five, with peaks between 12 and 36 months. The Vaccination program plans to target children under the age of six in all ‘unreached’ populations.

3) **Effectiveness**

The impact of immunization on disease is dependent on the timing and number of does received. Current immunization schedules in rural areas fail to focus on the number of rounds needed for effective coverage. If the immunization series improves, there can be serious improvement in the overall vaccination rates (estimated as a 20 percent increase). The Vaccination program will focus on completing series coverage, especially in the case of polio and DTP. The below table lists the protection of unimmunized children/women in after 1, 2, or 3 rounds in one year.\(^{81}\)

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>1 round</th>
<th>2 rounds</th>
<th>3 rounds</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measles</td>
<td>&gt; 85%</td>
<td>-</td>
<td>-</td>
<td>1 dose gives lifelong</td>
</tr>
<tr>
<td>Yellow fever</td>
<td>&gt; 90%</td>
<td>-</td>
<td>-</td>
<td>1 does give at least 10 years protection</td>
</tr>
<tr>
<td>Polio</td>
<td>&gt; 30%</td>
<td>76-100%</td>
<td>87-100%</td>
<td>Additional rounds are necessity</td>
</tr>
<tr>
<td>DTP</td>
<td>Little</td>
<td>80-100%</td>
<td>-</td>
<td>Second round crucial</td>
</tr>
<tr>
<td>TT</td>
<td>Little</td>
<td>3 years</td>
<td>-</td>
<td>Second round crucial</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>40%</td>
<td>100%</td>
<td>-</td>
<td>Standard</td>
</tr>
</tbody>
</table>

4) **Staff arrangement and training**

The success of the Vaccination program depends on large part on the quality of operational tools and their application in specific situations. The advantage of immunization services is the ability to vaccinate large number of populations with a relatively small number of staff. The Vaccination program divides into five main region areas—Velore (Villuppuram, Tiruvanamali), Erode (Coimbatore, Nilgris), Dindigul (Theni, Madurai), Tuticorin (Tirunelvel, Virudhunagar) Pudakkotai (Sivaganga, Karur). These areas have been specifically placed in areas, which will make access to rural and semi-urban areas much easier. The key of reaching the rural areas is through the roving, mobile health centers. Each center consists of three doctors, and eight staff assistants. The roving centers use the regional public hospital as a base, and make tri-weekly rounds of the areas. By focusing on rapid contact points through the roving health centers, the program intends to vaccinate the majority of ‘unreached’ populations.

\(^{81}\) ibid
**Recommended Actions to Increase Immunization Coverage**

The following recommended actions serve as essential keys to the comprehensive program for the immunization of Tamil Nadu children. These actions focus on creating joint partnerships, raising immunization awareness, and providing high visibility to the health sector.

1) Provide sufficient and free immunization coverage to targeted ‘unreached’ children in rural areas through new public health posts—Agrarian families (in areas such as Karur) will be able to receive vaccination for their children without the fear of bearing the currently high costs of immunization. The roving health centers will provide these incentives to families in order to encourage them to vaccinate their children.

2) Generate an advertising campaign with NGO’s that creates awareness—The program is committed to creating partnerships with the NGO’s (Care international, UNDP) in creating this immunization program. The program hopes to mobilize resources and create community participation through this partnership. A first step is to create an advertising campaign that specifically targets families and dispels misconceptions about immunization. This public relations campaign can utilize T.V, radio, and newspapers in characterizing the dangers of being under immunized and the effectiveness of routine childhood vaccines (BCG, DTP3, TT2+, Measles, Polio). Another aspect of this partnership is to send health workers to rural areas to describe the benefits of immunization in the region-specific dialects. These health workers could travel with the roving health centers. By educating local populations, this effort attempts to dispel the negative stigma attached to immunization in certain areas.

3) Attain better vaccination procedures and equipment for reducing vaccine wastage—In rural areas such as Tamil Nadu; almost 40 percent of vaccines are unusable because of poor delivery systems and inadequate cold storage. Reducing vaccine wastage can be achieved by introducing new vaccine vial monitors and droppers that are more effective in delivering the correct dosage to patients.

**Cost Estimation of Immunization Program**

The Tamil Nadu Vaccination program will have an annual budget of $500,000 (24,342,745 Indian Rupees). There are three main areas in which the financing will be subdivided—Medical supplies (drugs and vaccines), Infrastructure (building space, roving health center, cold chain equipment), and Staff coverage (doctor, assistant training and salaries). While it is tough to come up with exact figures, the following table outlines the broad financing framework for the SOS Program.

<table>
<thead>
<tr>
<th>Component</th>
<th>Category</th>
<th>Cost (US$)</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs, Vaccines</td>
<td>Med. Supplies</td>
<td>150,000</td>
<td>30</td>
</tr>
<tr>
<td>Roving health center (portable</td>
<td>Infrastructure</td>
<td>265,000</td>
<td>53</td>
</tr>
<tr>
<td>equip)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor (40), Nurse Assistants (70)</td>
<td>Staff coverage</td>
<td>75,000</td>
<td>15</td>
</tr>
<tr>
<td>Vaccination training</td>
<td>Staff coverage</td>
<td>10,000</td>
<td>2</td>
</tr>
</tbody>
</table>

---


Immunization services demand a relatively high initial capital investment in terms of clinic space, vaccines and cold chain equipment. However, when this is established within the first year, it will be relatively cheap to add additional interventions, such as vitamin A supplementation and malaria treatment.

Cost effectiveness of free immunization coverage

Increased vaccination levels can be achieved under an international program that reduces medical costs. Every year, health posts, public health hospitals and agencies treat thousands of illnesses/diseases that could have been prevented with proper vaccination. These costly and time-consuming treatments are a burden on health care institutions in Tamil Nadu. In the Journal of American Medical Association (JAMA) researchers calculated the cost-effectiveness of routine varicella and polio aimed at children under the age of six. In Tamil Nadu, if 60 percent of the targeted children were vaccinated, the program would prevent 300,000 chicken pox cases and over 90,000 hospitalizations. Compared with other prevention programs, increased immunization vaccination in Tamil Nadu would be cost-effective in the long run.

Performance Indicators

The Immunization Program is seen as a long-term investment in the health development of Tamil Nadu children. The Immunization program is designed as a three-year program, with yearly indicators. Indicators consist mainly of vaccination percentages administered by Ministry of Health officials. By year one of the program, the program hopes to have achieved immunization rates of 40 percent in key rural areas. The ultimate goal of the program is to achieve 80 percent immunization rates in targeted ‘unreached’ populations by year three. In addition to improved coverage rates, the program hopes to raise immunization awareness among communities and mobilize political support for vaccination programs. The program intends to monitor the ‘raising awareness’ effort by the number of patients arriving at clinics. Moreover, the program plans on gauging the political support for the program based on its partnership with NGO’s and the amount of cooperation achieved in creating a consensus around immunization coverage.

The Long Range Benefits of a Tamil Nadu Vaccination Program

Immunization coverage in rural areas has been lagging priority in recent years in the wake of AIDS prevention, and family planning. Critics of vaccination programs, however, fail to realize the heavy risks involved with being under immunized. Without proper vaccination, children in Tamil Nadu are extremely susceptible to life-threatening diseases and face the danger of compromising their overall physical and mental growth.

While all three recommended actions contribute to improving vaccination levels, the cost-effectiveness of routine childhood vaccines makes the option of providing sufficient access and free vaccines to targeted children the most appealing solution to Tamil Nadu’s under-immunization crisis. Parts of this project aim at dealing with malaria prevention and taking steps to decrease the incidence of malaria. According to the principle of equity, every child has the right to basic health care, including the protection against vaccine-preventable diseases. By promoting immunization coverage on a large scale in Tamil Nadu there will be a significant reduction in the number of illnesses children experience. For this reason, long-range benefits of

85 ibid
86 ibid
immunization are enormous and make the possibility of free vaccination a wise and cost-effective investment for the future.

Primary Education: Enrolment, Retention and Quality

Education contributes to economic growth both by improving the human capital portion of the factors of production, and by increasing knowledge to make improvements in technology possible. In the past, India has been able to grow in spite of lagged improvements in the education sector by focusing on its comparative advantages in physical capital and availability of low cost labor in areas like textiles and agriculture to drive economic growth. But successes in Bangalore and Chennai have demonstrated that investments in education are necessary if India plans to reap the greater returns of the science/technology and service sectors.

In addition to increasing productivity and generating new technology, education also provides many non-market externalities such as better personal health, lower crime rates, and reduction in fertility and child mortality. These in turn help create a generally healthier, cleaner, safer and less congested/polluted environment that is more conducive to foreign investment. All of this translates to higher GDP growth. According to George Psacharopoulos, for middle-income countries between the years 1960 to 1985, a 10 percent increase in enrolment in primary schools corresponds to a 0.3 percent increase in per capita GDP, while the same percentage increase in secondary school enrolment results in a 0.7 percent increase in per capita GDP.\(^{87}\)

Research has shown that better educated farmers (those receiving at least 4 years of schooling) in Africa are, on average 8-10 percent more productive than uneducated farmers.\(^{88}\) Similarly, better-educated people will have an easier time adapting to the needs of the new tourism and biotechnology sectors, and therefore be more productive than uneducated people. Obtaining basic education requires more than just high enrolment. In order for children (and society at large) to reap the direct and indirect benefits of education and literacy, school authorities must ensure that children are not just enrolling in school, but also stay in school, and receive a quality education when they are there. Tamil Nadu should continue to work towards providing quality universal primary education. A Primary education that covers basic math, literacy, health/hygiene and English will prove most useful in preparing the average person to participate and contribute to the service and biotechnology sectors.

High Enrolment

Tamil Nadu has made substantial progress in enrolling its children in school over the past decade. In 1999-2000, primary school enrolment for boys was at 98.5 percent and for girls was at 94.4 percent. The student to teacher ratio ranged from approximately 28 to 1 in the 1,047 municipal/corporation primary schools to a high of 40 to 1 in the 23,270 Panchayat Union primary schools.\(^{89}\)

Much of this can be attributed to the government’s attempts at improving access to schools by shortening the distance between children’s homes and schools. As of 1995-96, 96.8 percent of children in Tamil Nadu

---

88 Psacharopoulos, George.
lived within 1 km of a primary school, although accessibility to primary schools did vary greatly between urban and rural areas. Amongst the towns or cities in which more than 5,000 people dwelled, 100 percent of children lived within 1 km of a primary school. Yet the accessibility percentage dropped down to 92.9 percent for the 3962 villages where the population was between 400-499 in 1995-96, 77.8 percent for the 5641 villages where the population was between 200-299, and 64.3 percent for the 3418 villages where the population was below 100.

**Low Retention**

High enrolment rates also did not necessarily translate to high retention rates. The following table presents the drop out rate for primary schools in Tamil Nadu:

<table>
<thead>
<tr>
<th>Year</th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>18.3%</td>
<td>22.7%</td>
</tr>
<tr>
<td>1995</td>
<td>14.9%</td>
<td>17.0%</td>
</tr>
<tr>
<td>1999</td>
<td>12.9%</td>
<td>16.1%</td>
</tr>
</tbody>
</table>

Source: School Education Department, Government of Tamil Nadu.

According to Tamil Nadu’s School Education Department, every year there are about 10 lakhs or 1 million children who attain the school going age. Given both rising school-aged population and high enrolment levels, the fact that the drop out rates have decreased significantly through the last decade shows that the School Education Department is making good progress in keeping children in school. Yet, considering the number of children who are not enrolled and the number of them who drop out every year, the Department estimates that there are approximately 180 lakhs or 18 million illiterate adults, out of a population of 60 million people, in the state. So the illiteracy rate is approximately 30 percent, and women make up 64 percent of those who are illiterate. Although illiteracy is likely to be mostly confined to the rural areas, and hence have little effect on city-centers like Chennai, it is nonetheless important for the general welfare of TN for the government to work on decreasing the rate.

**School Education Department Policy for 2002-2003**

The School Education Department, in its *Policy Note on Demand No. 41 – School Education 2002-2003*, set out the following objectives and strategies for increasing enrolment and retention, as well as improving educational quality and experience:

---

90 School Education Department, Government of Tamil Nadu. “Policy Note.” 1995-96. (Table 17 of 92 obtained from Nirupam Bajpai.)
92 Ibid.
93 Ibid.
Objectives

- Enrolment of all children in the school going age
- Retention of all children enrolled in schools up to VIII standard
- Providing quality of education to all children so as to achieve minimum levels of learning competencies
- Ensuring harmonious development of child’s personality
- Decentralized planning and managing through community participation
- Enforcement of compulsory Elementary Education Act

Operational Strategies

- Open new primary schools in all eligible hamlets
- Upgrade primary schools to middle schools as needs arise
- Appoint additional teachers to needy schools
- Provide infrastructure facilities like construction of classrooms and office buildings, and provision of drinking water and toilets
- Establish linkages between Elementary Schools and Anganwadi, Balwadi centers and Nursery Schools
- Implement welfare schemes to increase enrolment and decrease drop-outs
- Strengthen supervisory administration
- Ensure community participation in planning and executing policies
- Impart in-service training to teachers in order to improve the quality of education

Current Situation

The goals and strategies listed above clearly demonstrate the School Education Department’s awareness of the general challenges in increasing access and bringing quality education to all school-aged children in Tamil Nadu. To that end, the Department has already taken substantial steps, particularly in the area of construction and infrastructure improvement. In 2000, the District Primary Education Program (DPEP) of the School Education Department devoted 70 percent of the “Education for All” budget to improving the quality of schools, 24 percent to construction and 6 percent to management expenses. Over 1,300 classrooms in 7 districts (Dharmapuri, Thiruvannamalai, Cuddalore, Villupuram, Perambalur, Pudukkottai and Ramanathapuram) complete with offices, toilets and water drinking facilities were built as part of the universal primary education plan in 2000. In addition, another 1,302 “alternative schools”, in the same 7 districts, were constructed to serve over 31,000 child laborers, dropouts and tribal children. These schools offer special assistance to these children with the aim of helping them catch up and get back into the formal primary school system. DPEP has also begun working with local communities to increase community ownership and community involvement in improving the quality of primary schools.

Funding for the implementation of similar schemes in all 22 districts in the sum of Rs. 2945.96 crores has already been submitted to the Indian Central Government. If approved, the School Education Department will receive Central Government assistance for 85 percent of the program in the first year, 75 percent in the second year, and 50 percent in the third year and thereafter to cover expenses relating to the construction of

---

96 Ibid.
classrooms and offices, provision of infrastructure facilities, appointment of teachers, etc. Details of the approved and budgeted “Education for All” scheme for Tamil Nadu are given below:

### Education for All scheme in Tamil Nadu

<table>
<thead>
<tr>
<th>Details</th>
<th>No. Approved in 2001-02</th>
<th>No. to be Approved in 2002-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Elementary Schools opened/ to be opened</td>
<td>452</td>
<td>187</td>
</tr>
<tr>
<td>No. of Elementary Schools upgraded/ to be upgraded into Middle Schools</td>
<td>197</td>
<td>1,243</td>
</tr>
<tr>
<td>Appointment of teachers to new schools</td>
<td>649</td>
<td>1,430</td>
</tr>
<tr>
<td>Appointment of additional teachers</td>
<td>--</td>
<td>17,629</td>
</tr>
<tr>
<td>Training to teachers</td>
<td>--</td>
<td>242,346</td>
</tr>
<tr>
<td>Training to community/VLC members</td>
<td>--</td>
<td>38,260</td>
</tr>
<tr>
<td>Teaching/learning equipments for new primary schools</td>
<td>--</td>
<td>1,243</td>
</tr>
<tr>
<td>School grant</td>
<td>--</td>
<td>38,260</td>
</tr>
<tr>
<td>Teacher grant</td>
<td>--</td>
<td>242,346</td>
</tr>
<tr>
<td>Maintenance grants including repairs</td>
<td>9,770</td>
<td>17,302</td>
</tr>
<tr>
<td>Construction of buildings for Block Resource Centers</td>
<td>35</td>
<td>271</td>
</tr>
<tr>
<td>Construction of classrooms to those having no classrooms</td>
<td>16</td>
<td>--</td>
</tr>
<tr>
<td>Construction of buildings for new elementary schools</td>
<td>94</td>
<td>1,430</td>
</tr>
<tr>
<td>Construction of additional classrooms</td>
<td>--</td>
<td>103</td>
</tr>
<tr>
<td>Toilet facilities to schools</td>
<td>2,510</td>
<td>12,399</td>
</tr>
<tr>
<td>Drinking water facilities to schools</td>
<td>2,367</td>
<td>15,177</td>
</tr>
<tr>
<td>Innovative education activities (Rs.50 lakhs per district)</td>
<td>--</td>
<td>29 districts</td>
</tr>
<tr>
<td>Research, evaluation, supervision and monitoring</td>
<td>--</td>
<td>38,260</td>
</tr>
<tr>
<td>Teachers for Block Resource Centers</td>
<td>3060</td>
<td>636 (306 centers)</td>
</tr>
</tbody>
</table>

Source: School Education Department, *Policy Note on Demand No. 41, 2002-2003*.

In addition to poor physical infrastructure and lack of latrines and drinking water, there is also the problem of lack of teachers leading to poor teacher to student ratios, which lowers the overall education quality and experience. Multi-grade teaching, for example, with up to 3 levels in one classroom, by one teacher is not an uncommon sight in Tamil Nadu. Although the average student to teacher ratio is around 40 to 1, there are classrooms where teachers are responsible for nearly 80 students. Teacher shortage is clearly a problem that the School Education Department will have to address in order to improve the quality of education in Tamil Nadu. According to the latest Policy Note, the Department has already identified where the surpluses and shortages of teachers are, and plans to shift teachers from schools with surplus posts to needy schools. So far, over 8,500 posts have been labeled as surplus posts, and 849 of those have already been reassigned.

One area that is of grave concern, but has not been addressed overtly in any Policy Notes, is teacher accountability. Lack of teacher accountability is well known and discussed openly in the School Education Department, and cited by many state and district level officials as a significant problem. Although public school teachers, on average, earn twice as much as their counterparts in private schools, that salary does not


necessarily translate to greater accountability. In fact, Grover and Singh noted, “in most of the schools which we visited without prior notice, we found little or no instruction taking place.” Instead, they found teachers chatting casually outside classrooms, and in some cases, the teachers were simply absent.

“Almost every master teacher attendance register examined in the course of this study revealed some teacher or other in every school absent on casual or medical leave every single day! Several teachers, including Head Masters, avail of the provision of ‘medical leave’, which can run into weeks at a time. By their own admission, it is ‘not hard to get a medical certificate’ which is mandatory for medical leave to be approved.”

One way to possibly remedy this problem is through increased community and parent involvement. Some efforts have been made to enhance community and parent participation in school operations and management. This has largely resulted in mobilization of funds in some schools for computer labs, additional furniture and equipment, even latrines and drinking water. Yet they have had little impact on increasing teacher accountability because of strong teacher unions and centralized processing of teacher salaries, recruitment, placement and promotion.

Another area that benefits from more attention is foreign language instruction in schools. Currently, public education in the Tamil language is free, consistent with what is stated in the Policy Note on education: “education through Mother tongue is the basic resource for broadening the mind of school-going children. Mother tongue is integrated with body and soul. Hence every school in the State will be required to ensure that Tamil is taught as a subject in the curriculum.”

What is missing, however, is a similar statement with regards to the importance of English (and/or other foreign language) instruction in schools. This will become increasingly important as Tamil Nadu begins to assert itself as a key player in the world’s ICT and biotechnology fields. Basic knowledge of English (as well as other foreign languages) will also play a key role in the development of Tamil Nadu’s tourism sector. In order to prepare for the development and expansion of these areas, the School Education Department must follow the examples of successful financial and ICT centers like Singapore and Malaysia, and begin to include and expand English instruction in its Primary School curriculum.

**Recommendations**

The School Education Department has done well over the past decade to increase enrolment of school-aged children in its primary schools. Its next concerns are to increase retention rates and improve quality in the midst of tightened budget constraints. Much of what the Department needs to do has already been mentioned in great detail in its 2002-2003 Policy Note. This paper will seek to highlight three areas that are not specifically mentioned in the Note, but are nonetheless important to the Department’s goals. The three recommendations are: 1) Enhance public-private partnerships; 2) Increase teacher accountability; and 3) Include English (and/or other foreign language) instruction in primary schools.

---

100 Ibid.
102 School Education Department… *Policy Note*… p.2.
1. Finding sources of funding: Enhance Public-Private Partnerships

As the state works to consolidate its budget to eliminate borrowing and finance deficits, the importance of being able to leverage funding from the private sector becomes critical. Finding new sources of funding or more effective ways of spending limited resources will be the key to improving the quality of education. What the government must NOT do is to increase the individual poor household burden of paying for fees, books, uniforms, stationary and transportation costs of schooling. In 1993-94, households with children ages 6-14 spent approximately 75 rupees per student on fees, books, stationary and transportation for every 100 rupees the government spent per student in government schools.\(^{103}\) Considering that over 32 percent of the population in Tamil Nadu live below the poverty line,\(^ {104}\) many parents probably lack the resources to spend on educating their children, even with significant welfare subsidies by the state.

Eliminating illiteracy and having an educated work force should not be the sole responsibility of the public sector. The private sector stands to gain the most from both the direct (highly trained labor force) and indirect effects (lower crime rates and better health and sanitation) of an educated population. As such, the private sector should also invest in the education system. Public-private partnerships, similar to the School’s Program already in use in getting computers into higher secondary schools (discussed below), are great ways to solve the funding problem, while supporting local businesses at the same time. Aside from providing the necessary funds and equipment, the private sector is also a great source for practical training via internships and apprenticeships to augment the knowledge gained in classrooms, especially at the higher secondary, vocational and university levels.

Informally, through community and parent associations, the private sector has already been involved in funding much needed infrastructure improvements and providing equipments. Formally, the Department is working on at least one public-private project to provide computers and ICT literacy courses to students and teachers in the higher secondary level. Through this “Schools Program” initiative, Tamil Nadu became the first state in India to introduce computers into its higher secondary schools.\(^ {105}\) As of 2000, out of a total of 3292 higher secondary schools (grades 11 and 12), 1206 are managed by the government\(^ {106}\). Of those, 1198 of them have computer labs.\(^ {107}\) The program offers a basic part theory and part practice computer science course to higher secondary school students. Approximately half of the 50,000 students (out of a total of 330,000 higher secondary students)\(^ {108}\) currently taking the course are girls, and half of the computer labs are located in rural areas.\(^ {109}\) The government plans to expand the program to offer ninth and tenth grade students and teachers basic computer literacy classes, with the intention of covering a total of 300,000 students when the program is fully operational.\(^ {110}\)

---


104 Planning Commission. “Report of the Expert Group on Estimation of Population and Number of Poor.” (Table 16 of 92 obtained from Nirupam Bajpai.)


107 Maclay, p.12.

108 School Education Department. “Number of Schools…”

109 Maclay, p.10.

110 Ibid.
Given the government’s limited budget in the education sector, Tamil Nadu has chosen to fund this initiative through public-private partnerships by contracting out the hardware, software and computer literacy training services to local businesses.\textsuperscript{111} Doing so saved the government from having to buy equipment, worrying about updates and servicing, and training instructors. At the same time, the program benefited the burgeoning ICT sector by providing a steady revenue stream to dozens of local ICT companies by allowing these companies to use the school labs for free in the evenings to provide ICT services and training to the communities at large.\textsuperscript{112} In so doing, many adults in these communities also benefit from the opportunity to receive ICT training, an opportunity that was not previously available, especially in the rural areas.

It would be worthwhile for the Schools Education Department to explore other similar cost-sharing schemes to fund future construction projects and equipment purchases, especially as it considers bringing ICT into primary schools.

2. Increase teacher accountability

The key to improving the quality of education is in improving the quality of teaching. Aside from recruiting more and better teachers, and having more and better in-service teacher trainings, the community and parents must be able to hold their teachers accountable. In order for this to happen, the state must explore ways to change incentive structures such that local schools and communities can have real power to affect change.

In some ways, these shifts are already happening through the implementation of the Central Government mandated Sarva Shiksha Abhiyan (SSA) universal elementary education scheme. Part of the SSA implementation strategy calls for community ownership of school-based interventions to increase enrolment and retention, and improve quality through effective decentralization. But more must be done.

Since dismantling the teachers union system is most certainly out of the question, the Department may wish to start by revamping the salary and promotion decision making structure to include inputs from local communities. This will require that the Department look closely at the structure of its own organization, and find entry points where community inputs can be used to evaluate and monitor teachers and school administrators. In order to receive meaningful input from communities, the Department must also provide capacity training to local communities such that the parents are aware of “the basic qualities exhibited by an effective school, the meaning of quality education and their constitutional right to demand it for their children.”\textsuperscript{113} Given the Department’s limited budget, it may wish to contact existing NGOs and community groups to share in the costs and personnel needed to organize such awareness campaigns and capacity training sessions.

3. Include English (and other foreign language) Instruction in Primary Schools

As mentioned before, growth in high technology and service sectors require more than just good infrastructure and talented professionals. This is evident in the scale and vision of the recently completed technology complex, TIDEL Park, located in Chennai. In addition to guaranteed electricity supply, 100% reliable telecom network and well-connected air, rail and road networks, TIDEL Park also boasts two 18,000 sq. ft. multi-cuisine restaurant/food court spaces, a 9100 sq. ft. multi-purpose convention center,

\textsuperscript{111} Maclay, p.10.
\textsuperscript{112} Ibid.
\textsuperscript{113} Grover and Singh. P.28.
6726 sq. ft. banking area, 9680 sq. ft. health club complete with sauna, Jacuzzi, gymnasium and massage areas, outdoor facilities include tennis courts, swimming pool and a golf course minutes away from TIDEL Park, and much space set aside for travel, courier and administrative services.  

Clearly, the Tamil Nadu government recognizes that it takes more than just good infrastructure and talented professionals to entice investors to relocate to Chennai. Creating a world-class environment with first-rate facilities is equally important. In addition, in the increasingly competitive ICT market, other invest friendly non-market related perks such as clean and safe living environments, first-rated schools, access to world-class dining and recreational facilities, etc. become the characteristics that distinguish one ICT hub from another. But world-class facilities cannot run on their own. Banks, health clubs, convention centers and even the food courts require educated people who can communicate with foreign investors to manage and ensure quality of service. Tamil Nadu has invested much in its engineers, computer science majors and university students. But to remain competitive with the rest of the world’s technology centers and tourism destinations, Tamil Nadu must also invest in primary and secondary education to establish an educated and English-speaking labor force that can provide world-class service in the service sector that is vital to attracting and supporting foreign investors.

Consequently, the government must prepare for further growth in high technology and service sectors by instituting foreign language instruction, specifically English instruction, at all school levels. This will require additional curriculum development and training for all teachers at the primary level to ensure quality and consistency, which means that the process will take time to implement. As such, the School Department must begin the process now, particularly in urban centers and rural areas that are located near popular tourist sights, in order to coordinate with the fast improvements and initiatives underway in the technology and tourism sectors.

Funding for such an initiative will be difficult to come by. One way to cover the teacher training costs may be to include English instruction as part of the in-service training for teachers. As for covering the cost of providing teaching materials and developing curricula, the Department may wish to solicit input and funding from the private sector. Once again, the high technology and tourism sectors stand to benefit enormously from having an educated, English-speaking labor force. So attempts should be made to solicit expertise and funding from the private sector to cover part of the costs of initiating English instruction programs in schools. Additionally, it may be worthwhile to explore charging tuition for adult evening English instruction classes using local school facilities to offset funding needed to purchase materials for primary school instruction.

Conclusion

Tamil Nadu stands at the crossroads of its socio-economic development. The state has a legacy of achievement, with high economic growth rates and a burgeoning ICT sector. Nonetheless, the recent economic recession and mandatory fiscal reforms imposed by the central government have imposed important fiscal constraints on state spending. The next years will, by necessity, see Tamil Nadu design a new budget allocation process, in which borrowing to cover deficits is eliminated, and revenue deficits are brought down to zero. This will require a conscientious prioritization of sectoral spending.

The necessary upcoming fiscal reforms will certainly create tension in budget allocation, and sectors poorly able to express their needs could see dramatic cuts in state funding. In preparation for this austerity, the government of Tamil Nadu must implement a strategy that encompasses covering basic needs of the very poor (such as welfare and pensions), enhancing economic growth through intervention in targeted industries, and facilitating the provision of quality health and education services.

It is the recommendation of this report that Tamil Nadu should concentrate on biotechnology and tourism as its cornerstone industries for the future. Biotechnology is appropriate both because of the growing demand for related goods and services in the world, and also because of the impressive high-tech infrastructure already available in the state. Tamil Nadu boasts highly trained computer scientists, engineers and scientists. It also enjoys the confidence of many high-tech international firms, many of which are already operating in Chennai and its environs. Biotechnology is simply the next natural step in the ICT boom that has revolutionized Tamil Nadu’s economy.

Tourism is a critical counterpart to biotechnology, as it has the potential to absorb large numbers of lower-skilled workers. Tamil Nadu has immense natural and cultural resources, giving it great potential to launch into one of India’s – and even the region’s – top tourist destinations. Furthermore, ICT/biotech development and direct foreign investment can be tapped into both for ICT solutions to tourism management and marketing challenges, and as a source of financing high-level travelers. Despite these visible advantages, the industry currently suffers from a severe lack of infrastructure and poor provision of basic services. The government should take major strides in promoting the industry by taking on the challenges of enhancing the active participation of the private sector, improving provision of services such as water and electricity, and supporting the maintenance and attractiveness of historical sites and temples.

The proper provision of health and education services is a critical aspect of enhancing the biotechnology and tourism industries. Healthy and educated populations provide the optimal manpower to make these industries operate effectively and efficiently, while at the same time increasing the domestic market base for goods and services. It is important thus that the government of Tamil Nadu continue to regard health and education as key social sector funding priorities.

In order to supplement the health-related work that Tamil Nadu’s government and several private and multi/unilateral international institutions are already undertaking on the ground, this paper seeks to encourage the state to apply for funding through the newly-established Global Fund for HIV/AIDS, tuberculosis and malaria. Money from this fund could cover aspects of these diseases which are currently not being adequately tackled, such as prevention of mother-to-child HIV/AIDS transmission, and home-based care of those suffering from AIDS and tuberculosis.

In the realm of education, the government of Tamil Nadu has the ability to bring the state’s already high-quality system to a new level of achievement. While primary enrollment is high, the state needs to enhance
student retention. It also needs to continue adapting curricula so that skills taught are practical and seen as valuable in the community, and so that students retain the most information possible from the education they receive. In order to fund some of the proposed expansion and enhancement projects given additional financial constraints posed by this new era of fiscal consolidation, the School Education Department should actively research the potentials of obtaining private funding, mentorship and expertise. In the area of improving education quality, the Department should consider further empowerment of local communities and parents to hold teachers and school administrators accountable to the state of their children’s schools and learning experience. Lastly, the state of Tamil Nadu should seriously consider enhancing English education in public schools. While there is much to be gained from enhancing local culture through language, it is critical that the population be able communicate with the outside world. This is especially vital given the upsurge of foreign direct investment in the state, and the international demands that IT/biotechnology and tourism will come to place on local citizens.

In sum, to meet its goal of becoming India’s leading state, Tamil Nadu must make a firm commitment to fiscal reforms, prioritize sectoral programs in health and education, and tap into its existing competitive advantages in both tourism and biotechnology.
### Appendix: Tamil Nadu Budget and Health Allocations

<table>
<thead>
<tr>
<th>Category</th>
<th>94-95</th>
<th>95-96</th>
<th>96-97</th>
<th>97-98</th>
<th>98-99</th>
<th>99-00</th>
<th>00-01</th>
<th>01-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tamil Nadu revenue expenditure</td>
<td>9635.0</td>
<td>10910.6</td>
<td>13064.9</td>
<td>14950.9</td>
<td>17697.4</td>
<td>20727.8</td>
<td>22318.2</td>
<td>24522.4</td>
</tr>
<tr>
<td>Total Interest + welfare payments</td>
<td>1659.7</td>
<td>2000.2</td>
<td>2278.8</td>
<td>2680.6</td>
<td>3201.8</td>
<td>3865.6</td>
<td>4337.9</td>
<td>4734.0</td>
</tr>
<tr>
<td>Interest payments &amp; servicing of debt</td>
<td>1152.6</td>
<td>1380.0</td>
<td>1588.0</td>
<td>1763.3</td>
<td>2121.8</td>
<td>2711.5</td>
<td>3000.0</td>
<td>3299.5</td>
</tr>
<tr>
<td>Welfare of SC, ST, &amp; OBC</td>
<td>236.7</td>
<td>314.4</td>
<td>354.4</td>
<td>386.9</td>
<td>449.1</td>
<td>470.2</td>
<td>553.7</td>
<td>569.9</td>
</tr>
<tr>
<td>Labour &amp; labour welfare</td>
<td>64.9</td>
<td>70.3</td>
<td>70.1</td>
<td>75.6</td>
<td>91.9</td>
<td>104.8</td>
<td>113.6</td>
<td>112.8</td>
</tr>
<tr>
<td>Social security &amp; welfare</td>
<td>205.5</td>
<td>235.5</td>
<td>266.3</td>
<td>454.8</td>
<td>539.0</td>
<td>579.1</td>
<td>670.6</td>
<td>751.8</td>
</tr>
<tr>
<td>Discretionary expenditures</td>
<td>7975.3</td>
<td>8910.4</td>
<td>10786.1</td>
<td>12270.3</td>
<td>14495.6</td>
<td>16862.2</td>
<td>17980.3</td>
<td>19788.4</td>
</tr>
<tr>
<td>(revenue expenditure minus total interest + welfare payments)</td>
<td>-</td>
<td>11.7%</td>
<td>21.1%</td>
<td>13.8%</td>
<td>18.1%</td>
<td>16.3%</td>
<td>6.6%</td>
<td>10.1%</td>
</tr>
<tr>
<td>% growth of total discretionary budget</td>
<td>-</td>
<td>11.7%</td>
<td>21.1%</td>
<td>13.8%</td>
<td>18.1%</td>
<td>16.3%</td>
<td>6.6%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Inflation</td>
<td>10%</td>
<td>9%</td>
<td>7%</td>
<td>13%</td>
<td>5%</td>
<td>4%</td>
<td>0.5%</td>
<td>115</td>
</tr>
<tr>
<td>Medical and Public Health, expenses</td>
<td>610</td>
<td>575.8</td>
<td>670.5</td>
<td>746</td>
<td>908.2</td>
<td>964.2</td>
<td>1,015.6</td>
<td>1,093.8</td>
</tr>
<tr>
<td>Medical and Public Health, capital</td>
<td>24.1</td>
<td>14.3</td>
<td>20.4</td>
<td>39.4</td>
<td>67</td>
<td>64</td>
<td>40.5</td>
<td>67.1</td>
</tr>
<tr>
<td>Total spent, % change from previous year</td>
<td>-6.90%</td>
<td>17.10%</td>
<td>13.70%</td>
<td>24.20%</td>
<td>5.40%</td>
<td>2.70%</td>
<td>9.90%</td>
<td></td>
</tr>
<tr>
<td>% of discretionary budget</td>
<td>7.95%</td>
<td>6.62%</td>
<td>6.41%</td>
<td>6.40%</td>
<td>6.73%</td>
<td>6.10%</td>
<td>5.87%</td>
<td>5.87%</td>
</tr>
<tr>
<td>Family Welfare, expenses</td>
<td>-</td>
<td>122.4</td>
<td>103.4</td>
<td>153.6</td>
<td>191.6</td>
<td>177.3</td>
<td>179.9</td>
<td>204.2</td>
</tr>
<tr>
<td>Family Welfare, capital</td>
<td>-</td>
<td>5.8</td>
<td>0.2</td>
<td>0.1</td>
<td>0.0</td>
<td>3.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total spent, % change from previous year</td>
<td>-</td>
<td>-19.20%</td>
<td>48.40%</td>
<td>24.70%</td>
<td>-5.60%</td>
<td>-0.60%</td>
<td>13.50%</td>
<td></td>
</tr>
<tr>
<td>% of discretionary budget</td>
<td>-1.44%</td>
<td>0.96%</td>
<td>1.25%</td>
<td>1.32%</td>
<td>1.07%</td>
<td>1.00%</td>
<td>1.03%</td>
<td></td>
</tr>
<tr>
<td>Total spent on health</td>
<td>718.3</td>
<td>794.5</td>
<td>939.1</td>
<td>1166.8</td>
<td>1209.1</td>
<td>1236</td>
<td>1365.1</td>
<td></td>
</tr>
<tr>
<td>% of total discretionary budget</td>
<td>8.1%</td>
<td>7.4%</td>
<td>7.7%</td>
<td>8.0%</td>
<td>7.2%</td>
<td>6.9%</td>
<td>6.9%</td>
<td></td>
</tr>
</tbody>
</table>

- Figures given in Rupees crore (10 million).

**References**

**On-line sources:**

AVERTing HIV and AIDS, [http://www.avert.org/aidsindia.htm](http://www.avert.org/aidsindia.htm)
Global Health Fund, Overview, [http://www.globalfundatm.org/overview.html](http://www.globalfundatm.org/overview.html)
Tamil Nadu Ministry of Finance, [http://indiabudget.nic.in/ub2002-03/vol2.htm](http://indiabudget.nic.in/ub2002-03/vol2.htm)
Tamil Nadu State Education Department, [http://www.tn.gov.in/policy/schemad.htm](http://www.tn.gov.in/policy/schemad.htm) and [http://www.tn.gov.in/policy/dpep-e.htm](http://www.tn.gov.in/policy/dpep-e.htm)
Tamil Nadu State AIDS Control Society, [http://tnaids.tn.nic.in/](http://tnaids.tn.nic.in/)
Tamil Nadu Tourism Development Corporation, [http://www.tamiltourism.org](http://www.tamiltourism.org)
TIDEL Park, [http://www.tidelpark.com/recreate.htm](http://www.tidelpark.com/recreate.htm)
Unido, [http://www.unido.org](http://www.unido.org)

**Interviews:**

Dr. Nirupam Bajpai, Director, India Program, Harvard’s Center for International Development
Dr. Josh Ruxin, Access Project Director, Harvard’s Center for International Development
Dr. K. Venkateswara Rao, Tuberculosis Medical Consultant, World Health Organization, Chennai
Mr. Christodas Gandhi, I.A.S., Project Director of the Tamil Nadu State AIDS Control Society
Nancy Hedemark Nay, Associate Director for Operations, CDC, Chennai

**Indian Government Publications:**

National AIDS Control Programme, India, AIDS Cases in India as of 31 December 2001
State Government of Tamil Nadu, Education Policy Note
State Government of Tamil Nadu, Health Sector Policy Note
State Government of Tamil Nadu, Tourism Policy Note
TIDCO, Tamil Nadu Industrial Association Report, November 2001

**Journals and Other Publications:**

Economic Intelligence Unit, India Profile, April 2001.


Cited: May 1, 2002.


