



FINAL REPORT
CityLinks Post-Tsunami Recovery Program in
Cuddalore and Nagapattinam, Tamil Nadu-India

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I. List of Acronyms

ADB	Asian Development Bank
CAD	Computer Aided Design
CMATN	City Managers Association Tamil Nadu
CMA	City Managers Association
ICMA	International City/County Management Association
IMaCS	ICRA Management Consulting Services Limited
M&E	Monitoring and Evaluation
NGO	Non Governmental Organization
ULB	Urban Local Bodies
UMC	Urban Management Centre
US	United States
USAID	United States Agency for International Development

II. Executive Summary

Introduction

On December 26, 2004, the Indian coastline experienced the most devastating tsunami in recorded history. Almost all the countries situated around the Bay of Bengal were affected. Nearly 80 percent of deaths along India's southern coast were centered in Tamil Nadu, which incurred approximately two-thirds of the property damage. Within Tamil Nadu, the cities of Nagapattinam and Cuddalore incurred much of the worst damage and loss of life.

In response to the tsunami, The United States Agency for International Development (USAID) USAID awarded the CityLinks Post Tsunami Recovery Program in Cuddalore and Nagapattinam, India to The International City/County Management Association (ICMA) in April 2005. The program provided disaster management assistance and guidance on the improvement of the delivery of municipal services to citizens for the local governments in Cuddalore and Nagapattinam. A key component of the program was the CityLinks Partnership between Cuddalore and Nagapattinam and Palm Bay, Oldsmar and Port Orange, FL. Like Tamil Nadu, Florida continually prepares for natural disasters that include unrelenting hurricanes throughout the state. Local and regional government officials from cities like Palm Bay, Oldsmar and Port Orange not only have first-hand disaster response experience, but also provide good service delivery to their citizens.

To capitalize on the knowledge and expertise of Florida city officials, ICMA facilitated a working partnership between Florida, Cuddalore and Nagapattinam to help prepare for and mitigate future disasters along the southern Indian coastline, as well as build the capacity of both governments to provide basic services to their citizens. ICMA, Florida and the Urban Management Centre (UMC), herein after referred to as the CityLinks Team, provided pro-bono hands-on technical assistance, capacity building training and focused exchanges, complemented by small and targeted project assistance funding for disaster preparedness, CAD mapping, park/playground development, water delivery, flood mitigation, model street development and financial management. The partnership and program have led to lasting relationships and tangible results that will continue to improve the quality of life for the citizens of both cities.

CityLinks Program Accomplishments

CAD Mapping

In the area of disaster and flood mitigation, the CityLinks Team created CAD base maps for both cities with detailed data layers of all relevant geographic features, public infrastructure systems and facilities, land uses and building structures, including topography (for mapping vulnerable flooding areas), municipal boundaries, building foot prints, open spaces/water bodies/ parks, road network, railways, current land uses including port and fishing industry activity, storm shelter facilities and temporary housing projects. The cities are now better equipped to evacuate during emergencies, are able to respond to vulnerable populations more quickly and are prepared to plan, prepare for and develop infrastructure based on current municipal information and citizen needs. The CAD Maps were also used throughout the CityLinks Program by the project team and by Cuddalore and Nagapattinam for planning and implementation purposes.

Flood Mitigation

The CAD Maps were particularly beneficial in the CityLinks drive to decrease seasonal flooding. Once the land features had been mapped, the CityLinks Team identified low lying areas and drainage issues for communities that were routinely affected by seasonal flooding. The CityLinks Team provided written recommendations in a report entitled *8 Ideas that Work* to these communities and to self-help groups on ways to combat flooding. The CityLinks Team removed the silt from drains to allow for a freer flow of water during monsoon seasons, including over 750 running meters of

drainage in Cuddalore. By cleaning the drains, the cities mitigated the affects of monsoons and allowed communities greater access to the drains, which had historically been clogged with trash, debris and snakes.

In addition, the CityLinks Team hired a local Indian firm to survey both cities to determine and provide recommendations for the best way to tangibly mitigate seasonal flooding. The CityLinks Team worked closely with local communities and municipal officials in Cuddalore and Nagapattinam to design responsive flood mitigation projects. As a result, working designs were developed for both cities and a flood mitigation pilot project was completed in Nagapattinam. Ponds and water bodies were cleaned and linked together, through the widening of 7 ponds that were historically interconnected to reduce flooding for citizens.

Coastal Restoration and Park Development

During the December 2004 tsunami, parks in Cuddalore and Nagapattinam were destroyed. To revitalize these community spaces, the CityLinks Team built two neighborhood playgrounds, soliciting the involvement of over 300 school children, ages 8-12 years old, their parents, teachers and members of the community. These school children drew pictures of their ideal parks, which formed the basis for the final designs that were approved by both communities during stakeholder meetings. The playgrounds were built by hand, within 5 days at each site and with approximately 4000 hours of labor donated by citizens. In-kind contributions were donated by citizens, the government, ICMA and through public private partnerships. In addition to the playground, the CityLinks Team designed and constructed 2 parks, allowing for increased urban greenery and improved gathering spaces for the tsunami-affected communities in Cuddalore and Nagapattinam.

Financial Management

In the area of financial management, the City Links Team worked with Cuddalore and Nagapattinam to increase their own-source revenue generation. More than \$800,000 in back taxes were identified through financial management assistance and, as a result, more than \$500,000 in actual revenues was collected by both cities. The increase in revenue was successful because the CityLinks Team worked hand-in-hand with local government and finance specialists to strengthen their financial skills and institutional capacity. By the close of the project, both cities had updated their financial records, identified outstanding tax payments owed to them and improved the tax collection process. The increase in revenues has allowed Cuddalore and Nagapattinam to pay for and provide better services to citizens.

Improved Services

Public service delivery was addressed through the improvement of the municipal water supply and by encouraging citizens to become more knowledgeable on water services provided to them by Cuddalore and Nagapattinam. After diligent surveying of citizen needs, water testing and review of improvement options, the CityLinks Team installed chlorinators and pressure meters to monitor the flow of water and to decrease the fecal coli form and e-coli content in Cuddalore and Nagapattinam. Chlorination is a low cost, sustainable and effective way to treat water, and is a proven means for decreasing disease among citizens. Pressure meters allow the city to determine when the flow of water has been interrupted, so that they can insure citizens receive regular water service. The installation of chlorinators and pressure meters increased access to pure drinking water for over 65,000 beneficiaries and showed concrete efforts by Cuddalore and Nagapattinam to address both concerns.

Once the chlorinators were installed, the CityLinks Team, in partnership with Cuddalore and Nagapattinam implemented a public relations campaign to encourage citizens to hook up to the municipal water supply and to pay for household water connections. Citizens had previously refused to hook up to the water system because they were wary of the water quality and questioned the regularity at which water was being provided. The campaign publicized the improvements in service delivery through the launching of a video on government television stations, an audio/street campaign,

leaflet distribution and house-to-house meeting. Citizens were educated on the improved quality of the water. By the end of September 2007, 670 applications for water connections were distributed in Nagapattinam and approximately 365 applications were filed by citizens to request water connections. By the end of September 2007, approximately 1200 applications were distributed in Cuddalore and 980 applications were filed by citizens to request water connections. The filing of applications to hook-up to the municipal water supply shows a significant change in the perceptions of citizens in their belief in water quality, as well as their interest in supporting the municipal water system. By successfully hooking citizens up to the municipal water systems, Cuddalore and Nagapattinam have the capacity to increase revenues by at least \$150,000 USD per year.

Model Street

During an exchange visit to Florida, Indian representatives were intrigued by the well-planned streets and sidewalks that were built to accommodate citizens, business and municipal needs. In an effort to recreate these spaces, Cuddalore and Nagapattinam requested that the CityLinks Team design and facilitate the construction of a model street in each city. In response, the CityLinks Program implemented stakeholder meetings, designed model street sections, identified funding/financial structuring opportunities and advocated with municipal/state governments to provide funding support model street development initiatives. Concept papers and proposals were submitted for funding from the State Government of Tamil Nadu, which is pending approval.

Conclusion

The CityLinks Program was successful because it remained a dynamic partnership that responded to municipal needs, was demand driven and improved the quality of life for citizens in Cuddalore and Nagapattinam. Although the program officially ended on September 30, 2007, the partnership fostered lasting international relationships between local government professionals in Florida and India that will continue for years to come. The attached Final Report provides detailed information on the successes summarized above, actual program results reported by Cuddalore and Nagapattinam, as well as mitigating circumstances that may have limited or impeded achievement of the initial benchmarks set forth in the CityLinks Project.

III. Comprehensive Report

A. Background

On December 26, 2004, the Indian coastline experienced the most devastating tsunami in recorded history. The tsunami was triggered by an earthquake of magnitude 9.0 on the Richter scale, off the coast of Sumatra, in the Indonesian Archipelago. Almost all the countries situated around the Bay of Bengal were affected. By any measure, and in any context, the loss of life and property in India was massive. Nearly 80% of deaths along India's southern coast were centered in Tamil Nadu, which also incurred approximately two-thirds of the property damage. Tamil Nadu suffered approximately \$109 million in damages to life and property. Within Tamil Nadu, Nagapattinam and Cuddalore incurred much of the worst damage and loss of life: Cuddalore estimated Tsunami damage restoration at Rs. 128.6 million (equivalent to \$3.2 million USD), while Nagapattinam estimated the cost at Rs. 200 million (equivalent to \$5 million USD).

Though the disaster passed, much work needed to be done to restore and revitalize communities. While Tamil Nadu and the cities of Cuddalore and Nagapattinam responded quickly and efficiently to the immediate challenges posed by the tsunami, the long-term recovery and basic needs taxed their human and financial resources. Availability and resumption of basic services is one of the most important determinants of the quality of life in urban and rural settlements, however, Cuddalore and Nagapattinam had access to limited resources before the tsunami, which became scarcer afterward. Even as both cities struggled to balance their finances and provide for citizens, the tsunami caused significant public and private destruction that had implications for capitol investment, for reconstruction and even greater loss of revenues from damaged properties. Elected and appointed officials that served these communities of nearly 250,000 citizens were hard-pressed to respond to the enormity of the needs their citizens faced and resuming daily delivery of services was difficult.

Discussions with the city governments and the Collectors of Cuddalore and Nagapattinam revealed a strong drive to build back better. Though the tsunami was a tragedy, many officials in Tamil Nadu viewed the disaster as an opportunity for planned redevelopment through implementation of appropriate procedures, processes and systems. To help Cuddalore and Nagapattinam respond to these needs, The United States Agency for International Development (USAID) awarded the CityLinks Post Tsunami Recovery Program in Cuddalore and Nagapattinam, India to The International City/County Management Association (ICMA) in April 2005. The program provided disaster management assistance and guidance on the improvement of the delivery of municipal services to citizens for the local governments in Cuddalore and Nagapattinam. A key component of the program was the CityLinks Partnership between Cuddalore and Nagapattinam and Palm Bay, Oldsmar and Port Orange, FL. Like Tamil Nadu, Florida continually prepares for natural disasters that include unrelenting hurricanes throughout the state. Local and regional government officials from cities like Palm Bay, Oldsmar and Port Orange not only have first-hand disaster response experience, but also provide good service delivery to their citizens.

To capitalize on the knowledge and expertise of Florida city officials, ICMA facilitated a working partnership between Florida, Cuddalore and Nagapattinam to help prepare for and mitigate future disasters along the southern Indian coastline. ICMA and Florida provided pro-bono hands-on technical assistance, capacity building training and focused exchanges, complemented by small and targeted project assistance funding for disaster preparedness, CAD mapping, park/playground development, water delivery, flood mitigation, model street development and financial management. The partnership and program have led to lasting relationships and tangible results that will continue to improve the quality of life for the citizens of both cities. The CityLinks Post Tsunami Recovery program ended on September 30, 2007, culminating in the implementation of a wrap-up symposium which highlighted USAID's and the CityLinks Team's support for the overall recovery of Indian communities, the return of Cuddalore and Nagapattinam to normalcy and the rebuilding of sustainable and self-dependent communities.

B. CityLinks Program Components

1) Partnership Obligations, Council Approval and Memorandum of Understanding (MOU)

U.S. cities participating in the CityLinks Program generally enter into an agreement with ICMA, local partner organizations and the partner city(ies) to provide specific short-term technical assistance. This assistance is provided primarily by city staff, but may also, under the city's direction, be provided by other individuals from the larger community [e.g., universities, chambers of commerce, non-profit organizations]. Prior to engaging in the partnership, the U.S. city is required to have its council ratify an agreement to participate. In so doing, the city will have strong support for continued participation in the program despite any unexpected staff changes.

In the case of the CityLinks Post-Tsunami Recovery Program, Palm Bay, Port Orange and Oldsmar, FL (U.S. Partners) received the necessary council approvals before the program began, which ensured a strong commitment to Cuddalore and Nagapattinam. A formal Memorandum of Understanding could not, however, be signed due to a dynamic political environment, staff transfers and changing priorities at both the state and local levels in India. At the request of the State Government of Tamil Nadu, the CityLinks Team agreed to forgo the signing of a formal MOU. In place of this MOU, The CityLinks Team, the State Government of Tamil Nadu and the municipalities of Cuddalore and Nagapattinam worked closely to define program activities and assistance needs, providing the necessary written approvals and buy-in throughout the life of the project. The lack of a formal agreement did not affect the overall implementation of the partnership, which remained responsive to government and citizen needs, benefited from the continued support of the municipalities and fostered a strong relationship between various departments, staff and officials at all levels of government.

2) Inaugural Visit to India (July 2005)

The partnership and technical assistance were inaugurated during two visits to Cuddalore and Nagapattinam in July 2005. The participants for the Cuddalore exchange included city managers and city planners from the three Florida municipalities of Oldsmar and Port Orange. The participants in the Nagapattinam exchange included Florida city managers from Palm Bay and Palm Beach Gardens. Achievements during the exchanges included: development of a draft work plan and program activities, implementation of meetings with key stakeholders and community leaders, as well as coordination with other donors working in Tamil Nadu, to learn more about their program activities. Based on these inaugural meetings, the partners determined priority assistance areas for Cuddalore and Nagapattinam, which included: financial management, service delivery improvement, coastal management, GIS mapping, disaster mitigation, park redevelopment and overall rehabilitation of tsunami affected communities.

3) Inaugural Visit to Florida (January 2006)

In January 2006, 10 municipal and state officials, as well as local CityLinks Team staff members, traveled to Florida to see disaster mitigation and management tools, service delivery initiatives, mechanisms for facilitating citizen participation and basic management techniques for implementing daily functions of the government. The exchange included state relief commissioners, state commissioners of municipal administration, municipal medical officers, municipal engineers and municipal commissioners/collectors. During the exchange, participants were involved in plenary sessions on disaster management, economic development, coastal management and water/sewage plants. Site visits were conducted to water utility operations, retention ponds, city parks and dune restoration sites. In addition, the delegation was exposed to development of disaster mitigation plans and strategies for building sustainable local economies.

4) Development of Work Plan

ICMA believes strongly that improved local governance is best achieved by ensuring sound financial management practices, effective service delivery, support of economic development initiatives and encouragement of community participation. By adhering to these principles, cities are well-positioned to provide a decent quality of life for citizens who are, in turn, more willing to participate in community decisions, pay taxes for quality services and raise revenues that allow the government to grow and remain self-sustainable. All program activities and pilot projects implemented under the

CityLinks Program were developed with these principles in mind. As a result of the inaugural visits, technical exchanges and comprehensive meetings, USAID, the CityLinks Team, the State Government of Tamil Nadu, Cuddalore and Nagapattinam identified leading practices for replication, determined opportunities for assistance and prioritized municipal needs.

A revised work plan was drafted and program activities and technical assistance efforts were narrowed down to allow for the implementation of tangible results-oriented activities in the following areas: CAD mapping, model street development, park restoration and playground development, coastal management, financial management, improvement of service delivery with a specific focus on the provision of water and flood mitigation. The updated work plan identified specific pilot projects that were implemented over the course of the project in Cuddalore and Nagapattinam and supported the following objectives:

- To develop comprehensive GIS base maps for Cuddalore and Nagapattinam to increase the ability of both municipalities to plan, prepare for and develop infrastructure, provide improved services and increase financial revenue.
- Strengthening of the institutional capacity of Cuddalore and Nagapattinam through the improvement of the overall financial system, leading to an increase of tax revenue collection and water user charges.
- Increase in the collection of property tax revenue and water fees, improving the overall financial status of Cuddalore and Nagapattinam.
- Improvement of the existing water supply system in relation to the quality and quantity of water provided to each user by the municipality.
- Improvement in access to information for the citizens and to increase transparency in urban governance for better service delivery.
- Ensuring the environmental sustainability of the damaged beachfront of Cuddalore and Nagapattinam and providing improved access to greenery and public spaces.
- Capacity building of Cuddalore and Nagapattinam to mitigate the impact of future floods resulting from heavy rains, storm surges and tsunamis.
- Establishment of a 'model' street in both Cuddalore and Nagapattinam that incorporates significant elements of a new and improved street design and right-of-way management, including street striping, signage, parking, walking areas/sidewalks, lighting, trash collection, and drainage.

C. From Work Plan to Implementation-Partnership Accomplishments

1) *CAD Mapping*

Mapping is a crucial element for urban planning, municipal infrastructure, successful delivery of services and disaster preparedness. Before implementation of the project, both cities were using municipal maps that had not been updated in more than 30 years (and in some cases 80 years.) The information that had been updated was done through pencil markings and not by official mapping procedures. To respond to the lack of information, the CityLinks Program developed and completed CAD base maps for both cities with detailed data layers. The maps that were completed included all relevant geographic features, public infrastructure systems and facilities, land uses and building structures, topography (for mapping vulnerable flooding areas), municipal boundaries, building foot prints, open spaces/water bodies/ parks, road network, railways, current land uses including port and fishing industry activity, storm shelter facilities and temporary housing projects. The maps were used to inform all program activities, providing Cuddalore and Nagapattinam with better information and improving the ability of both municipalities to plan, prepare for and develop infrastructure, provide improved services, increase financial revenue and prepare for disasters. By knowing where buildings and land features were located, the cities are better equipped to evacuate during emergencies and respond to vulnerable populations more quickly.

To ensure that Cuddalore and Nagapattinam took ownership and were responsible for updating the base maps, the CityLinks Team advocated for the purchase of CAD mapping software. Throughout the life of the project, meetings were held with state and local government officials to highlight the importance of mapping functions. As a result of this advocacy, during this quarter, the State Government of Tamil Nadu purchased and distributed the software to Cuddalore and Nagapattinam, as well as to 8 other cities in the state. The procurement of this software symbolizes a strong technical and financial commitment from the state to support CAD mapping functions and represented an in-kind contribution of approximately \$25,000. By investing in this software, each city is able to monitor infrastructure, land use and property changes in each community, which will inform future services provided to citizens.

To promote lasting sustainability, the CityLinks Team worked closely with Cuddalore and Nagapattinam to identify and train municipal staff to update the maps so that they remain relevant after the close of the program. In September 2007, staff members in Cuddalore and Nagapattinam were trained on the CAD software, providing them with the technical and technological resources to continue municipal mapping functions. In the future, Cuddalore and Nagapattinam may also use the CAD maps and GIS technology to manage other types of data such as personal income levels and neighborhood crime statistics. The data mapped for Cuddalore and Nagapattinam may be utilized by the Government of Tamil Nadu to link with its e-governance projects to identify locations of paying water customers and property tax collections, which will allow for better monitoring of collection and ultimately assist in increasing revenue generation and further improving the delivery of services to citizens.

2) *Financial Management*

a. Revenue Generation and Collection

The CityLinks Team worked closely with Cuddalore and Nagapattinam to strengthen institutional capacity by improving municipal financial systems and procedures and by facilitating the increased collection of property taxes and water fees. The overall objective was to improve the financial status of Cuddalore and Nagapattinam, so that they would have more revenue to provide efficient, regular and responsive delivery of services to meet citizen needs.

Throughout the program, the CityLinks Team provided technical guidance and support to Cuddalore and Nagapattinam. In October 2005, the CityLinks team implemented a study tour for both cities to the Indore Municipal Corporation. The purpose of the study tour was to expose them to the innovative practices and reforms in tax billing and collection methods. The study tour provided opportunities for replication in Cuddalore and Nagapattinam and increased overall awareness of tax collection/billing systems. By showing Cuddalore and Nagapattinam the successful practices in Indore, the CityLinks team was able to pave the way for systemic improvements in both cities.

As a result of the tour, Cuddalore and Nagapattinam underwent a significant financial review process. In partnership with the CityLinks Financial Management Consultant, Cuddalore and Nagapattinam assessed their financial management systems, developed strategies and solutions for revenue generation methods and identified alternative and innovative ways to increase revenue collection. The CityLinks Team provided appropriate training, technical expertise and assistance to conduct analyses of existing financial systems. Accountants worked in Cuddalore and Nagapattinam to ensure that numbers and information were collected and accurately reported for the past two years. The assistance allowed Cuddalore and Nagapattinam to reconcile balance sheets, clear outstanding audit adjustments educate top management staff in their current loan position and do an analysis of the loan repayment schedule. Recommendations were also provided to Cuddalore and Nagapattinam, to motivate the residents of the municipality to pay taxes. Tax collection information (property tax, water tax, professional tax and rental taxes) was documented by ward and by street to identify

payers/non-payers. From this information, tax collection gaps were identified and recommendations were provided to the municipalities for improvement.

To collect these revenues and to target the most egregious defaulters, the CityLinks Team developed a list of the top 100 defaulters in each city. This list provided a starting point for collection of outstanding taxes for both cities and, as an end result, Cuddalore and Nagapattinam are more financially sound. Over \$800,000 in back taxes were identified over the life of the project, with more than \$500,000 collected in both municipalities. This additional revenue has been used to pay for improved services, cover municipal loans and improve the financial standing of both cities. Citizens now understand that tax collection in Cuddalore and Nagapattinam is a priority and they are more responsive in paying their fees.

b. Property Tax Survey

In addition to collecting taxes from defaulters, the CityLinks team completed an extensive property tax survey in Cuddalore. The property tax survey in Cuddalore extended into all 45 wards and identified buildings that were either new or not listed in the government records, had uses that were improperly identified, and/or were incorrectly assessed. As a result of the survey, up to 20,000 properties should be reassessed by Cuddalore, which will lead to an increase in property taxes collected by the city. The CityLinks Team submitted these findings to the collector in Cuddalore, who plans to use the summary reports to begin collecting outstanding property taxes from citizens and businesses. At the collector's request, the CityLinks Team presented the process/methodology adopted during the survey, along with the findings, during the CityLinks Post Tsunami Recovery Wrap-up Symposium in September 2007.

3) *Coastal Restoration*

At the outset of the project, the CityLinks Team hired an eco-restoration expert to study the coastlines of Cuddalore and Nagapattinam to prepare recommendations for the re-establishment of natural vegetation. The report identified natural vegetation along the coastline that can be used for dune restoration, documented plant species and primary sand dune formations and identified potential eco-restoration strategies from the town. The report was vetted and discussed with state, district and municipal officials, however, based on municipal priorities, available funding, and the difficulty in getting state and central government approvals for eco-restoration work, no additional eco-restoration assistance was undertaken for the remainder of the project.

4) *Playground and Park Redevelopment*

a. Playground Construction

During the January 2006 visit to Florida, Indian officials were exposed to a playground site that had been designed and built directly by the community with help from a U.S. firm that oversaw the building process. Municipal officials were excited at the prospect of building similar playgrounds and parks in Cuddalore and Nagapattinam and requested technical assistance and funding from the CityLinks Team. In support of the work plan objective to improve access to greenery and public space, and to revitalize community spaces lost during the 2004 Tsunami, the CityLinks Team agreed to support this effort and recruited the same U.S. Firm (Leathers & Associates) to oversee the process.

After the CityLinks Team confirmed significant community and stakeholder buy-in, Cuddalore and Nagapattinam agreed to donate the land for the development of 2 playgrounds and parks. Over 300 school children, ages 8-12 years old, drew pictures of their ideal parks, which formed the basis for the final designs that were approved by both communities during stakeholder meetings. In January 2007, the playgrounds were built by hand with approximately 650 days of labor for Cuddalore and 540 days of labor for Nagapattinam donated by women, children, students and community volunteers. Public-private partnerships alleviated the cost of the build, with Leathers & Associates donating over

\$16,000 in labor contributions, the community of Cuddalore collecting over \$500 in door-to-door contributions and sponsoring three meals per day for all volunteers and carpenters. The Municipality of Nagapattinam beautified the playground site by funding the renovation and repair of community restrooms. In addition, Cuddalore and Nagapattinam committed to maintaining the playgrounds and parks after the close of the project. Both cities received maintenance plans for the playgrounds and have direct access to Leathers & Associates to ensure further sustainability.

b. Park Construction

In addition to the playgrounds that were developed with community participation, the CityLinks Team designed and built two parks in Cuddalore and Nagapattinam. Construction of the parks began in early 2007 and culminated in September 2007. The parks are located in well-traveled areas and provide meeting places for tsunami-affected communities including picnic areas, benches, planting of greenery, establishment of lines for watering plants and construction of surrounding park walls for safety. Both Cuddalore and Nagapattinam donated time and resources for the completion of the parks and accepted ownership for maintaining the sites. In Cuddalore, the commissioner and collector authorized the provision of approximately \$9,300 towards the construction of the park, which was used to alleviate the cost incurred by the CityLinks Team. Both cities also incurred costs for the construction of compound walls to ensure the safety of children and sustainability of the park.

5) *Flood Mitigation*

Cuddalore and Nagapattinam struggle with flooding which is a result of heavy rains, storm surges and tsunamis. The tsunami highlighted the importance of building the capacity of both cities to respond to natural disasters, to plan for seasonal/inclement weather and to determine ways to mitigate flooding. The CityLinks Team structured technical assistance and designed pilot projects with these capacity building and flood mitigation efforts in mind. At the outset of the program, the CityLinks Team conducted a vulnerability analysis of temporary housing and distributed a report (*8 Ideas That Work*) that included action recommendations for improvements of future shelter construction that were distributed to the state collectors, commissioners, and appropriate NGOs. Technical support was also provided to NGOs who were interested in carrying out improvement work in the temporary shelters. The CityLinks Team conducted a study to better understand how the cities function during cyclones and included a study of management responsibilities (local, state and community), a list of buildings that are used as emergency shelters and basic necessities that need to be provided in case of emergency. In addition, the CityLinks Team hired a local Indian firm to survey both cities to determine and provide recommendations for the best way to tangibly mitigate seasonal flooding. The CityLinks Team worked closely with local communities and municipal officials in Cuddalore and Nagapattinam to design flood mitigation projects which culminated in the implementation of a flood mitigation pilot project in Nagapattinam.

Flood mitigation activities were completed in Nagapattinam in September 2007 and included the widening and cleaning of 7 ponds that were historically interconnected. The reason for connecting the ponds was to allow for a free flow of water during storm surges and to provide a natural system for draining the water that accumulated as a result of inclement weather. Stakeholder meetings were held with residents and businesses in the pilot project area to ensure buy-in and the necessary community support to maintain the pond connections. After soliciting approval from the stakeholders, drainage cleaning and pond connection initiatives were implemented and will lead to decreased flooding and a safer living environment for citizens in Nagapattinam.

6) *Improved Services*

a. Improved Citizen Access to Water Supply

As a result of site visits, exchanges, community surveys and reviews of the existing water situation by Florida experts, Cuddalore and Nagapattinam requested technical assistance and pilot project funding for improvement of water quality and better access to cleaner water for citizens. In 2006, ICMA, in coordination with Indian and American firms, designed and conducted surveys to better understand water needs in Cuddalore and Nagapattinam. The survey solicited citizen perceptions of municipal water services and the availability of clean water. The survey focused on residents who lived in areas where municipal water connections were currently available but had significant numbers of residents who chose not to hook into the municipal water systems or who subscribed to in-home water pipes but chose not to pay their water bills in full. The survey results showed that most citizens would be more willing to pay for water service if the quality and delivery were better. Citizens believed that the municipal water quality was poor and unhealthy, and were unwilling to hook up to the system or pay for it until it was improved.

In response to the survey findings, the CityLinks Team worked closely with Cuddalore and Nagapattinam, as well as with self help groups and other agencies to conduct water quality testing. The results showed trace amounts of e-coli and fecal coli form, which are known to cause bacterial infections, cholera and other diseases among children and elderly. Improvement of water quality became a top priority for both cities, which prompted the CityLinks Team to facilitate an exchange for a pro-bono Florida water expert, who traveled to Cuddalore and Nagapattinam in January 2007, to determine the best way to improve water quality. The CityLinks Team also met with other donors, including the Asian Development Bank (ADB), to determine how to best compliment their on-going water technical assistance efforts. After reviewing the ground realities and conducting meetings with municipal officials in both cities, the Florida water expert proposed the use of chlorinators to remove the e-coli and fecal coli form, which are a cost effective, efficient and environmentally friendly way to address water quality issues.

Cuddalore and Nagapattinam were eager to install chlorinators in their cities and requested financial and technical assistance from the CityLinks Team to make it happen. To show their commitment and support for the chlorinators, Cuddalore and Nagapattinam donated the land and pledged to handle all maintenance costs/needs after the close of the project. Both cities solicited and received approval for the chlorinators and provided letters of approval to the CityLinks Team to install chlorinators in their cities. As a result, the CityLinks team installed ISO-certified chlorinators in Cuddalore and Nagapattinam providing improved, healthier water to citizens, which lead to greater citizen confidence in the water quality and municipal service delivery. To ensure sustainability, the CityLinks Team also installed pressure meters, which are being used as part of the monitoring and evaluation effort of water service delivery. The pressure meters allow Cuddalore and Nagapattinam to measure water quality, determine efficacy of the chlorinators and respond to water flow needs regularly.

b. PR Campaign

To showcase the chlorination effort and improved water quality, the CityLinks Team conducted an education campaign in targeted wards throughout both cities. The purpose of the education campaign was to show the tangible steps Cuddalore and Nagapattinam took to improve water quality, to increase the number of citizens connected to the municipal system and to generate more revenues for the city so that they can continue to improve water and other municipal services. The campaign included the launching of a video on government television stations to publicize water efforts in the city, an audio campaign on the streets, leaflet distribution and house-to-house meetings with citizens to educate them on the improved quality of water. By the end of September 2007, 670 applications

for water connections were distributed in Nagapattinam and approximately 365 applications were filed by citizens to request water connections. By the end of September 2007, approximately 1200 applications were distributed in Cuddalore and 980 applications were filed by citizens to request water connections. The filing of applications to hook-up to the municipal water supply shows a significant change in the perceptions of citizens in their belief in water quality, as well as their interest in supporting the municipal water system. By successfully hooking citizens up to the municipal water systems, Cuddalore and Nagapattinam have the capacity to increase their revenues by at least \$150,000 USD per year.

7) *Model Streets*

The original SOW for the CityLinks Program included implementation of stakeholder meetings, design of model street sections, identification of funding/financial structuring opportunities, advocacy with the municipal/state governments for approval and oversight of implementation once approval was granted in both Cuddalore and Nagapattinam. The CityLinks Team completed each of these activities, with the exception of the physical implementation and construction of the model street sections. Given that this is a CityLinks Program, which is built upon the creation of partnerships, it was imperative that Cuddalore, Nagapattinam and the state government approve all activities and provide matching funding support for implementation. Approval shows buy in and a willingness to fund costs directly, and is required for the sustainability of the projects. The CityLinks Team received approval from the municipal governments of Cuddalore and Nagapattinam, who supported the implementation of model street construction. In partnership with these cities, the CityLinks Team developed concept papers, created budgets, provided the designs and completed working drawings for physical implementation. The CityLinks Team also identified ADB funding for the projects, which is released when approved by the state government.

To confirm municipal buy in, Cuddalore and Nagapattinam submitted the concept papers, requisite documents and ADB funding requests directly to the state government. Both cities and the CityLinks Team followed up with substantial advocacy, meeting with the ADB and state representatives regularly (often on a weekly basis) to release the necessary funding. Advocacy continued throughout the life of the project, however, approval was not granted. As a result, the CityLinks Team officially completed technical assistance efforts under model street activities this quarter, but were unable to oversee implementation efforts.

D. CityLinks Post Tsunami Recovery Program Wrap-Up Symposium

On September 22, 2007, USAID, the CityLinks Team and the municipalities of Cuddalore and Nagapattinam partnered to implement the CityLinks Post Tsunami Recovery Wrap-Up Symposium. The symposium highlighted the partnership objectives, the work completed over the life of the project, the municipal successes and the benefits of each of the pilot project activities on the daily lives of citizens in both communities. Over 30 people attended the symposium, including representatives from City Managers Associations (CMAs) in Orissa and Karnataka, municipal officials from Cuddalore and Nagapattinam, representatives from the State Government of Tamil Nadu, international NGOs and consultants who ensured the successful implementation of project activities. Key note speakers included:

- Mr. David Hopper (Consul General, Chennai)
- Mr. CV Shankar (Officer on Special Duty and PD for Tsunami Relief, IAS)
- Mr. Anand Rudra (Cognizant Technical Officer, USAID)
- Mr. Jon Bormet, Director of the CityLinks Program

Throughout the symposium, expert presentations were conducted on financial management, water, model street development, chlorination techniques, CAD mapping, flood mitigation and service delivery. The presentations highlighted the program successes and exposed participants to innovative

governance practices in Florida and India. The symposium also provided an opportunity for partners to discuss next steps, outline ways to ensure the maintenance of the park, playground chlorination and pond restoration sites, discuss the importance of stakeholder involvement in the future and renew their commitment to continued ties between Cuddalore, Nagapattinam and Florida. By inviting and including diverse participation in the symposium, ICMA and USAID insured that the innovative practices achieved through the CityLinks Program will be disseminated and replicated in other cities throughout India.

As part of the dissemination effort, the CityLinks Team compiled information and wrote case studies on the successes and benefits of financial management, CAD mapping, flood mitigation and improvement of service delivery activities for Cuddalore and Nagapattinam. These case studies were distributed to all of the participants during the conference and showed the methodology that was used for implementation of all pilot projects. The case study documentation will be provided to all of the CMAs in India to facilitate replication and improved urban governance.

E. Conclusion

The CityLinks Program was successful because it remained a dynamic partnership that responded to municipal needs, was demand driven and improved the quality of life for citizens in Cuddalore and Nagapattinam. Although the program officially ended on September 30, 2007, the partnership fostered lasting international relationships between local government professionals in Florida and India that will continue for years to come. The attached Final Report provides detailed information on the successes summarized above, actual program results reported by Cuddalore and Nagapattinam, as well as mitigating circumstances that may have limited or impeded achievement of the initial benchmarks set forth in the CityLinks Project.