Ex post evaluation – India

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Sector: 24030 - Formal sector financial intermediaries
Programme/Project: Urban infrastructure development Tamil Nadu - 2006 66 107* (interest subsidy), 2006 66 081** (bond issue) and 2007 70 024 (accompanying measure)
Implementing agency: Tamil Nadu Urban Development Fund (TNUDF) / Tamil Nadu Urban Infrastructure Financial Services Limited (TNUIFSL)

Ex post evaluation report: 2017

		Projects (Planned)	Projects (Actual)
Investment costs (total)	EUR million	77,00	76,75
BMZ No. 2006 66 107	EUR million	65,00	65,00
BMZ-No. 2006 66 081	EUR million	10,00	9,75
BMZ No. 2007 70 024	EUR million	2,00	2,00

*) Random sample 2013 **) Random sample 2016

Summary: The project included financing municipal infrastructure in the Indian State of Tamil Nadu through two investment components and a complementary measure. The first component featured a FC loan (subsidised interest loan) of 65 million EUR for municipal investments in infrastructure. The second component featured a FC loan of 10 million EUR to support the capital structure of an investment vehicle for emitting bonds. This structured vehicle bundled infrastructure loans for participating municipalities. Thus smaller and medium-sized municipalities can issue a group bond, which is then placed on the capital market as a municipal bond for private and institutional investors. For a total of 2 million EUR, complementary measures aimed at helping municipalities to prepare their projects and at supporting the fund manager TNUIFSL issuing the bonds and developing an asset-liability management system.

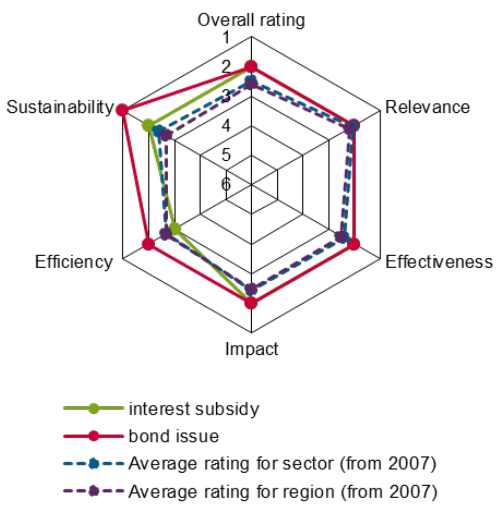
Development objectives: The module goal was to promote investment in municipal infrastructure that generates positive impacts on the environment, and mobilising private funds for municipal infrastructure in Tamil Nadu. The overarching developmental goal of the project is contributing to an ecologically sound infrastructure at municipal level as well as to developing the capital market for municipal bonds.

Target group: The immediate target group were the municipalities i.e. ULBs (Urban Local Bodies), which can submit project proposals for ecologically sound infrastructure to TNUDF for financing within the credit line. The ULBs also are provided with a platform for partial refinancing of their infrastructure demand using the capital market. The ultimate beneficiaries of the project are the users of the improved urban infrastructure and thus the population of the participating municipalities.

Overall rating: 2 (interest subsidy), 2 (bond issue)

Rationale: The project provided access for municipalities to financing and to the capital market for financing infrastructure projects. Building underground sewage systems, water supply systems and sanitary facilities increased the living conditions of the target group in a significant way, and reduced their economic burden as well as the pollution of the environment. In addition to this, the bond issue component contributed specifically to the development of the financial system.

Highlights: The project finances municipal infrastructure projects and contributes to the development of the finance sector. Setting up a structured bond fund mobilised private capital from institutional and private investors for developmental purposes. Furthermore, the project clearly led to a positive impact on the environment.



Rating according to DAC criteria

Overall rating:

Interest subsidy (BMZ-No. 2006 66 107): 2

Bond issue (BMZ-No. 2006 66 081): 2

Overall context

The project, which was launched in 2008, involves the financing of municipal infrastructure projects in the Indian state of Tamil Nadu. The investment components include:

1. Providing an FC development loan (interest subsidy) under SMIF-TN 1 (Sustainable Municipal Infrastructure Fund - phase 1) amounting to EUR 65 million for investment in municipal infrastructure with a positive impact on the environment;

2. Providing an FC loan under the WSPF (Water Sanitation Pooled Fund) amounting to EUR 10 million as financial support for the financing vehicle for issuing bonds;

3. Supporting measures amounting to EUR 2 million aimed at helping municipalities with the detailed planning of infrastructure projects and fund manager TNUIFSL (Tamil Nadu Urban Infrastructure Financial Services Ltd.) with issuing bundled bonds and the development of an asset liability management system.

Due to inadequate tax receipts at all levels, much of the funds required for infrastructure projects have to be mobilised via the financial system. Until now, this has only offered limited opportunities for financing infrastructure projects with long loan terms.

The central and/or state governments in India supported the establishment of infrastructure finance companies and specialised infrastructure funds such as the TNUDF. These institutions seek to combine the financing expertise of private actors and the political support of the state government via public shareholders.

The TNUDF was established in 1996 as a fund under the 1882 Trust Act by the government of Tamil Nadu and three private financial institutions in the form of a public-private partnership, and serves solely as a vehicle for financing. As the fund manager TNUIFSL does not have any direct influence on the building contractors and operators of the infrastructure projects because the cities and municipalities (urban local bodies, ULBs) are the sole owners of the facilities.

Two bonds with a total volume of around EUR 14.6 million were issued with the help of an FC loan amounting to EUR 10 million in the form of a subordinated loan to the WSPF and a first loss tranche amounting to around EUR 2.7 million financed by the state of Tamil Nadu. Combined with the TNUDF's other funds, the bonds contributed a total volume of around EUR 96[1] million to the financing of 18 projects. In order to determine a rating and issue the bonds it was necessary to select the projects of the various ULBs in advance in order to be able combine them into a portfolio. Some of the infrastructure projects chosen had already been completed by the time the bonds were issued, and the other projects were at an advanced stage of construction. The TNUDF created a funding window with the designation SMIF-TN 1 for the FC development loan amounting to EUR 65 million. A total of 15 projects were financed, ten of which had been completed by the time of the evaluation.

Relevance

The infrastructure projects of all ULBs in Tamil Nadu typically face a financing bottleneck because the tax receipts are not sufficient for the huge volume of urgent investment needs in infrastructure, which are also due in part to strong population growth, to be financed using public funds. In addition to underdeveloped

[1] This was based on the average exchange rate for the months in which each bond was issued (08/2012 for the first bond and 05/2013 for the second)

and outdated infrastructure, demand for investment in infrastructure is being fuelled by rising population growth. However, ULBs often only have low credit ratings and therefore limited access to the financial market.

The inadequate provision of infrastructure such as a supply of drinking water and the disposal of waste water impacts living conditions for the urban and rural populations of the municipalities in Tamil Nadu. Obtaining water takes a lot of effort and/or costs. Women are often put in charge of getting drinking water, and this takes up time that they are unable to spend doing other activities, or families are dependent on private water dealers who charge high prices for water that is often of unknown origin. Collected waste water is often channelled into the environment untreated. The pollution of the water poses a threat to the ecosystem and to the health of the population. Against this backdrop, the impact chains assumed at the project appraisal remain valid.

The module targets were based on the typical deficiencies of the financial sector that had been identified: the absence of banks and private investors investing in infrastructure projects, the underdeveloped nature of the bond markets and the lack of other suitable financial intermediaries. Local, commercial banks are currently unwilling to take on risks in connection with the financing of infrastructure over periods of more than ten years for reasons relating to risk and yield. These shortfalls were addressed by issuing a long-term loan to the TNUDF with a term of 12 years under SMIF-TN 1 and 40 years under WSPF.

The project's approach was suitable for reducing financing bottlenecks in the field of infrastructure and implementing the financing of public infrastructure. With respect to the problematic conditions in the financial sector, the TNUDF is well-integrated as a financial vehicle and closes the existing financing shortfall. This is particularly true for the concept for placing bonds, which mobilises public and private funds to finance infrastructure projects.

The project is in keeping with the BMZ's financial sector concept, which envisages the promotion of environmentally friendly investment in infrastructure and the development of the financial sector.

The government of Tamil Nadu has set itself the target of providing sufficient and adequate water supply and waste water disposal systems to all of the state's municipalities, with the projects to be financed by the TNUDF. The TNUDF has financed water supply and waste water disposal systems in about 70 of the state's 124 municipalities to date. Before these projects were implemented, the municipalities in question struggled with fundamental problems with their water supply and waste water disposal systems, as well as severe problems with respect to the environment and pollution. There is also an urgent need for financing in the other municipalities, making the project still relevant today. The concept behind the project was appropriate on the whole, and was designed to be subsidiary to the Indian government's own efforts.

German FC, the World Bank and the Japan International Cooperation Agency (JICA) act as international donor agencies under the TNUDF. Each donor has its own project pipeline under its respective funding window. There is no competition between donors on account of the huge demand for finance for infrastructure projects. There are also some differences between the institutions with respect to their loan terms and their focus in terms of infrastructure sectors.

To summarise: it is assumed that the relevance of the projects was and remains high.

Relevance rating: 2/2 (interest subsidy/bond issue)

Effectiveness

The targets specified in the project appraisal provided for the promotion of municipal infrastructure projects with positive effects on the environment in Tamil Nadu and the mobilisation of private funds for urban infrastructure projects. The achievement of the project's target indicators can be summarised as follows:

Indicator	Status at ex-post evaluation
(1) The rapid and complete utilisation of the credit line with environmentally friendly urban infrastructure projects within the five years following the signing of the loan agreements.	Achieved. Funds were fully utilised within five years of signing the loan agreements.

(2) Placement of all of the municipal group bonds on the capital market within three years of signing the loan agreements.	Achieved to a large extent (92.5% achieved). EUR 9.25 million has been utilised out of a total of EUR 10 million. [2]
(3) The projects financed using the credit line's funds are operating in accordance with the criteria specified in the project planning three years after completion, and achieve the specified minimum volumes.	Achieved. The Trichy Roads, Tiruppur Storm Water Drains (SWD), Panruti SWD and Tirunelveli WSIS infrastructure projects were completed three years ago. The projects have been operating in accordance with the criteria specified in the project planning since they were launched. The other projects had not yet been operating for three years at the time of the EPE.

It was not possible to place all of the municipal group bond because a fixed exchange rate was specified in the financing agreement. The devaluation of the Indian rupee meant that the available volume of investment was not paid out in full. The nominal failure to achieve the target for the indicator is due to an exchange rate effect. The funds from the bond issue that were not used up were assigned to the successor facility SMIF-TN 2, which was also financed using FC funds (BMZ no. 2011 66 446).

Indicator 3 only relates to infrastructure projects under the first investment component (SMIF-TN 1), since projects financed in connection with the bond issue were already at an advanced stage (i.e. past the project design phase). The criteria defined in the project planning for the projects selected for the issue of the bond were not disclosed to KfW, and can therefore not be evaluated.

The achievement of the targets was due to a range of factors, including the fund manager's professionalism, the close support provided to the project by the TWAD (Tamil Nadu Water Supply and Drainage) Board and the complementary measure to set up the bond vehicle. The complementary measure's intended objectives (improving the fund manager's asset liability management, preparing detailed project reports and the project pipeline) were achieved. The complementary measure therefore contributed to the achievement of the project's goals.

We can summarise by saying that the targets relating to financing were met to a significant extent. Based on the sample looked at, the targets defined for the operation of the infrastructure projects were met in full. Infrastructure projects completed within the last three years are very much expected to meet their targets, in all likeliness before the three years are up.

Effectiveness rating: 2/2 (interest subsidy/bond issue)

Efficiency

TNUIFSL is responsible for forwarding the funds provided by the international donor agencies and government agencies to the municipalities. The fund manager is very professional and has been generating surpluses for many years. The EBIT margin, which indicates how profitable the company is, has been 9.5% p.a. or more for the last five years. The return on capital employed (ROCE) has ranged from 6% to 7% p.a. during the same period. The company's total assets have grown steadily without causing its credit quality to deteriorate. A standardised and efficient investment process is used to assess and rate the loans.

The fund's structure helps ensure the coordination of the various donors' contributions as well as coherency among the donors.

[2] An amount in INR was specified when the contract was concluded that corresponded to the volume of investment available in EUR. The value of the INR then fell, as a result of which a lower volume of investment was required in EUR in order to cover the amount specified by the contract in Indian rupees.

Employees of the TWAD Board provide quality assurance and ensure the continuity of operations for smaller cities and municipalities.

The fund's loans to the ULBs are tailored well to the latter's needs. They have longer terms to maturity than are customary for commercial banks, and the annual interest rates of between 8.0% and 9.5% for projects financed under SMIF-TN1 are (well) below the interest rate for municipal infrastructure projects on the national capital market. The ULBs' financing costs for the infrastructure projects under the WSPF fell to 7.1% and 6.4% p.a. respectively in the two bond issues, due in part to the favourable IDA conditions of the FC loan.

The project planning ensures that the costs of operation and maintenance are covered by fee income at all times, and that full repayment of the loan is guaranteed in the long term. If the ULBs are unable to keep up with their loan repayments, the government will step in and redirect the tax money payable to the ULBs from the national budget on account of the financial equalisation process to the fund or the investors. The ULBs have always met their payment obligations thus far, and there are no outstanding payments.

A number of projects were delayed due to the complex and extensive process of coordinating the various parties involved in financing and implementing projects under SMIF-TN 1 (the fund manager, the ULBs, TWAD, the authorities, the construction companies). This was due in part to the at times lengthy process of applying for a building permit (from the National Highways Authority of India or Indian Railways) for water supply and waste water disposal projects running parallel to or beneath the roads and tracks of the public railways. Changes were also made to the project concept and with respect to the procurement of materials, as well as switching to different (sub-)contractors. There were also delays on the part of the commercial developer, and in two cases legal disputes regarding the amount of compensation paid for laying pipes on private ground. This contrasts with the projects financed using bonds, where there were no significant delays because these projects were almost ready for operation or already in operation when the bonds were issued. .

The delays to the implementation and completion of the project impacted the project costs, making it less profitable and efficient. While the time required to implement road-building projects (including street lighting) amounted to one or two years in the past, it ranged from four to ten years in some cases for water supply and waste water disposal projects, which substantially reduces efficiency. A number of water supply and waste water disposal projects that were the subject of high levels of public and political interest, on the other hand, were completed on schedule or even earlier than planned.

The intended timeline was not completely complied with as a result of these delays. Although the funds were utilised in full within five years of signing the contracts, the disbursement of funds was delayed in relation to the original timeline. By the time of the EPE, however, all of the funds under SMIF-TN1 had been disbursed. By the time of the bond issue, these projects were promoted by other financial facilities provided by the fund (World Bank and JICA).

Differences in the expertise and quality of the construction companies and their sub-contractors resulted in variations in the quality of construction services. Improper building work, particularly towards the start of the first phase (SMIF-TN1), made it necessary to intensify the supervision and monitoring of construction activities, which increased the workload and costs accordingly.

Taking the peculiarities of the Indian capital market into account, the financial vehicle for the issue of bonds is a highly efficient instrument for mobilising private funds. Private investment totalling EUR 14.6 million was mobilised for the two bond issues with the help of FC funds amounting to EUR 9.25 million as a subordinated tranche and EUR 2.7 million as a first loss tranche.

Efficiency rating: 3/2 (interest subsidy/bond issue)

Impact

The project appraisal did not define any dedicated indicators for the achievement of overarching goals (contribution to environmentally friendly municipal infrastructure and development of the capital market for municipal bonds). Instead, it was assumed that the overarching goals would be achieved once the project's goals are achieved (promoting infrastructure measures that help improve the environmental situation and mobilising private financial resources for that purpose). This correlation seems plausible from today's perspective, but the project target indicators do not provide any direct indication of the extent to which the individual financed projects actually have a positive influence on the environmental situation.

The active involvement of the ULBs, the support and cooperation of the public and the pressure exerted by the public on the authorities, the rapid issuing of permits by the relevant departments for individual projects and the political will to provide the entire federal state with water supply and waste water disposal systems contributed to achieving project's objectives. The operating support of the fund manager and the technical know-how of the TWAD Board beyond completion also made a positive contribution to the project.

The projects significantly improved the living conditions of the population living in the project regions, and reduced their economic burdens. Based on experiences in the water sector, it is plausible that the provision of basic infrastructure, a water supply and water disposal for the population saves time and reduces household spending. The inadequate supply of drinking water forced residents to collect the water required for the household in containers, and to dispose of waste water collected in septic tanks at great effort. The time saved can now be used for other activities that generate income, and therefore provides a boost to household incomes. The extent to which the target population was reached can be measured based on the number of households connected to the water supply and waste water disposal network. At the time of the ex-post evaluation, more than 25,000 households in the five ULBs visited were benefiting from the infrastructure projects.

The construction of underground waste water disposal systems, water supply systems and sanitary facilities significantly reduced the pollution of the ground and the environment as well as rates of open defecating. Representatives of local hospitals are seeing a drastic fall in sickness rates thanks to a reduction in (sometimes fatal) diseases such as dengue fever, malaria and (water-borne) diarrhoea. This is due in part to the more hygienic environment, improved water quality and also the reduced threat posed by mosquitoes. The project has also reduced the lowering of the water table. It also promotes equality between the sexes, as women now have more time to spend working since they spend much less time collecting water. Speaking in general, the infrastructure projects have boosted economic activity by making the ULBs attractive for further investment once basic utilities such as water, waste water disposal and electricity were available.

The overarching effects of the bond issue lie in the development and consolidation of the financial market. The bond could not by nature provide any impetus for the creation of environmentally friendly infrastructure because these funds ultimately replaced existing financing from other TNUDF facilities (World Bank and JICA). The WSPF is an important link between the domestic capital market on the one hand and the need for infrastructure financing in Tamil Nadu's ULBs on the other. The issue of the bonds benefited small and medium-sized municipalities in particular.

The hoped-for development of the capital market can for example be measured based on the number of ULBs that have been given access to the financial market. The loans issued to the ULBs by the fund manager TNUIFSL under SMIF-TN1 have improved access to financial services for smaller ULBs in particular. SMIF-TN 1 gave 15 ULBs access to finance, while the WSPF gave 16 ULBs access to the capital market (as part of 18 projects). Three ULBs also benefited from both investment components.

We consider the overall developmental impact to be good. In addition to mobilising private investors, the bond emission is helping give smaller municipalities an alternative source of debt financing via the capital market while also giving them the opportunity to build up a reputation on the capital market.

Impact rating: 2/2 (interest subsidy/bond issue)

Sustainability

The TNUDF enjoys a good position in the state of Tamil Nadu and is managed professionally by TNUIFSL, which ensures that the ULBs have access to financial services in the long term. Close monitoring and careful project selection have helped enable the municipalities to meet all of their payment obligations thus far, and prevented the emergence of any problematic assets or defaults in the fund's balance sheet. The support provided by the fund manager and the TWAD Board beyond completion is also contributing to the project's financial and technical sustainability.

However, the TNUDF is still dependent on funds from donors. Government money and private funds are not enough to provide the financial resources for the ULBs' infrastructure requirements in the near future.

TNUIFSL therefore intends to attract other international development finance institutions (DFIs) such as the Asian Development Bank to provide funds. The long-term hope is that the funds provided by the DFIs will be replaced by the national capital market. The fund will act as a stable partner and investor for ULBs. Insurance companies and pension funds are potentially the biggest groups of investors in a functioning bond market. However, the law requires them to invest certain minimum quotas in government bonds. Changes are necessary in order to boost demand on the bond market further. There are however signs of developments in the financial market indicating that banks are also getting involved in longer-term projects, and that regulation is improving thanks to legislative initiatives aimed at promoting bundled municipal bonds.

The funds of the complementary measure have made a significant contribution to creating a robust and reproducible structure for issuing bonds. They have also played a significant role in preparing the infrastructure projects in order to ensure economic and technical sustainability.

The projects are designed to ensure that the operating and maintenance costs for the infrastructure projects can always be covered by the fees received by the ULBs. The coverage of costs is a prerequisite for the approval of a project by TNUIFSL.

In order to ensure that the new infrastructure is operated correctly, the TWAD Board retains responsibility for the project in a three-party contract between the private facility operator, the ULB and TWAD, for the first five years following the commissioning of the facility in the case of small ULBs and for a year in the case of large ULBs. The purpose of this is to ensure that the facilities are maintained properly in the long term and a high standard of quality is preserved.

The government of the Indian state of Odisha has used the TNUDF as a model and set up the “Odisha Urban Infrastructure Development Fund (OUIDF)” with the aim of developing and financing infrastructure projects in partnership with ULBs, government-owned companies and private investors.

The bond issue serves as a model for the Indian financial sector because the fund provides adequate protection to investors against default risks thanks to the subordinated tranches of German FC and the other shareholders, as a result of which the investors are willing to invest in infrastructure projects. The bundling of infrastructure projects for multiple cities and municipalities increases the diversification of the portfolio for the bond, and reduces the default risk for investors. This has allowed smaller, financially weaker municipalities to also gain access to the financial market.

The two bonds successfully issued by the WSPF in 2012 and 2013 established a sustainable and replicable financial construct to mobilise private investors for the financing of municipal infrastructure projects.

Sustainability rating: 2/1 (interest subsidy/bond issue)

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).