Municipal Infrastructure Financing in Hungary:
Four Cases

By: Károly Jókay, Judit Kálmán, Mihály Kopányi

Hungary – Subnational Development Program
The World Bank
October, 1998
Municipal Infrastructure Financing in Hungary: Four Cases

Introduction

1. Since 1990, local governments in Hungary have made significant investments in water and wastewater treatment systems using overwhelmingly state-provided funds in the targeted and addressed grants system. Drinking water systems covering essentially all localities were completed in 5 years guaranteeing piped drinking water to 99% of Hungary’s population. Concurrently the financial efficiency and scale economies of these development projects came under increased scrutiny. Many of Hungary’s fixed networks for natural gas distribution, electrical power, natural gas and telephones were privatized and operate on a regional basis. The next challenge concerns wastewater collection and treatment, solid waste handling, and road construction. All three areas are important for eventual EU accession. Hungary’s local governments have amassed significant lessons learned in the area of financing infrastructure, while at the same time not using standard financing techniques common in more developed economies. Less than optimal solutions are used mainly due to the distortions caused by the transfer system. Our cases demonstrate that (1) the primary criteria for local investment decisions is to maximize grant funding; (2) the grants distribution system causes liquidity problems at the local government level during construction projects; and (3) expensive and semi-legal “bridging” techniques are used to overcome these liquidity gaps.

2. This study identifies key characteristics of municipal infrastructure finance based upon extensive field research and a comprehensive review of several sewage treatment and collection projects recently completed in Hungary. Hungary’s mixed regulatory system, almost entirely privatized banking and financial system and local governments with a broad range of business and economic activities and roles, amount to many examples of creative infrastructure finance that are entirely rational given the environment in which these actors operate. These creative solutions on a project-by-project basis are often suboptimal at the social level, and reveal the distortions caused by uncertainty and the perverse incentives of the existing construction grant system. In addition to identifying the actors, their roles, as well as prototype models, this study will describe in detail four disguised cases, as well as draw general conclusions and possible policy lessons.
A. Actors Involved in Municipal Infrastructure Projects

3. The key actor in initiating, planning, funding, constructing and operating a sewage treatment plant and collection system is the municipality, or alternatively a group of municipalities in a loose association managed by a lead municipality. Municipality is a collective term for any and all duly recognized and incorporated Hungarian units of government that could in practice be cities, villages or towns, but are treated as legal and functional equals by the body of law pertaining to the smallest unit of government.

4. Municipalities in Hungary simultaneously act as: service providers, owners, and customers, project sponsors, regulators in charge of price setting and as price-setting authorities with oversight over quality as well. Municipalities, regardless of their size, are required to provide public services such as water, sewer, mass transportation, district heating, solid waste, sanitation and road maintenance. In most cases, the municipal government directly owns the treatment plant and the network (core assets) providing these and other public services. The municipality could also own entirely or in part the utility operating company. The municipality and its institutions such as schools and hospitals, are often major consumers of these services, while as a representative body, the municipality is also charged with representing the interests of all commercial, private and industrial consumers.

5. As project sponsor, the municipality also supervises technical planning and engineering, as well as supervises construction and obtains funding sources in the form of grants, loans and other capital contributions. A conflictual and difficult additional municipal function is that of setting utility rates for water, sewage, solid waste and district heating services. One one hand the municipality should support cost-based pricing with a modest profit, on the other hand, the local government as a political entity fails to support an economically rational price nor approves a sufficient price adjustment. As the price-setting authority the municipality has the right to examine the utilities cost structure and operations in detail even if it is not the de facto owner. This raises the classical “principal-agent” dilemma in the sense that as a public authority the municipality may not have the technical skills to encourage the most efficient operations on the part of the utility.
6. The operating entity or utility could be (a) a department of the local government; (b) an independent enterprise owned by the municipality; (c) a privately owned utility; or (d) a state-owned firm, such as a regional water utility. At the onset of the post-Communist local government system in Hungary, assets such as machinery, vehicles, buildings etc. spun off into a separate legal entity and became the property of the operator, while real assets such as land, sewer pipes, treatment plants etc. were transferred to the books of municipalities. Under this arrangement, the value and depreciation of municipal assets are indirectly related to user fees. Customers pay user fees to the operator to cover its operational expenditures, capital and financing costs, and also a leasing fee due to the municipality from the operator in return for the use of its core assets. The leasing fee should be large enough to cover the real depreciation cost of these utility assets. Political considerations limit the extent to which user fees cover all capital, operating and other expenses. Looking at the whole universe of the integrated service providing utility system, the majority of assets are directly owned by the municipality, while only a relatively small portion is owned by the operator. One major consequence of this undercapitalization of the operator is that utilities do not have enough physical collateral to obtain financing, and thus local government guarantees are needed, involving pieces of real estate and other assets with no relationship to the capital project being funded.  

7. Large users. Large industrial and commercial users of water and sewage services have a vested interest in plants that have the capacity to treat their effluent adequately, and these interests are often at odds with the interests of the population that does not feel the effect of environmental degradation directly. Heavy users have to comply with discharge standards in order to obtain or to renew operational licenses, and wish to avoid fines and penalties, or a disruption of operations. In project planning where several large users account for a significant portion of the effluent and pollutants, it is often the best undiscovered interest of the local government to involve the large users at all stages of capacity engineering, and especially in project finance preparations.

8. Prime Contractors. The Act on Public Procurement (Act XL, 1995) requires a public competitive tender for projects above a certain size, and all but 10% of water, wastewater and sanitation projects fall into this category. The prime contractor could be a private company, or a municipally owned enterprise. The prime contractor is expected to be sufficiently capitalized. They often volunteer to provide three types of bridge credits: (a) a loan identified as such in a contract or note; (b) in a fictional contract of sale, when the contractor “purchases” a piece of real estate or other property at a high price, only to sell it back at a later point at a more favorable price; (c) delayed payments (forced credit) for services rendered (repaid when the municipality obtains funds from another source). Mortgaged real estate, unrelated to the project could also be involved. Having a closer look at these arrangements, the effective real interest rate and the total cost of funds in most of these schemes often exceeds purely market-based loans and other forms of credit. This is due to the lack of local government expertise in project finance and in analyzing the real/effective price of such offers.

9. Financial institutions. In the late 1980s before the transition from socialism, local councils issued 10-15 year notes with fixed 8-10 percent interest rates. In the early 1990s, inflation in the 30 percent range and above destroyed the real value of these

---

instruments. Afterwards, long-term fixed rate financing such as 20-30 year bonds were not available as banks tended to lend for no more than 3-5 years at variable rates of interest indexed to government bonds of short term maturities. The prevalent grant and soft money system creates adverse incentives for project-based, cash flow financing. In addition, the general level of uncertainty and mistrust prevents the classical general obligation, full faith and credit type of financing from taking hold. Prudent regulations in the legal framework such as debt service limit provision of the Act on Local Government prevent excessive debt. However the municipal accounting system is cash-based and does not accrue or apportion an impending balloon payment as “debt service,” causing sudden, unpredictable violations of the debt service limit during the year of the balloon payment.

10. Customers. The population plays several roles, first as consumers of infrastructure services. A second, no less important role, is that of taxpayer, voter and enforcer of popular sovereignty over the local government, that is of course, an owner, a price-setter and perhaps an operator of the same infrastructure. In addition, the population also pays a gamut of central government taxes, a portion of which comes back in the form of capital grants to municipal projects. In a slightly schizophrenic situation, the local citizen encourages grant seeking, while as a payer of national taxes such behavior is not necessarily in favor. Various segments of the population could be divided among themselves in multiple roles as local business leaders or consumer advocates, or even environmentalists. Customers pay a critical role as financiers through user fees, hook up charges and local taxes. User fees are often in the crossfire of local political debates, which could result in economically dubious compromises. The willingness to pay “unfair” rates is thus critical if the population is not educated about the true costs and benefits of the infrastructure at hand. In addition to hook-up fees and “contributions” to utility capital costs, the population can form wastewater associations through signing petitions, enabling the associations to borrow funds from banks where 70% of the interest cost is paid by the state directly. These associations essentially signal a form of highly subsidized phantom borrowing by the municipality where the state bears an additional burden.

---

2 Present prudential regulation requires banks to set aside reserves of 100% against loans made to municipalities.
Box: 1 Four General Models

The scale and dimensions of various sources of funding distinguish the four general models of infrastructure finance. This ranges from almost entirely state funds, to largely own-source funds and private capital that is to be repaid from operational revenues. Precisely what proportion of capital costs was truly from own-sources differentiates among these typologies.

100% or overwhelmingly state-funded projects: No local government project is done without some degree of state funds. One extreme would be a complex mix of state funds adding up to 100% or perhaps more of a project’s cost. (Targeted grants, addressed grants, Central Environmental Fund, Water Fund, Road Fund, Regional Development Fund etc). Central government funding sources are not synchronized nor coordinated nor cross-referenced. Starting in 1999, donors will be required to “coordinate” among themselves. Targeted and some other infrastructure grants also play an economic equalization role and are distributed on an entitlement basis.

Entirely own sources. At the opposite end of the spectrum, a local government could fund a project entirely from its own sources such as loans, operational savings, capital contributions and hook-up charges etc. A popular misnomer in Hungary is to characterize as an “own source” all funds that are obtained from sources other than the one being applied for at the time. In other words, a grant from the Environmental Fund is an own source to be matched against the targeted grant etc. All state originated funds, for clarity, should be separated from genuine own sources. Genuine own sources can include asset sales, capital income, operating profits from user fee based services, as well as loans based upon future cash flow from these sources. Borrowing is seen as a last resort mechanism, in contrast to the pay as you go system of generational equity in practice in more advanced OECD countries. Bond financing, whether GO or revenue, is still controversial, yet a hopeful future option.

Public-private partnership. In Hungary, this model involves several variations. In one case a large commercial or industrial user offers a soft loan in some form to the project company or to the municipality, in return for quicker construction, or a more appropriate technology treating the enterprise’s anticipated waste flow. The large user offers cash that can be used to complete project faster than otherwise possible given the 3-year draw-down under the traditional targeted grant system. The large user avoids environmental penalties and operational disruptions, while the municipality enjoys a steady stream of predictable user fees during operations and liquidity during construction. Another variation is to involve a concessionaire in a BOT arrangement, where the concessionaire finances, builds, owns, then later transfers ownership to the municipality in return for a guaranteed rate of return. In a unique Central European twist, BOT could mean that a piece of infrastructure is built with public funds then sold to a concessionaire or leased to an operating company. (Privatization of natural gas and electric utilities took place in this manner).

Vendor finance. Vendors could be asked to not only provide liquidity loans, but to essentially finance the “own source” portion of a municipal project by delaying payments over long periods, and by actually loaning cash, or buying services at disproportionate prices from the operating company or project company. The project’s own sources are provided by the vendor who then recoups the investment through its usual profit margin. The vendor essentially extends a loan that would be repaid from the proceeds of a potential concession fee offered to the municipality in return for the right to operate the facility. The infrastructure, built with state funds and from explicit and hidden loans from the prime contractor, and/or major services and equipment vendors, is financed from anticipated profits from user fees and from high markups on services rendered.

11. The state. By state funds one means funds from the various organs of the central government. The state, through various grant and soft loan programs, is essentially the chief finance source for local infrastructure projects that reflect some national priority. In Hungary, these funds come in the form of targeted and addressed grants, from specialty funds (water, environment), and from regional development monies. Using the principle of matching grants, this means a 20-50% direct state share, that in some cases thanks to a lack of coordination and enforcement, could be tuned up to 100% or more of project costs. The state provides payments only against invoices that have already been paid, causing a major liquidity problem even in projects that are overwhelmingly grant funded. Preparation costs are not reimbursed by the state, and in essence, local governments have to pre-finance the eventual state grants. Vendors and prime contractors, as well as financial institutions provide up front monies. The state as
rule maker and the creator of the enforcement mechanism motivates grant seeking and grant maximizing behavior removed from economic and environmental rationality.

B. Four basic investment cases

A Project Supported Entirely by State Funds

12. In this typical case a small village of 1,700 in one of Hungary’s most disadvantaged regions with an unemployment rate above the national, but below the county average, decides to initiate a project whose total cost over a three year build-out period is about 10 times its annual budget. Given the village’s small size any infrastructure project of significance, in this case a sewer and sewage treatment project, is likely to be a multiple of its annual budget. This village was motivated by the availability of free money and soft money, and by rivalry with neighboring communities of similar size. The community began its planning by considering a wetland-type form of pre-treatment it already had in operation. In other words, the community was already pretreating its septage without an expensive sewer system.

13. The village faced four options: (i) improve the existing wetland and connect the future sewage network there; (ii) connect its new system to the nearby large city; (iii) connect its new system to a nearby medium sized city’s plant under construction; (iv) construct a small treatment plant with a neighboring small village. Expanding and improving the existing wetland and building a collection system to serve it would be the most economical in terms of capital and operational expense. Regulatory authorities, organized on a county by county basis, in the case of this locality, did not seem to favor natural or alternative treatment systems, and imposed such discharge standards that made using the existing system difficult. In contrast, in the EU discharge standards do not come into force until the population is over 2,000. In this case, zealous environmental regulations prevent the most cost effective from of treatment from being used.

14. A second option would be to build a collection systems and mains, and connect the village into a nearby large city’s underutilized modern treatment plant. This option was rejected due to the cost of moving sewage a large distance, and due to doubts about the willingness to pay high sewer charges. The grant system does require an estimate of operational expenses, but it does not require demonstrating coverage of all costs, including replacement and capital costs. Hence, municipalities do not always select the most economical option. A third option would have been to build the collection system and connect it to a neighboring town of 5,000’s treatment plant under construction. However, since the village was not part of the other town’s original grant application, it could not “join” later because of grant regulations. In this case, the grant regulations prevented a smaller town from perhaps choosing to join a neighbor in jointly providing a service because illogically, a grant-supported project already under way could not be modified.

15. The final option was to initiate the construction of a brand-new treatment plant jointly with another neighboring village. This joint effort brought the population to over 4,000, and the other village contributed the presence of an industrial user interested in a plant expansion. Investment costs based upon official national average unit costs as stated in regulations ignored that the area had soil conditions that significantly reduced construction costs below the national average. Construction costs came out to 1,000 million HuF, of which only 85 million were accounted for by the treatment plant. The small village had to contribute 31 million HuF from its own sources towards the treatment plant, and 440 million HuF towards the collection system. The village in
question needed to assemble a total of 471 million HuF, of which 90% would come directly from state sources, and about 10% in the form of hook-up fees from the population.

16 Discussions with the local government leads to the conclusion that the preferred alternative was selected based upon the lowest possible users’ fees. However, it became evident that certain expenses were not taken into account such as depreciation, and estimated user fees projected for approximately 1,300 households are likely to be much higher than indicated by the village’s own projections.

18 This project has not been constructed as of November, 1998, but serves to demonstrate what a large role state funds can play in selecting project alternatives. A significant feature of this situation is the order of magnitude difference between the sponsor village’s annual budget and the total or annual capital cost of the sewage system being built. In other words, a village with an 80 million HuF annual budget is responsible for a 470 million-HuF project. We cannot be certain that sufficient technical and financial competence exists to manage the project, and given the small size of the system being built, scale economies may not be sufficiently exploited caused by essentially grants-maximization behavior.

Predominantly own sources

19 The next case describes a fortunate county capital of 36,000 residents with well-managed, strategically oriented local government that has a prudent financial record. This city has a budget of nearly 5,000 million HuF, and a local economy with low unemployment and a vibrant business sector. Annual budgets are prepared based upon a long-term strategic plan and the city has significant savings. The specific project at hand is a refurbishment of an existing wastewater treatment plant and an expansion of its capacity. Upgrades have been planned since 1996 when the existing plant proved unable to meet more rigorous standards. The project does not include an expansion of the sewer system.

20 The water utility’s largest owner, 27%, is the local government, with 45 other local government shareholders. User fees include a profit margin of 3-5% sufficient to cover minor repairs. The utility not only operates but also owns the facilities, so it can finance capital improvements from depreciation allowances. The upgrade and expansion however will result in the local governments taking possession of the new facilities directly.
This local government, in contrast to the previous example, and unlike the general approach in Hungary, plans to use an extraordinary proportion of its own funds. The total project cost is approximately 1.3 billion HuF. Despite PHARE loans, and funding from the Water and Environment Funds, the city will cover 39% of total capital costs from its own sources. Eleven percent from a cheap PHARE loan, 15% from a bank loan and the rest from borrowing by the city. If we include value added tax refunds then the state portion rises to 55% (as the second pie-chart shows), still very different from the typical case.

Sources of repayment for the PHARE and the bank loan will be in part a portion of the user fee, and in part, a rental fee paid by the Utility to the local government. The rental fee will include depreciation, interest and capital repayment, so in essence, the operating company also contributes to repaying the municipal loan. This project does not require the usual bridge loan, nor does the city need to borrow for liquidity purposes. The city has a long run strategic plan, and there are sound environmental reasons to expand the existing capacity. Another lesson learned is that despite success at obtaining a concessional PHARE loan, the city needed to wait two years for the decision, thus delaying the project by that much.

Public-Private Partnerships

Partnerships in this context mean the cooperative and non-cooperative involvement of large commercial and industrial polluters in the financing of wastewater facilities. In the cooperative case, the local government and large users jointly plan, discuss and implement projects that result in significant benefits for both parties. In the non-cooperative case, the local government often needs to coerce the polluter into contributing to the project under construction. In this case, communication does not take place before a municipal decision, and is certainly not interactive.

Cooperative involvement of large users. In the cooperative case, the project receives a relatively small capital grant from the state, and the large users essentially finance the project. In this example, a well located if not too wealthy city of 15,000 decides to develop an industrial park at its periphery starting in 1993. Given good road access, the park soon creates a sudden need for modern sewage treatment. Tax breaks and good infrastructure attracted a major multinational as an anchor tenant to the park. This plant has major needs for sewage treatment capacity, a capacity also in demand by the city itself and by other potential tenants in the industrial park. The large user desperately needed sewage treatment capacity in order to obtain an operating license on short notice. The large user had several options: (a) it could purchase additional land and build its own plant; (b) it could wait for the city to build its own plant; (c) it could jointly build a plant with the city, agreeing to purchase a portion of treatment capacity, essentially becoming a steady source of user fees for the operator. An important feature
of course was timeliness in the sense that any delay in plant operations due to a lacking piece of infrastructure would cause significant losses for the large user.

24. The local government had a vested interest in helping the multinational investor solve its problem partly because it was already thinking about the municipal sewage program due to favorable grant environment, partly because the local government knew that infrastructure is also needed for attracting further tenants to its industrial park. The local government involved the multinational company from the planning stage forward, and the planned investment was only the treatment plant, with the collection system to follow. The cost of the jointly planned treatment plant was 800 million HuF. The local government managed its construction, but the large user contracted to use 80% of the built capacity of the plant over a 20-year period. The local government applied for and received a targeted grant for 200 million HuF. This is a very low proportion compared to the usual 40-60% levels of support prevalent in sewage projects. The large user through a series of financial intermediations provided the balance, or 600 million HuF. The municipally owned water utility issued a 20-year, non-interest-bearing bond to the large user. The treatment plant became the property of the local government and the large user signed a 20-year usage contract. Both parties were aware that the user fee would have to cover not only operations, but capital expenses as well. Thus the large user essentially became the prime source of repayment of its own loan to the municipality.

25. The 200 million HuF-targeted grant from the state could be drawn down only over a three-year period. The vendor, who wanted the plant to get done as soon as possible issued a 3 year, 0 interest rate loan to the local government. The source of repayment was the capital grant drawn down over three years. The large user got its plant built in 8 months instead of three years. By calculating using net present values, we could demonstrate the following: the large user, if it decided to go alone, would have to build a plant costing at least 80% of the 800 million HuF, or 640 HuF. Because of the high fixed cost of land (which in the common project was provided by the LG), this option would have cost about 740 million HuF. Alternatively, by relying solely on the local government for construction financing, the large user would have paid capacity and hookup charges of about 200 million HuF. To this, one would add user charges over 20 years, which would come out to 198 million HuF. This added up to 398 million HuF for the large user if the local government builds the plant on its own. The cost of waiting three years for the plant to be finished was not calculated, yet this was obviously large enough to convince the investor not to choose this option.

26. If the large user and the local government jointly finance the treatment system, then the net present value of the large users’ total contribution is less than 600 million HuF. Including the user fees paid, the hook up charges and the loans paid, the net
present value of the large user’s contribution to capital cost is 467 million HuF. In other words, the large user benefited from cooperation with the local government, because it built a plant for 467 million HuF in present value terms, instead of spending over 700 million on a plant of its own, or waiting three years, or more, for the municipality to finish one on its own. This plant built and under operation, is an example of cooperative public-private partnerships that are well planned and executed. The large user was able to avoid municipally imposed environmental fines altogether, and the municipality could build its plant in 8 months.

27. The local government enjoyed several advantages from the participation of the large user in financing the project. For its own purposes only, the local government would have built a 200 million HuF sewage treatment plant. This would have called for at least 100 million HuF in cash from the local government. In contrast, a much larger plant was built without any local government cash outlay, and the plant became the exclusive property of the municipality. The larger plant has excess capacity that could make the local industrial park more attractive to other investors. Based upon an 800 million HuF project cost, the local government gained a VAT refund of 160 million HuF within 8 months. This alternative even generated a positive cash flow for the municipality. Taking into account opportunity costs the advantage to the local government of using this option is estimated in net present value terms to be around 260 million HuF. In addition, it is critical that the large user promised to use 80% of the plant’s capacity over the next 20 years, and the repayment of the bond over the same period is to be covered by users’ fees. The municipality essentially issued a virtual revenue bond.

Non-cooperative partnership

28. In the second case, the local government and several large users were not able to discuss the treatment and capacity needs of the city and industrial users, resulting in a sub-optimal solution. Another large city in a less developed area of Hungary was home to several food processors. The municipality has a relatively large budget for its 36,000-person population, but only 5% of the 3,500 million HuF budget come from local taxes. The city has no privatization or capital income. In this situation, the city is a “grants seeker” unlike several previous examples. Fortunately, over 65% of its homes were connected already to the sewer system. Treatment for the city was provided by a wetland-type pretreatment facility. The availability of grants motivated the city management to quickly develop a plan for a new treatment facility and to apply for the grants. Although the capacity problems and fluctuating discharge quality would justify a timely and close cooperative effort with the largest users, this aspect was ignored due to the lack of communication between the local administration and the users, and partly due to the distortions rooted in the grant allocation system. One option was to build a small biological plant without state grants that would not offer a long-term solution. (Albeit this plant could have provided adequate treatment if one of the foreign-owned dairies had been consulted about pre-treatment experiences, they have had abroad in similar situations).

---

3 The large user provided a one-time loan of 800 million Forints to the local government. By deducting the present value of the stream of loan repayments from the 800 million Forints, we arrived at the net present value of the large user’s contribution. The present value of the 20 year, non-interest-bearing bond is 199 million forints. The three year bridge loan at zero interest produces a present value of 134 million. By deducting 199 and 134 million from the 800 million cash loaned to the project, we arrive at the large user’s contribution of 467 million forints in net present value terms.
second option was adopted without consulting with the two biggest sources of wastewater. This option involved a 560-million HuF treatment plant.

29. The construction cost for the city’s sewage project was calculated on the basis of a list of unit costs of sewage treatment development published by the Ministry of Water, Transport and Communications. Likewise, the city assumed it could get up to 50% in targeted grants. Detailed planning began with these parameters pre-determined, now involving the large users who accounted for over 2/3 of the total sewage load. The key question regarding financing remained who is to cover the other 50% of capital costs. Of the missing 280 million HuF, 120 million could be recouped through VAT refunds, leaving only 160 million HuF of own source funds to identify. The city decided to obtain these funds from the large users in a confrontational manner. Initially, the city decided to set the large users’ hookup fee at exactly 160 million HuF. When the large users refused to pay the hookup fee, the city threatened to impose environmental fines in the same amounts. In the end they agreed in the bond format (“this was necessary due to lack of trust”- as large users expressed) and the city issued a private placement bond to the large users, paying no interest with a 10 year maturity, and a face value of 100 million HuF. A municipally owned operating company borrowed the remaining missing own source funds (60 m HuF), backed by mortgages on municipal property completely unrelated to this project.

30. The above scheme forced the municipality into a liquidity trap since state grants were only paid against invoices, and VAT refunds similarly required that cash be used to pay invoices that were reimbursed with a time lag. In this project the 0 interest bond provided the only liquidity besides another 0 interest loan from the prime contractor, who asked for mortgages on municipal property and agreed to buy, then sell back, a piece of wooded real estate. Repayment of the loans and of the bonds is expected from user fees, when three quarters of the user fees are to be paid by the largest users themselves. (i.e. the solvency of the treatment plant depends on the ability and willingness to pay of the largest users far into the future). These monitoring and transaction costs added to the notional rate of interest being paid by the city on all the “virtual” borrowings.

31. This confrontative case illustrates the need for good communication even in the conceptual stage of a planned project to prevent costly capital projects from getting out of control. From the large users’ perspective, this process contains several important lessons learned:

a.) The large users need to be involved at the conceptual stage, since they have precise data on wastewater parameters, and prospective data on future flows. Involving plant personnel would enable precise planning and appropriately sized projects to take place.
b.) In this specific case, a smaller and less expensive option would have been optimal had large users been involved from the outset.

c.) Treatment facility phasing could have been optimized since in the large users’ opinion, the existing facility could have served for another 1-2 years while the plant expansion was planned and constructed.

d.) Plant management expressed a concern that since they were a part of the community for several decades, they would have expected some cooperation in an earlier phase.

32. On the other hand, given their deep and long-standing presence in the community the management of the plants could have sought out city officials on an informal basis. Thus, mutual distrust and miscommunication cause bad relations. As technical problems emerged re. Operations, this mistrust continued and the treatment facility are run in a sub-optimal manner. Another significant distortion is that the existing facility could have been optimized for 1-2 years in a transition period, but the “grant-seeking temptation” was too large, and the city sought to maximize outside funds instead of fully using existing capacities. Another fault of the system is that the technical content of the funded project proposal is not the same as the realized project. In other words, “value engineering” is applied in a negative sense with funded features reduced in size, and quality, and the funds used for other purposes. In the opposite direction, more expensive, and more profit-laden components are added during construction, denying efficiencies that may have been contained in the original plans. These changes cause severe delays in project implementation on one hand, and a significant amount of grants are not drawn down in the same budget year, yet appropriated, on the other hand. This creates an unnecessary burden on the central budget.

4 On a macro level a significant portion of targeted grants, 42% in 1996, are not drawn down in the year in which they were programmed. Nearly 78% of the funds not drawn down were sewage and sewage treatment project funds according to a report by the State Audit Office.
The centrally set unit cost ceilings

These centrally set nation-wide unit costs for sewage-related developments are published by the Ministry of Water, Transport and Telecom (MWTT) in the Official Gazette. These have been introduced with the forward looking intention of providing a basis for comparability and cost effectiveness in 1996. The unit costs are given along technical measures in the following format: for pipelines according to size of pipe, for machinery helping the transfer of sewage according to performance measured in m³/day, and in similar ways for other equipment to be built into treatment facilities. Some examples:

<table>
<thead>
<tr>
<th>Pipe size (mm)</th>
<th>Unit cost (HuF/m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>3500</td>
</tr>
<tr>
<td>110</td>
<td>8000</td>
</tr>
<tr>
<td>250</td>
<td>20500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance (m³/day)</th>
<th>Unit cost (HuF/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100</td>
<td>12000</td>
</tr>
<tr>
<td>101-300</td>
<td>80000</td>
</tr>
<tr>
<td>301-600</td>
<td>65000</td>
</tr>
</tbody>
</table>

However according to several expert and local government opinions these unit costs are not diversified enough to mirror differences in geographic, waterbase and other characteristics. Moreover, although originally intended as maximum allowable unit costs, these published numbers are used by local governments as given numbers orienting budget calculations in grant application, and also accepted by grantor agencies as such.

Thus central budget pays high amounts of subsidies for developments in areas where due to soil quality or other features such investments can be constructed with unit costs lower than those centrally set. Local governments, as investors can save significant amounts and use them for other purposes, which practice in turn due to the lack of proper monitoring system might stay unnoticed. In a recent report the State Audit Office dealt with this problematic issue, and wrote the following: "real units costs of certain technical solutions (e.g. sewage network construction) are lower than those published (prime contractors chosen by public procurement could make offers of 15-30% less costs) whereas in other cases (e.g. the transferring machinery) the Ministry’s unit costs are underestimating real costs." 1997/366. SAO Report on the analysis of targeted and addressed grants of the fiscal year 1996

In our opinion this system needs improvement since it provides no incentives to find cost-efficient technical solution and thus results in overspending of public money.

33. The unit cost ceilings set by the Water Ministry do not reflect the geographic and technical diversity of real construction costs. These unit cost ceilings are maximums, and the rational local government “tunes up” project size and cost to obtain the maximum amount of cash flow, regardless of the availability of lower cost technologies or other engineerable economies. Naturally since capital costs are matched to maximize available funding programs, operational expenses and depreciation costs are not optimal, causing sewer charges to be higher in some cases than would be otherwise justified. Finally, from an economic perspective, it is not justified to involve municipal assets such as real estate, not related to a specific service, as collateral in loans to municipal infrastructure projects. The municipality bears the opportunity cost of mortgaging assets better suited for other projects, and these pledges also remove the direct need for the project itself to generate or provide the asset-based or revenue based security for loan repayment. These hidden opportunity costs and guarantees do not show up as operational or capital cost in project budgets, distorting project financial projections and decision-making processes. State level financial and technical regulations, as well as grant programs thus distort local government project planning away from optimal solutions and appropriate technologies. The cooperative model described previously was motivated by the real needs of both the project sponsor and the largest users, while the suboptimal, confrontational public-private partnership was motivated solely by grant maximization. On the other hand, in the cooperative case the large industrial user who accounts for 80% of waste flow could have built its own plant,
because the need for a municipal treatment plant was not proven definitely. The industrial user had the state capital grant program pay for 80% of a plant’s capacity that did not serve predominantly municipal purposes.

Vendor-based financing

34. **Background and description:** In 1992 one village and 3 neighboring communities in central Hungary to pursue a grant from a foreign donor to finance up to 50% of the costs of a preliminary operating permit to build a 6,500 cubic meter wastewater reuse system. In 1993, the donor awarded a planning grant and the four villages decided to form an association to build the system. The four communities received the preliminary permit in 1993, and decided to apply for a targeted grant for 1994. In the meantime, two additional communities joined the association. The Association also applied for targeted grants for a sewer system in 1994. Since the Association was originally formed only for building a treatment system, the targeted grant application for a sewer was rejected in 1994. In 1995, the Association was awarded a targeted grant for the treatment plant and a general contractor was selected. In 1995 the Association modified its charter to include the collection system, applied for a targeted grant for the collection system, and was awarded a targeted grant for the collection system in 1996. Two additional communities joined the Association in 1997. Construction on both systems began in 1996. The treatment system was completed in April 1998, and began operations in May 1998. The collection system will be completed in 1999.

35. **Treatment and collection system construction finance:** The design, financing, construction and future operation of this wastewater collection and treatment project took place in essence with virtually no cash contribution on the part of the 8
members of the Municipal Association ("Association"). This case demonstrates the state of the art in grant maximization and careful cash flow management. In addition, project needs, missing cash flow, and unique legal and tax situations prevalent in the early 1990s leads to the creation of a limited liability company ("project company"), owned by the initial six communities involved.

36. The roles in detail: The Association through its lead member applied for, and received the maximum allowable targeted grants for both the treatment and collection systems. The Association assumed responsibility for coordination of what ultimately became an 8-village project. All regulatory liaison, negotiations with vendors, financiers, regulators, contractors, and state authorities were handled by the Association, and its designated chairman, the mayor of the lead village. The grant formula changed during the course of the project. At its inception, targeted grants covered up to 50% of unit cost ceilings (based upon statutory formulas) of the treatment system. By the time the Association applied for the collection system targeted grants, the level of targeted grant support dropped to 40% for treatment systems. In both cases since a municipal association was the applicant, the targeted grant amount was increased by 10 percentage points, to 60% for treatment and 50% for collection.

37. Other grants were applied for by and awarded to the Association, one from the Water Fund and two from the Environmental Fund. Since the Association at the time of grant disbursement was not equipped with its own tax and statistical number, all the grants were legally awarded to the Association yet all the grants were paid through the bank account of the lead village. The lead village incurred administrative, bank and other expenses that it could not recover from the other members.

38. In terms of financing the “own source,” or to use a better term, the non-state grant component of both the treatment and collection systems, several types of subsidized, zero interest, and vendor loans were involved. In addition a unique financing mechanism, the 711 million HUF community water association subsidized loan (társulati hitel), based upon the valid signatures of 60% of the households of each community, was used to generate funds for the collection system. This unique loan made through a commercial bank involves a highly subsidized interest rate and a 10-year term. Essentially each Association member community collected signatures on a petition, then received its proportion of the 711 million HuF-subsidized loan. This is a “reverse BOT scheme” in that the local governments obtained funds to build a system that was to become their property, only to seek a concessionaire for operating the system since the association members could not come up with their own sources of funds. In essence they lost the usual advantages of BOT during the construction process, but at the same time, they bore all financial risk.

39. The 133 million HUF Phare loan, with zero interest and an initial three year term (expiring in late 1998) was made to the Association with each community assuming responsibility in proportion to the number of hook-ups in each community. In this case each community is assuming a portion of the liability for the one lump sum payment of principal due upon maturity, initially at the end of 1998, but most likely to be rescheduled. Two vendor loans, one for 199 million HUF from the treatment plant general contractor, the other for 300 million HUF from the collection system general contractor, cover the balance of own source funds. These two loans have unknown implicit interest rates. Overall, debt of all types accounts for 39% of total

---

5 70% of the interest is paid by the Central Budget.
project costs, including cost overruns, and for virtually all of non-grant own sources of construction funds.

40. Sources of repayment. The population will directly repay the community association loan in a special assessment as a part of the future sewer charge. The PHARE loan, on the balance sheets of each community, shall be repaid from general revenues, or will be included in a potential concession fee. The two-vendor loans (plus interest) amount to 499 million HuF will be included in an up-front fee to be paid by the winning concessionaire. No announcement has been made about winning bidders or about the exact terms of winning an operating concession. The eventual sewer charge is expected to include a capital charge to finance the up-front concession fee that essentially converts the debt of the eight municipalities into the debt of the selected Concessionaire/operating Company.

41. Generation of and financing of own sources: Several essential conclusions can be drawn from the above case. The two vendors have an uncertain source of repayment, since repayment or assumption of accumulated debt is a part of on-going negotiations with potential operators/concessionaires. However, the Association’s cash flow problems during construction were significant and illustrative. The Association as representative of the eight villages could only draw down the various forms of state grants if it could demonstrate a cash balance amounting to, on average, about 40% of the invoice. The state agency would pay its share of each invoice if the Association could show that it had the missing 40% of that particular invoice on hand. Several sources of liquidity were used.

42. The Association’s members created a project company, under the control by the member communities. The proceeds of various loans were used to provide the 40% own share in order to draw down the state grants. So the vendors loaned the association an amount that could cover 40% of the vendors’ own invoice for services. But, the Association subcontracted project management to the project company. The project company received loan proceeds as payment for services, and then the vendor invoiced the project company. The advantage to this method was generating liquidity. Namely, the project company could get VAT reimbursements for each invoice it paid to the vendor, and use those VAT refund proceeds as loans back to the Association, which then ordered the next round of services from the vendor through the project company. Of the 3,400 million HUF all-inclusive costs, about 20% or 680 million HUF in VAT was ultimately paid back to the state tax office. But using the VAT reimbursement method, the Association through the project company used the refunds as temporary liquidity, in essence, not having to generate 40% of the VAT (272 million HUF) as an own source contribution. Thus, realized interest earnings on this cash flow were also used to generate “own source” revenues for the project.

43. During the operational phase, the Association through its members will maintain ownership and the overall statutory service provision obligation. The Association and its members assume responsibility for repaying the PHARE and the community association subsidized loans, with payment streams from general revenues, concession fees, and user fees. The two large vendor loans amounting to 500 million HuF or 19% of the total project cost including the cost overrun, are a delicate part of negotiations with concessionaires/operators that have responded to a public call for proposals in early 1998. A key element will be the concession fee to repay the loans, or an assumption of these and perhaps the PHARE loan by the concessionaire if its own cost of funds are more favorable, and the user fee structure can finance either a lump sum repayment or a refinancing.
44. Two key lessons learned: it is still possible for a group of communities to optimize the grant-driven infrastructure financing system without much cash of their own despite a high, 40% own source requirement. Nearly 85% of the total project cost was provided by “soft money” in terms of subsidized loans and grants. About 15% of the total cost came from vendor financing. The other important lesson demonstrated is that the excess profit or capacity that is included in a system subject to such a high level of grants is about 15-20%, based on international experience. In other words, the “hard loan” or “vendor finance” portion of this project not only provided much needed liquidity, it also provided a profit source to be financed through user fees and general revenues far into the future.

45. The key problem demonstrated with this system is not the level of subsidies or subsidized loans, but it is with the “unit cost ceiling” figure determined in the grant formulas. These figures are taken as givens, regardless of the genuine cost of construction. If the entire cost were hard money, or harder money, about a 20% cost savings could be extracted. There is reason to believe that in this case the collection system cost overrun was justified, but in the case of the collection system, the allowable cost (i.e. the ‘project cost’ calculated with the centrally set unit costs, given in the application for grants) was about 15-20% higher than the lowest possible cost. In other words, the allowable cost figure is not accurate enough given competition among various technologies and construction firms, and the entire price could be biased upwards. Secondly, the “soft money” nature of the overall sources of revenue for projects like this provide a strong disincentive for value engineering, in that capital cost is assumed to be bearable by the population far into the future if the concessionaire and the Association can set a sewer charge that is high enough, and extract up front payments or refinancing from the potential concessionaire.

C. Evaluation and Lessons Learned

46. Planning and pre-financing

- Local governments must demonstrate in their grant applications that own-source funds are available, and must pre-fund technical design and engineering (between one and five percent of total project costs)
- Local government rarely has enough reserves to invest in technical design and engineering costs up front, thus they have to decide whom to involve in pre-funding these expenses (vendors, prime contractors, large users)
- In most cases the above actors provide some form of bridge or liquidity loans involving assets and real estate unrelated to the facility being constructed
- Starting in 1999, targeted grant applications will require a technical and economic feasibility study. This(according to the 104/1998 (V.22) Government Decree ) should include a description and evaluation of project alternatives and the selection of one proposed along many aspects such as technical, operational, financial, economical etc. in the economic comparison not only investment costs, but also future yearly operation costs, projections on user fee revenues will have to be taken into account,

47. Own sources

- Municipalities define “own sources” of funds as any source independent of the current source being sought in an application, allowing double-counting and total awards exceeding 100% of allowable project costs.
• New regulations coming into force in 1999 will define “own sources” in targeted grant applications (submitted to the Interior Ministry) as those those funds specifically identified in a city council budget resolution, or as a line item of a budgetary agency. A documented loan commitment from a financial institution, or approved plans for the collection of hook-up fees could also be considered as “own sources.”
• Regulations clearly state that funds from the state budget, regional development monies, and foreign donor funds will not be considered as own sources.

48. The role of credit
• Market based loans: Bank loans and bond issues by municipalities which have had a modest role in municipal project financing to date, will become more significant in future projects because:
  1. Budgetary agencies such as municipalities have modest resources available to pre-finance engineering and design and other forms of project preparation.
  2. European Union requirements for environmental upgrades, as well as mandated cost sharing generate demand for own sources.
  3. Monies to serve as matching funds for EU grants are not available from the central state budget.
  4. Inflation in Hungary is expected to decline to 12% in 1999, and to single digits soon thereafter, making fixed-rate instruments more feasible and likely.
  5. Mandatory and voluntary pension funds, and other institutional investors seek fixed income instruments to complement government bond and equities portfolios.
• Municipal budgeting regulations and accounting practices do not allow for capturing/recording accrued principal payments and balloon payments on bonds and loans outstanding. These loans could involve contingent municipal liabilities in the form of implicit or explicit guarantees, making transparency of financial statements difficult.
• From an economic perspective, it is not justified to involve municipal assets such as real estate, not related to a specific service, as collateral in loans to municipal infrastructure projects. The municipality bears the opportunity cost of mortgaging assets better suited for other projects, and these pledges also remove the direct need for the project itself to generate or provide the asset-based or revenue based security for loan repayment. These hidden opportunity costs and guarantees do not show up as operational or capital cost in project budgets, distorting project financial projections and decision-making processes.

49. Fees paid by the population
• The population participates in financing municipal infrastructure projects by paying one-time hook-up fees, and by paying continuous user fees.
• User fees are set on a political basis by city councils, and do not always cover full capital costs such as depreciation, interest and principal payments, in addition to operations and maintenance costs.

50. State grants
• Local governments build projects to maximize state funding in forms of grants and subsidized loans
• Availability of a variety of state funds motivates the decision to build projects
• State grants and soft loan programs are uncoordinated, resulting in duplication and over-engineered projects
• Funding goals and mechanisms among grantmakers are divergent
• Funding decisions are rushed given the volume of applications
• Local governments seek funding for the same project from multiple sources
• The overall grant system often creates wrong incentives, e.g. an estimate of operational expenses is required, but demonstrating coverage of all costs, including replacement and capital costs is not. Hence, municipalities do not always select the most economical option.
• Starting in 1999, project applications are to be submitted to the largest funding agency, which is then responsible to evaluate, then pass on the materials to other funders, hopefully preventing parallel applications to a variety of funders.

51. Funding of sub-optimal projects

• It is still possible to obtain funding for projects that are over-engineered, inappropriately-sized, that use the wrong technology, and that will have technical and financial difficulties during the operational phase.
• The pressure to submit plans and specifications within project funding deadlines negates opportunities to research alternative, lower cost solutions, thus favoring “prepackaged” technical solutions that meet grant criteria but do not necessarily offer the best solution for the municipality.
• The new feasibility study requirement calls for a comparison of prospective operational as well as capital cost scenarios, including fee impact analysis as well as a study of the ability to pay on the part of the population.
• The pressure to create EU-conform regulation can also end up in unwanted consequences, e.g. wrongly interpreted rigor in environmental regulation (lack of distinction along size - which does exist even in the EU regulation) prevent the most cost effective form of treatment from being used, leads to unnecessary amounts of public spending.

52. Other

• Normative unit cost ceilings do not take into account geographical, technological as well as cost diversity. In practice, planners use the maximum amounts multiplied by the physical characteristics of the project under consideration, instead of using value engineering. The lack of diverse unit cost ceilings rewards grants-seeking behavior with no regard for cost savings.
• Monitoring performed by the State Audit Office is post facto and amounts to a compliance audit that does not question the rationale behind spending decisions. Project finance monitoring is de facto performed by the municipality’s bank as it makes payments of government grants, first deducting the town’s own source funds, then seeking reimbursement from the central treasury for the balance.
• Local governments seek VAT refunds on projects that will produce revenues. These VAT refund schemes have the effect of reducing the actual cash outlay a local government needs to pay as an own source in that grant payments are made against the gross costs, and after reimbursement is made, the local government puts up its own source contribution against the net cost. Since the VAT is 25% on most goods and services, this type of distorted “rent seeking” distracts local governments from
proper project planning and cash flow anticipation. VAT rules are anticipated to be tightening, perhaps removing these types of rent seeking from project execution.