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Guidance Paper: Instruments for cost-covering Financing of Municipal Waste Management in Turkey

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I. Purpose and objectives

Municipal solid waste management has made considerable progress over the past years in Turkey whilst the growth in domestic production and consumption, thus the generation of waste, has also increased the challenges in this field. A decade ago, the Turkish Grand National Assembly stated a substantial lack of infrastructures available for waste management in the country and a high urgency to secure an environmentally sound handling of waste in general. Massive efforts and investments of the state since then improved the waste management situation significantly and created structures which are elementary to handle industrial and domestic waste in a proper and environmentally safe manner.

The fundamental importance of further strengthening waste management in Turkey to ensure the protection of human health and nature, a sustainable use of resources and better quality of life for present and future generations has not diminished till to date. Turkish municipalities need to cope with growing waste volumes and at the same time have to permanently strive for a better service quality and enhanced working conditions for the waste service crews. In addition to managing available and new capacities for waste disposal, and getting existing landfill sites better secured, there is a need of reducing landfill disposal in the long run and to move towards more resource-efficient methods of dealing with waste, i.e. waste treatment and recycling. The appeal made to all parts of society ten years ago *'to contribute to this goal and be 'self-sacrificing' so as to allow the establishment of a better waste management system in Turkey'* remains fully valid also from this perspective.

A crucial part of that is to secure a reliable financing of waste management. To date no mechanism in Turkey has been established that allow the full waste management costs to be recovered based on the 'polluter pays principle' and provide sufficient funds for development from other than the general budget. This not only threatens further progress in waste management but prevents stronger engagement for waste reduction and recycling due to lacking economic pressure and incentives.

The German Environment Agency commissioned with the INTECUS GmbH an internationally recognized consultant for waste management to look into this subject and supply Turkish decision-makers with insights and ideas on appropriate mechanisms to finance municipal waste management more sustainably. Main findings and conclusions were compiled for the purpose of discussion and orientation in decision-making. Essential objectives of the assignment were to evaluate current mechanisms and practices for financing municipal waste management in Turkey and, in this context, to outline possibilities for additional or alternative strategies and applications with the potential to address fundamental weaknesses and opportunities in the existing system and enhance financial sustainability in the municipal waste management segment. The finalization of this paper was achieved by a discussion process with experts from the Turkish Ministry of Environment and Urban Planning in the period from July to October 2017, and at a workshop held at the Ministry with sector stakeholders on October 26, 2017. Insights and feedback obtained have also been incorporated into this document.

The authors wish to express to the Turkish partners their profound gratitude for the good co-operation and instructive discussion and hope that this joint work will bring waste sector developments in Turkey and friendship between our two nations forward.

Additional note: *The information provided in this paper is intended for decision-making support. It should facilitate a discussion, make expertise from reference examples accessible and enable appropriate steps for the improvement of municipal waste management finance in Turkey to be effectively taken up. Its content should not be construed as an intervention into the legal or financial affairs and autonomy of the country nor as an attempt to give relevant authorities any kind of instructions or advice of mandatory nature. Public officials should consult with their attorneys and stakeholders on their specific legal issues and options for adopting or applying the recommendations provided. Any views or opinions presented are solely those of the authors*.

II. Summary and main conclusions

Municipal waste management in Turkey is carried out through a system of divided responsibilities, depending on the political and administrative status and affiliation of the respective municipal territory. In general, each municipality has the obligation to collect the waste from households and the household-similar wastes from commercial units. The disposal facilities, most of which are currently made up from landfills only, as well as the transfer stations used to realize efficient waste transports to these disposal sites, are usually subordinated to other sovereign entities. Either these are Metropolitan Municipalities represented by specially established bodies, or Municipal Waste Unions, under which the respective provincial municipalities have associated. The financing of the municipal waste services in the country is also implemented along this fundamental split of responsibilities. A main feature till to date is the collection of revenues for waste management according to a state-defined scheme and their redistribution via a lump sum compensation of the superior municipal units. Although this approach shows a weak cost orientation and hardly leaves possibilities for municipal involvement, other mechanisms have not come to a breakthrough so far.

Since more than two decades, revenues for municipal waste management services have basically been generated by collecting an environmental cleansing tax (Çevre Temizlik Vergisi) from households and commercial entities. For a long time, this was the only revenue-generating tool that aimed at the waste producers and held them directly liable to refinance the operating costs for the management of municipal waste. Cost recovery however remained largely incomplete as ever since only fractions of the actual waste management costs had been covered with the mechanism applied on payment calculation. Waste management progress in Turkish municipalities therefore has a very narrow leeway and up to now is marked from a constant shortage of financial resources and huge dependence from support decided at the level of central government authorities.

A system of centrally determined assessment rates is adopted for calculating the environmental cleansing tax. The revenues collected this way are distributed on basis of an allocation formula in fixed proportions among the two main acting levels described above. Although this taxation scheme allocates financial responsibility to the polluters and therefore realizes the polluter pays-principles it is not related to the actual costs incurred, neither via the calculation mechanism nor the distribution scheme for its revenues. Moreover have the assessment rates been set relatively low from the outset and not been increased in any close correlation to general cost and currency developments afterwards. Municipalities which have no other income from environment-related payment obligations face grave and widespread underfunding of the necessary expenditures for waste management as logic consequence. For the resulting gaps in budget and necessary investments local authorities have little more options but to get these financed through additional borrowing or by making use of money from other revenue segments and the legal shares the Ministry of Finance allocates to them from general tax income. Municipalities can avail of these legal tax shares at their own discretion, whilst facing kind of a permanent need to cover deficits incurred from waste service expenditures. Cross-financing together with targeted subsidies for waste services, being however only available for a limited number of municipalities in the form of the provision of collection trucks free-of-charge, give so far the only assurance for upholding the current scope of waste services. Additional new and/or skillfully modified financing instruments are needed in order to move beyond this level and make a modern waste management possible.

A principal approach for that is levying charges on provided waste services on the basis of the actual costs. An essential basis for this has been laid in Turkey already through corresponding stipulations in Law No.2872 on the Environment in combination with the "Regulation on Rules and Principles to be Applied to Determine Wastewater Infrastructure and Municipal Solid Waste Facilities Tariffs" (Evsel Katı Atık Tarifeleri). It has nevertheless not been possible until to date to achieve that all municipalities fulfill the existing obligation to apply the tariff scheme and waste service charge. Skepticism and reluctance among the municipal leadership against the prescribed introduction, most likely nourished from implications deemed as being unsocial and prestige threatening, up to now form a high barrier.

However, relying on the environmental cleansing tax only and leaving investments basically with the state does no service to enhancing performance and cost-effectiveness in waste management. In particular a chance would be missed to engage municipalities stronger in progress and appropriate solutions.

One way to change this situation is that cost-covering waste charges get strictly enforced and finally become the principal means for municipalities to recover their service costs. Efforts in this direction, which already have been made in the form of a series of decrees with clear enforcement deadlines, would need to be complemented with effective sanctions and incentives as well as stronger political support. There are already indications that more and more municipalities are levying a waste service charge, so that a continuous expansion of the application is indeed noticeable by now. Results and developments following this will increasingly become recognizable and should be given careful attention. This will allow the necessary support to upgrade implementation of waste tariffs nationwide. Weak progress made over past years in this field might also be due to the fact that the environmental cleansing tax is always applied simultaneously.
Since the mechanism prescribed for service charge calculation in Turkey is absolutely compliant with all essential principles to determine and levy incurred waste management costs to waste generators in a full cost covering manner, it is recommended that this instrument forms the core element for the future financing of waste management in Turkish municipalities.

Along with the further rollout of the waste service charge on nationwide scale is advisable that the environmental cleansing tax loses in relevance and ultimately proves superfluous to cover recurring service costs. Credited on the income side or as a contribution to cover waste management expenses, the earnings from the environmental cleansing tax are currently being deducted from the costs in the calculation of the waste service charge, anyway. An environmental cleansing tax that is still in place thus only complicates the calculation process of the waste service charge without generating any additional revenues. Handling the waste service charge hence could become easier when the environmental cleansing tax is abandoned.

Both facts are important in the communication to inform stakeholders and the public that the waste service charge does not add to the waste producers' payment obligations and is not meant to provide the municipality a source of extra income. That understood, may make levying the environmental cleansing tax ultimately dispensable. In turn it provides an extremely good opportunity to convince the population and political elites of a real paradigm shift in financing waste management and to generate sufficient acceptance for that. Abolishing this tax in the present form also creates room to develop a complementary financing instrument, instead.

Another way to tackle the deficient coverage of costs might be viewed in the possibility to retain the environmental cleansing tax. In this case, adjustments would become absolutely necessary in order to enhance its contribution to the budget for municipal waste management. It would be imperative to also revise or eliminate current exemptions in its application while simultaneously a drastic increase of the rates (by about ten times on average or more) would be necessary to achieve cost-parity. To meet the normal permanent changes on the cost side requires an additional mechanism for a continuous dynamic adjustment of the assessment rates. With these modifications the environmental cleansing tax in the end would be almost identical to the concept of a waste service charge. At this point it seems more efficient to pursue further the existing and by many municipalities yet already adopted tariff approach.

In addition to covering running service cost with aforesaid solutions, additional funding and economic incentives are needed for Turkish municipal waste management, in particular, its further development in line with important environmental objectives, such as resource conservation and climate protection. A wide spectrum of other revenue-generating measures, with diverse examples of European and worldwide application, comes into the focus and should be discussed and considered in parallel. It would likewise be necessary to identify and adopt such supplementary instruments should concerns about refinancing waste management through service charges or a drastically increased environmental cleansing tax show a long persistence and thus hamper cost covering contributions directly from the population.

Introducing a progressively increasing payment attached to the landfilling of waste (known as 'landfill tax') is an option which, considering the country's present waste management status and needs, can be extremely worthwhile in Turkey. Such added tax to landfilling not only creates a considerable new revenue stream but simultaneously provides an excellent steering effect. Investing the tax revenue into treatment infrastructures and waste reduction measures and significant payments required for landfilled amounts can induce considerable changes in waste disposal behavior.

The establishment of special funds has proven helpful for financing environmental protection measures and facilities, including certain expenditures related to municipal waste management task, in many countries. These funds, in particular, serve as a vehicle to combine the nationally available investment support and certain other revenue streams, and to have them managed independently of public budget decisions and constraints in a clearly target-oriented and equitable manner.

Creating such an autonomous fund in Turkey could offer an effective solution towards the possible introduction and administration of a landfill tax, as well as for the goal to tap other revenue potentials, which ideally should but must not necessarily show a relationship with services and/or concerns in waste management. In order to justify the fund, its money must be used to finance and support waste sector activities only.

Similar to the waste charge, Turkey already created the necessary foundation for that with certain legal provisions (e.g. Article 18, Law 5491 of 26/04/2006 and preceding regulations). Adjusting the framework for managing the proceeds and to decouple utilization of the funds from the general state budget would be highly recommendable, however. It would be an asset if an autonomous institutional structure is established that involves multiple stakeholders to the extent that a qualified, less centralistic decision-making on waste management and development co-financing can be realized. A program that in the minimum outlines priorities, key areas of action as well as development targets and stages would have to be developed to substantiate the fund solution and give it a clear frame.

To make the different solutions for waste management finance actually work and accepted, firm political will and continuity, intelligent communication and high transparency with regard to the process of their adoption and revenues utilization will be of primary importance.

A nationwide implementation of the waste charge has the best starting position in the short and medium term. The suitable construction for cost coverage gives this instrument the potential to eliminate recurring deficits in municipal budgets for waste management in a rather short period. In addition, this instrument also has an economic incentive to provide quality services at optimized costs.

The environmental cleansing tax, on the other hand, can hardly be freed from its weaknesses for a long-term sustainable waste management financing. This approach lacks a substantial relationship with real cost developments that adjustments to the assessment rates and payment exemption rules can alter only partly. Legal discrepancies would have to be overcome as well. The development of further revenue-generating mechanisms and their use for tailored financial support of waste management progress in Turkish municipalities can be fostered through an additional fund largely decoupled from the state budget.

Turkey has a high potential to further modernize its municipal waste management, to make it more environmentally compatible and to create sufficient financial means on the basis of the polluter-pays principle for that. Fundamental elements and appropriate approaches are in many respects already available in the country. They require only a certain adaptation and further expansion helped by concerted efforts of the legislative, executive, and judiciary powers as well as a political endorsement irrespective of affiliation and affection.

III. Main principles and approaches to finance municipal waste management

The management of waste is an expensive yet indispensable task that consumes a large proportion of available municipal budgets for operational services. Financing waste management implementation thus poses a critically important issue for keeping the sanitary conditions and the economic flexibility of the municipalities intact. Any effort to improve the waste management situation by enhanced technologies and services is always associated with additional expenses for which appropriate budgets and financial mechanisms must be secured as well. A modern waste management, in addition, comprises more than just the provision of simple collection and disposal offers for the waste produced by society but also a responsibility for resources and climate protection. Both, the state and the municipalities assume financial responsibilities for such a waste management. State policy needs to govern the enforcement of environmental and waste management objectives also by financial instruments and contributions whereas the financial organization of the operative waste services is best in the hand of the acting municipalities.

As a matter to ensure that waste management follows a generally sound and sustainable strategy also in terms of its financing and the integration of the whole society, some basic principles are considered essential. Any measure seeking to secure waste management the financial basis should be aligned and evaluated towards these principles.

The principle **‘the polluter pays’** is commonly accepted and referred to as a practice by which those producing a burden to environment (in the form of a pollution or waste) should be held responsible for the costs associated with managing it so as to prevent damage to society or the environment. Expressed in a simpler and more focused way for the waste management sphere it means that whoever causes waste should pay for its reuse, recovery or disposal. Society as a whole and also each of its parts generate waste and pollution, although the intensity by which this is done varies individually.
Addressing the different intensities of creating a waste or pollution is not directly the subject matter of the polluter-pays-principle which has a more generic meaning. For this the formula of *“pay-as-you-throw”* exists which relates to the approach that each unit of waste or pollution created incurs a specific cost and the payable amount hence must be determined in correspondence with the number of units concerned (‘unit pricing’).

Complementary to the principle ‘the polluter pays’, the **‘full cost recovery’** or cost covering principle is of fundamental importance. Only adherence with this principle can make sure that indeed all costs for the protection of society and environment from pollution and waste related risks are properly accounted and relayed to those who caused them. This principle demands the total expenses to be recovered through charging or securing funding at a level which represents the relevant proportion of fixed and variable costs involved in damage prevention, ideally also including externalities costs. Not recovering the full costs leads to a deficit which has to be met by using the funds or subsidies needed for other purposes or through raising extra funds to avoid shortfalls in services and protection. Inherent in this principle is that the sum of all payments collected in relation to the waste management and risk protection task shall neither exceed nor be less the actual costs.

The **‘principle of equivalence’** is meant to ensure that a balance is being maintained between what different actors do actually deliver, also in terms of services and quality to get wastes properly managed, and the financial compensation they should be able to claim or receive for that. In other words, each performance deserves adequate compensation or the scope of a service determines the extent to which compensation must be provided. Under this principle a continuous improvement of the scope and intensity of waste services or individual engagement cannot be expected without to find adequate reflection in the payments to be made. An effort to engage in reducing waste burdens and the related costs, may it be on the private or commercial level, should be recognized and rewarded correspondingly.

Provision and development of waste services should not go endless. They have to stay economical and ideally involve a personal engagement in order to keep the costs affordable. The 'affordability of costs' cannot be clearly defined since the limitations when things are still affordable and when not anymore are individually different and thus require a sliding scale.

The **'affordability principle'** however wants to make sure that no part of society shall be overburdened from the payment obligations imposed on it for managing the waste and protecting the environment. Therefore is important that responsibilities are shared as above mentioned between the state and the municipalities but also further along the whole resource consumption and waste disposal chain. Affordability and "willingness-to-pay" go hand in hand. If people are willing to pay for the costs of a particular service, then it is a clear indication that the service is valued and will likely be used and maintained also by means of an adequate individual contribution. This in general allows generating the funds actually required to sustain the state of the environment and specific services needed for that. Up to what extent there is eventually a willingness to pay for certain services on the other hand has a limitation in how much one can afford. Not knowing the affordability to pay implies the danger of a failure of recovering the full waste management costs and to even trigger adverse effects like illegal dumping and littering when services are 'overpriced'. The limits which may have to be respected in different environments regarding the affordability of waste related payment obligations have therefore been investigated by institutions such as OECD and World Bank and research must try to reconfirm them. In some countries, people are more willing to pay for a service provided by the private sector than for a similar service by a public entity. This is partly because of a traditional bias that taxes are paid so that government can provide services, and therefore no further charging should be necessary.

The **'fairness principle'** prescribes that when several entities abide to a common rule and thus restrain their liberty in ways necessary to yield an advantage from a mutually advantageous activity like waste management for the whole society, all those benefiting have to submit themselves to the same restrictions and obligations as per the rule and should share similar responsibilities. Industry, trade and individuals contribute to waste generation and hence must be given a share in financing waste management in order to act fair. Ideally would be therefore to charge the entire costs for managing waste in the form of cost-covering fees or charges to each individual waste contributor and service beneficiary. Only this would indeed represent a truly fair allocation of the financial burdens for the collection, treatment, disposal of waste as well as for the aftercare and the restoration of the environmental damage done.
The principle of fairness is also making the link back to the polluter pays principle with the demand that the obligation to carry the financial burdens for creating waste or pollution should not entirely be realized by way of absolutely equal contributions or through arbitrary derived payment rates but indeed take the different individual intensity and scale of pollution and service use into account. Fairness moreover implies a certain degree of social solidarity in that those who have and can afford more should also bear more of the burden and relieve those in less privileged positions a bit.

Waste management related charges are a financing instrument which to bring in correspondence with the above principles is relatively easy. Hence they are the most widely used means to finance recurring waste management costs.
Such charges can stand for its own as an obligation to pay for the creation of pollution/waste and the provision respectively use of services to prevent, control and reduce pollution/waste and associated risks. They can be perceived also as the sum of various components (fees) which are charged individually and complementary to other instruments and ought to address the various impacts a pollution/waste can have as well as the different services/precaution this may require.

Using the proceeds from ***taxes*** is another frequently employed option for financing operative waste management. Relying entirely on this concept is making it already difficult to act in full compliance with the specified principles, however. There exists certain conflicts with regards to the

realization of the ‘fairness principle’ and the ‘principle of equivalence’ and concerns raised towards this end can indeed hamper personal engagement in waste management. Tax income and utilization moreover are subject to dynamic change and political preferences. The multiple purposes tax money generally serves give cause for strongly competing demands and perceived or actual shortages which let the availability of sufficient finance for a continuous, ever more growing task such as waste management quickly come under pressure and reevaluation.

Between taxes and charges exist following main differences. Proceeds made over taxes are generally paid directly into the consolidated revenue account whereas funds generated from charges are desirably allocated to their specified use. Taxes do not relate to the costs of providing a specific service whereas user charges are designed with a view to their making a contribution to the costs of providing a specific service. In real life the charges and taxes existing are often hybrid forms which consequently show a mixed efficiency also with regards to the different functions financial instruments should be able to fulfill in waste management.

IV.Situation assessment

It always is the most advisable strategy to identify suitable ways to improve municipal waste management financing and develop corresponding recommendations based on a detailed situation assessment. Also the preparation of this paper was preceded by such assessment.

General framework applying to MSW financing in Turkey

Turkish municipalities[1] are traditionally assigned as the main implementation authority for waste management. Metropolitan Municipality Law (No. 5216 of 10.7.2004) and the Municipality Law (No. 5393 of 3.7.2005) more specifically allocate sole responsibility for municipal waste management in Turkey on them. Each municipality accordingly has an obligation for the collection of the waste generated at its jurisdiction, whereas operational responsibility for the waste transfer stations and other disposal facilities is transferred to metropolitan municipalities or to municipal waste unions representing associations (Birlik) of the municipalities and Special Provincial Administrations. This cooperation among neighboring municipalities for joint municipal waste management and split of operational responsibilities began in 2003.

The costs the said waste management responsibilities incur on municipalities are so far covered from the municipal budget. With the objective of financing solid waste collection, transportation and disposal services provided by both metropolitan and non-metropolitan municipalities, the government introduced charging of an Environmental Cleansing Tax (**ECT** *[Çevre Temizlik Vergisi]*) to buildings benefitting from municipal SWM services starting from year 1994[2]. The base assessment rates for the ECT are determined separately for non-metropolitan municipalities and metropolitan municipalities for residential, commercial and other type buildings. Users, not the owners of the respective buildings, are liable to pay the ECT in two equal installments in the months of May and November.

ECT rates applying to residential buildings are determined in terms of Turkish Lira (TL) per cubic meter of water consumption. Municipal councils have no discretion of adjusting residential ECT rates set by the government.
For ECT to be charged to the commercial and other buildings, various building groups with respect to the type of use have been defined. Within these groups is differentiated in 'degrees' that reflect decreasing solid waste generation capacities using certain parameters of size. Municipal councils, by taking into account the parameters contained in the commercial database and social and economic differences of the localities, determine the differentiation used to group buildings in their jurisdictions under these 'degrees'. To each degree for commercial and other type building groups applies a fixed annual ECT rate set separately by the government for metropolitan and non-metropolitan municipalities as lumpsum amounts in TL per year.

Base assessment rates are annually reassessed and adjusted along a mechanism that is meant to take the annual change in wholesale prices inflation index (Asset Revaluation Rate) into account for ECT increase.

Billing and collection of ECT amounts is done from water and sewerage administrations who form legal entities with autonomous budgets, accounts, physical and financial resources and are simultaneously in charge for the responsibilities assumed by metropolitan municipalities for water and wastewater issues. Out of the total ECT amounts collected, 80% are transferred to the related metropolitan district municipalities for the solid waste collection and transportation services and the remaining 20% to the metropolitan municipalities for the solid waste disposal and landfilling services. ECT amounts collected in non-metropolitan municipalities are directly transferred to municipal budgets for paying waste collection and transportation as well as services of the Municipal Waste Unions.

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[1] data from the Ministry of Interior indicate that Turkey currently has 1398 municipalities in total, which by status divide into 30 Metropolitan Municipalities (Büyükşehir Belediyeleri), 519 Metropolitan District Municipalities (Büyükşehir İlçe Belediyeleri), 51 Non-metropolitan Provincial Central District Municipalities (İlçe Belediyeleri), 400 Non-metropolitan Central District Municipalities (İlçe Belediyeleri) and 398 Non-metropolitan Non-central District Municipalities (Belde / Kasaba Belediyeleri)

[2] by adding Article 44 to the Law (no. 2464) on Municipal Revenues

A further means for the financing of municipal waste management costs was installed in Turkey with the instrument of charging waste services via tariffs. The demand for using this instrument goes back to stipulations in the Law on Environment (No. 2872 dated 26.04.2006, amended by the Law No. 5491), the Law (No. 4736) on Goods and Services Tariffs of Public Institutions (Article 1), and the "Regulation on Rules and Principles to Be Applied To Determine Wastewater Infrastructure and Municipal Solid Waste Facilities Tariffs".

Latter regulation determines the rules and principles to set tariffs related to constructing, operating, closure, monitoring and maintenance of the facilities aimed at collecting, transporting, recycling (composting, incineration) and landfilling of residential (municipal) solid wastes. The way these rules and principles including the tariff calculation mechanism were elaborated and municipalities instructed to adopt them would ensure the recovery of the full waste management cost to be achievable.

Generally can be concluded that Turkish municipalities since 2006 are legally obliged to determine solid waste collection, transportation and disposal tariffs (**EKAT** *[Evsel Katı Atık Ücret Tarifesi]*) and to bill them with no discount to any real or legal person in form of a waste service charge. This mandatory and irrevocable full cost recovery obligation for municipal waste management services since 13.05.2006 is confirmed by decisions on cases brought before the Turkish Court of Accounts (Sayıştay)[3].

Situation and development in municipal waste management finance

Irrespective of aforementioned legal requirements it still has not been achieved that all municipalities in Turkey apply EKAT. This is different from ECT collection which apparently is a practice that works reliably nationwide. Application intensity and design of the currently adopted financial instruments impact strongly on the situation most municipalities in Turkey face regarding waste management finances.

After political enforcement of the ECT on the basis of uniform base assessment rates in 1994, a significant adjustment mandated in 2004 resulted in a differentiated ECT for residential and commercial type buildings in dependence from the municipalities' status. At that time also imposed was that applicable ECT rates in metropolitan municipalities should be fixed at least 25% above the level for (non-metropolitan) municipalities.

Further hereon applies the rule that ECT rates are to be increased annually in line with an Asset Revaluation Rate announced by the Ministry of Finance. To the extent that the corresponding law stipulates that setting new ECT rates must only consider a revaluation rate increase which goes above 5% of the ECT amount, that adjustment procedure is not consistently followed, however.
In fact, while cumulative growth rate of the Asset Revaluation Rate has been in the range of 133% between 2005 and 2017, cumulative ECT growth rates of metropolitan and non-metropolitan municipalities in TL terms have only reached 87% and 75%, respectively. Similarly, while cumulative growth rate of the yearly average exchange rate between the Turkish currency and the Euro has been around 144% between 2005 and 2017, ECT rates of metropolitan and non-metropolitan municipalities in EUR terms have been decreased by 24% and 28%, respectively. Therefore, residential ECT rates have been adjusted neither in line with wholesale price increase nor in line with devaluation rate of TL against EUR.

An adjustment of ECT rates undertaken directly in line with Asset Revaluation Rates in the 2005 - 2017 period would have to result in a 25% higher ECT rate than the current one in the metropolitan and a nearly 48% higher ECT rate than the current one in non-metropolitan municipalities. If in adjusting residential ECT assessment rates charged per m³ of water consumption in 2005 consideration were made of the development in currency balance between the TL and EUR, then the ECT rates for metropolitan and non-metropolitan municipalities had to be over 400% higher today. Consequently a considerable loss of the values of residential ECT rates in real terms must be observed due to the legally prescribed adjustment mechanism.

[3] see Court of Accounts; External Audit Report 2014 - Elazığ Municipality (Elazığ Belediyesi 2014 Yılı Düzenlilik Denetim Raporu Sayfa 27 - 30)

Municipal waste management financing currently experiences various consequences from this.

The lacking realization of cost covering tariffs in many municipalities and the imperfect design of the ECT to recover total waste management costs cause a general shortage of available finance for waste management tasks. Municipal accounts in this segment continuously suffer considerable deficits which the state must offset with subsidies and transfers to their budgets. Surveys done among the municipalities that cannot comply in a satisfactory way with waste management regulations showed that the majority blamed the situation of finances for this.

The financial load municipalities have to carry to comply with their responsibilities for waste management consumes a significant share from their overall budget. An audit report of the Turkish Court of Accounts released in 2007 indicated, based on data from the Ministry of Finance that municipalities needed to allocate not less than 40% of their budget for the environmental tasks. The situation change that has occurred in this regard since then can be attributed to a general increase of municipal budgets rather than the fact that municipal spending for environmental tasks has lost in significance.

10.5% of total municipal expenditures in 2016 were related to environmental protection service expenses. Across all municipal categories these expenses are considerably higher than the revenues generated from ECT collection. ECT revenues materialized in Turkey in the year 2016[4] comprise in the overall only slightly more than 1% of total municipal revenues. In metropolitan municipalities were generated 16%, in the non-metropolitan provincial central district municipalities 5% and in the non-metropolitan non-central district municipalities 79% of the total ECT revenues, respectively.

Consequently, there have huge deficits been produced in this budget segment nationwide, whereby metropolitan municipalities contributed almost 35.5%, non-metropolitan provincial central district municipalities 7% and non-metropolitan non-central district municipalities 57.5% to the accumulated deficit, respectively. Deficits from waste service provision (ECT revenues minus environmental protection service expenses) increased between 2014 and 2016 continuously from TL 6 billion to over TL 8.5 billion showing the decreasing impact of ECT revenues on cost coverage. The overall average cost coverage (the ratio of ECT revenues to total environmental protection service expenses) is less than 10% and has been deteriorating steadily from 9.70% in 2014 to 9.67% in 2015 and further to 9.57% in 2016.

Waste management cost coverage ratio by ECT is at the lowest level for metropolitan municipalities (which receive only 20% of total ECT revenues from water and sewer administrations) and at the highest level for non-metropolitan non-central district municipalities (which keep 100% of ECT revenues collected with water bills). Whilst the coverage level of environmental protection cost from ECT revenues in metropolitan municipalities declined from 5.15% in 2014 to only 4.54% in 2016, it has slightly increased in the non-metropolitan non-central district municipalities from 12.10% in 2014 to 12.66% in 2016.

Certain exemptions and discount regulations for ECT application contribute to the low coverage that is achieved with ECT revenues on incurred waste management costs. Diverse type buildings operated under the public domain and state supported programs are not held accountable for ECT. Numerous of those institutions, although being sources of waste generation too, often do not have their separate collection systems and thus dispose of their amounts via the ordinary containers provided for residential waste without paying any extra contribution to municipalities. Arrangements with a special full cost recovery service charge, such as İstanbul Metropolitan Municipality has it for example through a municipal subsidiary company to collect and dispose clinical waste from hospitals and other healthcare institutions[5], are not yet commonplace in all municipalities and for all types of waste. Exemptions from ECT exist also for religious and remote places. Other categorizations entitle to discounted ECT rates. Such can be the status of belonging to underdeveloped areas or provinces with priority for investments or to municipalities having small populations.

[4] data published by the Public Accounts General Directorate of the Ministry of Finance of Turkey

[5] İSTAÇ (İstanbul Çevre Yönetimi Sanayi ve Ticaret A.Ş. / İstanbul Environmental Management Industry and Commerce Co. Inc. collects clinical waste from about 10,000 units in the total amount of about 22,000 t/a

EKAT is an alternative and, under proper application of the regulations, can be seen as a completely appropriate instrument to ensure a full recovery of recurring municipal waste management cost. However, it seems to be at the beginning of realization in Turkish municipalities only.

In the frame of the upfront situation analyses a review of the implementation case in seven Turkish municipalities belonging to the different status categories was conducted. It was established that in each municipality with the EKAT already in place, introduction of this instrument had been enforced only recently[6]. Oftentimes implementation had commenced just months or a few years ago so that only the first fiscal years under full scale application of EKAT have passed and experiences as well as the implications on municipal budgets are not really tangible yet. The reviewed cases showing the adoption of EKAT as a financing instrument included *İzmir Metropolitan Municipality, Tekirdağ Metropolitan Municipality, Isparta Municipality, Giresun Central District Municipality* and *Bulancak District Municipality of Giresun Province*.

Bulancak District Municipality, for example, followed the cost plus mark-up method[7] in determining its total waste management costs to ensure setting full cost recovery service charges as required in the regulation on tariffs. As a result, the total system cost of residential customers is calculated to be 0.82 TL per m³ of water consumption and started to be applied as waste service charge as of September 2016 in water bills issued to the domestic water customers.

In *Giresun Central District Municipality* as the biggest municipality in Giresun Province, residential waste service charge in comparison is 1.13 TL per m³ of water consumption. It is charged to both, domestic customers and building construction sites based on actual readings of water meters.

With the introduction of waste service charges, *Bulancak Municipality* starting from 2017 aims to eliminate the deficits which resulted from the insufficient revenues from ECT collection in the budget for environmental protection. Cost coverage ratios from ECT revenues in the municipality were only 4.76% in 2015 and 4.44% in 2016. Consequently, substantial amounts of deficits accrued every year with the need to be cross-subsidized by other municipal revenues. Giresun Province, which is declared one of the "Priority Provinces for Investments" by the government, applies the residential ECT rate as per the valid regulation with 50% discount (0.10 TL instead of 0.21 TL/m³).

In the other investigated cases, namely *İstanbul Metropolitan Municipality* and *Elazığ Municipality* it was found that charging EKAT had not been realized yet by the year 2016. The analysis of these last two cases confirmed the problem of insufficient coverage of environmental protection service expenses by the sole use of the ECT. Considerable deficits between ECT revenues and these expenses are found for both municipalities in a historical retrospective.

The environmental protection objectives as formulated in Article 56 of the Constitutional Law of Turkey definitely incorporate the need for reducing waste generation and the amount of waste to be landfilled. Absolutely detrimental to such targets is a situation as can be observed in Turkish municipalities with huge deficits accruing as a result of ECT as an insufficient instrument to achieve the coverage of recurring waste management costs. Adequate financing is a prerequisite for implementing effective and organized services compliant with administrative and legal requirements and in order to be able to perform waste management in the directions prescribed by Turkish environmental strategy and the Constitution.

[6] for the cases investigated the start date was mostly in 2016

[7] Total System Cost = Residential Solid Waste Management Service Cost + Return on Equity (Own Municipal Funds)

V. Recognized and effective applications to finance municipal waste management and services

Waste management should be geared to provide high environmental standards and service quality in a sustainable manner at reasonable costs. This requires a multitude of well-coordinated instruments and action fields. Securing the financing for sanitary services and investment in waste infrastructure developments and safe disposal practices is of utmost importance and part of the above strategy. It should therefore involve in particular finance mechanisms which provide the incentive to act cost-effectively and incorporate a controlling and educational potential.

Prominent is the role various economic instruments can be playing in this regard to strengthen waste management systems and the "polluter-pays-principle" by providing revenues. The use of such instruments is therefore common practice in most countries and an integral component of their waste management financing concepts. The rationale beyond the revenue generating function of certain economic instruments for environmental policy is their potential to influence waste disposal behavior via the price-mechanism making a specific behavior more or less expensive. Hence, economic instruments comprise all levies, permit trading schemes, and subsidies that create incentives and disincentives mobilizing the self-interest of consumers, producers, and service providers to make environmental improvements or reduce adverse environmental consequences.

In response to varying policy objectives a large array of instruments has emerged. From a public administrators perspective a differentiation can be made into *revenue-generating, revenue-providing*, and *non-revenue instruments*.
Examples for each category are shown below.

Revenue-generating instruments	Revenue-providing instruments	Non-revenue instruments
• charges • fees • taxes • royalty payments/ concession/permit levies	• subsidies • bonuses • tax rebates • tax exemptions • licence waivers	• deposit-refund systems • take-back solutions • performance bonds/ sureties • permit trading schemes

At each stage of the waste management process, different economic instruments may be appropriate to further the respective environmental objectives. For example waste charges may create incentives for improved separation and general waste reduction at the stage of waste generation. Deposit-refund systems may create incentives for better collection at the same stage. At the stage of waste treatment, advanced recycling fees can provide the revenue for the recycling processes so that recycling of certain products is increased. At the stage of waste disposal, landfill taxes can create disincentives for landfill disposal and divert waste streams to other waste management methods (e.g. recycling or incineration) instead.

Economic instruments do not substitute but complement and strengthen regulatory and other approaches in the respective policy area.

Revenue-generating instruments make up the largest proportion of instruments used to implement a certain economic policy and get waste management financed. According to their principal policy objectives, revenue-generating instruments are often classified in three main categories[8]:

[8] here classification used by the European Environmental Agency

- **Cost-covering charges;**
  these charges are directly levied on a specific service or act of pollution in order to provide revenues which serve to get either the costs of environmental services and abatement measures, such as water treatment or waste collection and treatment *(user charges)*, or other environmental expenditures *(earmarked charges)* covered.
- **Incentive taxes or charges;**
  are levied on pollution or resource consumption, with the objective of changing the behavior of producers and/or consumers.
- **Fiscal environmental taxes;**
  are levied on pollution or resource consumption, but primarily with the objective of raising revenues.

Many ways exist for the practical realization of these instruments, some concepts are specified below.

Revenue-generating instruments

- **waste service charges, based on collection and disposal services received**
- **pollution charges, based on pollutant loading**
- **waste charges, based on quantities and hazardous degree of the waste produced**
- **tipping fees (gate fees) to unload at transfer or disposal facilities**
- **product fees to handle disposal of problematic goods**
- **disposal taxes, added to tipping fees or charges to influence disposal choices**
- **pollution taxes, added to service charges to incentivize pollution reduction**
- **presumptive taxes, based on presumed levels of pollution**
- **license fees**

Municipal waste charges, and their tariff structure are, within statutory limits, usually municipally determined. These charges are earmarked to cover the cost of municipal waste management, such as the costs incurred by waste collection and transportation, as well as the establishment, maintenance, decommissioning and aftercare of facilities for waste treatment and disposal. In practice, the type, quality and quantity of waste, as well as the frequency of collection and, for instance, the conditions for collecting and transporting waste on the property and in the transport area may affect the waste charges. In principle, these charges should correspond to the level of services offered by the municipality and, among other things, steer waste management towards the order of priority set forth in the national policy, or more generally, the so-called waste hierarchy.

The more is oriented on material flow management and resource protection objectives through a modern waste management, the more grows the importance of charges to also fulfill steering functions and recover rising system costs. In this situation it is natural that the public demands the system costs to be far more fairly allocated in dependence from waste disposal performance and individual burden caused by service use and that waste charges therefore should be levied in an absolutely just manner.

Variable rate pricing and user differentiated charge models, commonly referred to as ‘pay-as-you-throw’-schemes or PAYT programs are the answer to that. This approach of waste charging is comparable to the payment regime applied to ordinary utility bills with the actual payment being closely related to the amount of consumed utilities, such as water, gas or electricity. Identification of each user and service availed, measuring and pricing the service amount, and a correct allocation of the price to the user are necessary prerequisites for PAYT implementation.

The charge eventually will be realized via a fixed fee component which is due for service provision and a fee which, depending on the specific amount and type of waste generated and actual service use, is variable. A cost recovery and waste charging that is entirely and solely linked to actual waste generation or obtained services can indeed be critical. It increases the volatility of collectable revenue the more households and commercial customers react on the incentive to save on charges by reducing the waste quantities handed over to the municipal services. Introducing the hybrid system, with one component being a flat-rate charge that covers a main part of the structural costs of waste services and the other a variable part depending on the amount of service availed, helps also to overcome such potential trade-off between the environmental incentive effects set and the stability of revenues obtainable from waste charges.

Pricing policies adopted for household waste collection in many countries meanwhile play an important role in encouraging sorting of waste for recycling by the disposing household. An example for this, which encourages households to reduce mixed residual waste amounts, is that certain services offered for source separated recyclables (like paper, glass or kitchen and garden waste) are provided for free or at a low fixed annual fee. That one is charged for specially provided bins, but a dynamic pricing is applied on each pickup of mixed (residual) waste or emptying of the respective container.

What can be the options for levying a waste service charge or user fees depends on the type of waste collection system in place and available service offers. Where waste is collected from collectively used containers situated at public places, a charge or fee cannot be based on single containers or an individual user. In such a case the costs are to be divided among all users and the charge/fee has to be based on measurable data related to the premises on which the waste is being generated. Such data for example can be the number of residents, floor space, the value of the property, or even the individual water consumption.
If the service is being provided for single premise collection containers, the fee can be based on the volume of the container as well as the number of emptyings performed by the collection service, and thus a ‘pay-as-you-throw’-scheme indeed implemented.

Theory suggests that the optimal policy instrument in waste management is the application of a tax or charge equal to the marginal costs (for the prevention) of environmental damage. In other words, an environmental damage respectively the prevention effort associated with one more unit of waste that can be precisely estimated or established should be levied on each unit of output. A disposal fee or charge set at a level that is equal to the measured damage (prevention) costs, ensures that the full costs of disposal were paid.

Waste management fees and charges on the other hand have to follow a lot of different requirements. Some, like the adoption of the polluter pays-principle, may be given by law, some represent economic needs, like the achievement of full cost recovery for financing recurring municipal waste management expenditures. So-called ‘soft’ criteria like social aspects and a general request for affordability may have to be incorporated in charging policies, too. Certain aims can be controversial and the concept of adopting a single charge model cannot fulfill all of them completely. Approaches that form a compromise suited to the specificities and the prioritized aims in the place of adoption are always required. The foundation for such compromise must come from a sound knowledge of the different needs and effects to be expected.

Complementary instruments

Municipal waste charges, as can be derived from the above, may have their limits to provide the whole financial basis for waste management tasks. Nevertheless is the focus first and foremost on what a certain measure can help to recover the waste management cost. Authorities hence have mainly waste charges in mind. Awareness needs to be raised on the fact that the bunch of instruments available to create funds for waste management tasks is much bigger. To avail of the wider spectrum is a way to overcome the limits of a service charge as the only approach, and offers possibilities to address further environmental objectives and waste actors.

Being complementary elements in the financing of waste management these instruments therefore can be (and often are) employed additional to waste charges.

Direct fees (earmarked charges) are general practice. Municipalities or facility operators in many countries levy them upon the acceptance of certain waste materials at specific reception points or for providing a waste-related service that goes beyond standard collection offers and/or service intervals. Examples are the extra payments which have to be made for the pickup of bulky wastes or fees charged at staffed public waste management sites (e.g. amenity centers). The pricing policies adopted for these fees, in addition to the cost covering they must ensure, may consider that contributions for steering a specific environmental performance are being included (reduction or diversion targets) or a premium is added for reflecting the extra service or a certain pollutant load (pollution charge). Any kind of such direct fee leads to greater accountability to the customer since collection of general municipal service charges is becoming more difficult where providing such specific treat is not included or there is dissatisfaction about the general service.

The impacts expected for the environment and management efforts once certain products enter the waste stream provide the principal reference and justification for charging *product fees*. These kind fees are levied on products before entering the waste stream. Product fees can take the form and fulfill the same function like a charge which is levied on pollution or for the right to place products on the market, both which can be found as alternative applications of this instrument in an international context.
An arrangement that combines the levying of product fees with the payment of recycling subsidy does assume a similar role that extended producer responsibility and deposit-refund schemes normally take (☞ see also the extra information on deposit-refund provided later). Obligatory fees on plastic bags provide a known example for this revenue-generating instrument. Ireland is one of the countries where this kind of a fee was very successfully enforced in recent years.

Advanced recycling fees (ARFs) are fees paid by the consumer on product sales and used to cover the cost of recycling. ARFs are often assessed per unit of the product sold but can also be assessed on a weight basis. The objective of ARFs is to internalize the costs of the recycling of products after the end of their useful lives already in the purchasing price and thus to guarantee that prices better reflect products' life cycle costs. Extended producer responsibility (EPR) obligations are oftentimes executed by way of ARF schemes. Through that, certain products and waste material streams like tires, batteries, electronic goods, packaging or end-of-life vehicles have been successfully placed under ARFs. While they do not create an incentive for increased recycling (this is done through mandatory recycling quotas) they generate revenues for the recycling process. ARFs have therewith contributed to the creation of strong recycling markets in the course of only a few years. However, also ARFs burden the costs of recycling on the consumer. Germany in certain fields of EPR implementation (like for packaging waste and paper packaging) has a requirement to arrange the collection in agreement with the local municipality. This leads into a mutualisation of the costs which, in fact, triggered structures that eventually turned out inefficient and raised costs unnecessarily. An example how municipalities can financially benefit from this are ancillary charges which are paid by the group of licensed producer responsibility organizations (PRO) to the municipality for the financing of help desks and the provision and maintenance of areas for the waste collection containers. It is understood that the schemes operated in Turkey in the EPR segment and by PROs (e.g. ÇEVKO or Lasder) so far do neither include nor foresee any direct financial cooperation with municipalities.

Permit trading is an approach whose application was inspired through global market concepts (emission trading) but likewise implemented on a national scale, with one example coming from United Kingdom (Packaging recovery notes, Landfill Allowances and Trading Scheme (LATS)). The concept can be considered another way to generate revenues for general budgets, when the permits are not just given out for free but sold or auctioned. Tradable permit schemes, introduce a requirement to hold allowances for certain amounts of waste disposed of. Economically it is equivalent to a disposal charge and can provide incentives for waste avoidance and reduction of disposable waste amounts.

Lots of popular destinations in Europe and the world have taken to charging tourists a little extra for financing environmental protection and sanitary services as especially challenging duties for them. These co-called *tourist taxes* are levied by accommodations, at beaches or by the managements of main tourist attractions and transferred directly to the respective local government units. On the Balearic islands of Spain this tax is named 'ecotasa' to make clear the use of the revenues mainly for environmental objectives, such as the area cleanup, remediation of spoiled sites, expansion of waste collection infrastructure and educational activities. National or municipal authorities determine how to set the tax rates, there can be further variations in dependence on season, accommodation categories, etc.. An 'eco tax' can be imposed as a stand-alone solution, even on products with a high ecological impact, it can also be that a tourist tax is levied to cope financially with other tourism-related challenges and needs but this could include a proportion earmarked as ecological contribution.

A *performance-dependent (non-compliance) fee or (compliance) bonus* describes a payment which is levied depending on compliance with predefined target levels of performance. Pollution thresholds can also give the yardstick for measuring performance (pollution fee). The payment can be imposed from an administration like municipality on entities whose activities have a larger meaning for the waste management or pollution situation in the area. Alternatively is possible that a superior authority monitors the performance of municipalities against predefined targets and imposes such a fee or is paying them the bonus based on whether the targets were met or not.
The Wallonia region in Belgium gave an example where such an arrangement was temporarily exercised to charge communities on excessive amounts of residual waste generated and by that, for either an insufficient effort or low performance in source separation. Target levels for per capita residual waste generation rates defined in national and regional plans gave the thresholds against which were evaluated whether municipalities had to pay kind of a penalty fee or entitled to receive a reward payment.

Centrally setup waste disposal facilities and landfill sites have to deal with the discards of a large number of waste generators from outside areas. The population in these locations as a result hereof is burdened overproportional to their own waste generation by different type nuisances (e.g. traffic, emissions) and experiences a devaluation of land and life quality that the outside waste generators do not. Payments in compensation could be imposed on those benefiting from relocated disposal and not suffering the inconveniences others have in their area in form of *site utilization fees*.

Applying a *landfill (disposal) tax* as an incentive or disposal tax goes in a similar direction. Dumping waste on landfills is normally the least costly method of disposal, in particular when technical standards at these sites are kept low and the burden environment and society pay for such practice is left unconsidered. This results, for as much as a gate fee is at all charged for the dumping, in the lowest prices paid for the tipping of waste at a landfill. Not only from the environmental perspective there is a need to break with this practice. The landfill tax is a means to incorporate also the costs for externalities and thereby increase the price and make landfill disposal less attractive.

Several objectives can be addressed with the tax.
An unwanted disposal practice such as landfilling is discouraged in that an economic penalty applies to it. Landfilling, as the least preferred option according to the waste management hierarchy should face the highest penalty. A progressive increase of the tax can provide a concept for the potential payers to get used to such tax but furthermore also a means to raise its dissuasive character. By making disposal more and more expensive in the long-term, an incentive for the selective collection and recovery of waste materials is created. The more of the wanted developments of the tax (e.g. reduction of landfilled waste) are seen on the one hand side, the smaller gets the basis for levying it (and thus the tax earnings) on the other hand. Progressive increments also help to fill this gap for a while.

Revenues that the tax generates can be re-invested in multiple ways in waste management, preferably however into measures that serve the development of alternatives to landfilling and the safeguarding of the landfill sites. Part of that strategy can be to use revenues as stimuli for municipalities that practically engage in the desired direction of performance in the waste management field. Achieving full cost recovery and supporting material separation in their territories could entitle local authorities to benefit from certain revenue refunds. These refunds can go into investments or the lowering of the waste management costs, thus two opportunities that make the population benefit in form of better waste services or stable if not reduced charges.
The linking of refunding with certain quality criteria can trigger substantial improvements in the desired directions, e.g. quality of services, quality of material streams, etc..

Example for (best) practical application:

The landfill tax in Catalonia/Spain[9]
Spain does not apply a landfill tax at national scale but the country's Waste Act incorporates the right that economic incentives can applied by the waste authorities in different regions in order to promote a more environmentally benign waste disposal performance. The national legislation on taxation moreover defines the circumstances when regions can create their own taxes. Several places used that possibility to levy a special tax on the landfilling of certain wastes but the tax scheme on landfill disposal (and meanwhile also on incineration) in Catalonia is the only one that targets on municipal solid waste. In addition, this tax scheme also allows the return of the revenue to the payers of the tax according to their waste performance. Introduction of that scheme took place in 2004 and 2008 respectively, and was reinforced by investments made in parallel into waste infrastructure and separate collection programs. The applied tax rate initially was EUR 10 per ton of municipal waste landfilled and brought over EUR 32 million in revenues in its first year.
Catalan Law 8/2008 on financing infrastructure and waste management established additionally a tax of EUR 5 per ton of municipal waste incinerated. Beginning from 2010 an incremented rate of EUR 20 for landfilling was charged to those delivering municipalities that had not initiated separate collection schemes for biowaste. Tax earnings are earmarked for the Waste Management Fund (Fons de Gestió de Residus) with the stipulation that at least 50% of the revenue generated serve the financing of waste pre-treatment. The Catalan Waste Management Fund is the most important instrument for the financing of waste management strategic goals and infrastructure development in the region.

Revenues from the fund not used to co-finance waste pretreatment are refunded to local authorities according to their performance regarding separate collection. Especially the source separation of biowaste is incentivized by refunds that vary depending on the quantity and the quality of the material delivered to the biological treatment plants. Periodical composition analyses of the waste provide the basis to assess the quality in terms of contamination rate. Other criteria which are subject to annual revision by a Municipal Waste Governing Board do also exist for refund decisions. In that way the refunding program can be kept flexible and act as steering instrument to promote certain strategic municipal waste management goals. Such can involve to increase the individual engagement in waste reducing activities, for example through home composting, and consequently the lowering of the municipal waste management costs. Local authorities in Catalonia apply once a year for refunding, accrediting the compliance with the refund criteria in force. The positive effect of the taxation that less waste is going to landfill and incineration has resulted in decreasing revenues of the disposal tax over the years and therefore requires the refunding concept to be dynamically adjusted to the lower budget. For example, home and community composting have been more in the focus recently, whereas subsidies for the already well-established separate collection of paper was cut down, also with view to the revenues municipality could obtain for the sale of these recycling materials.

Landfill tax rates applied are very different. Most countries with landfill taxes in place introduced them together with regulatory measures to ban certain substances from or enhance general standards at landfills. Gradual rising of the landfill tax rate is also pursued in many countries.

[9] using information from the 'Regions for Recycling' initiative ('Good practice Catalonia: Waste Disposal Tax'), September 2014

Ireland had also adopted landfill tax schemes similar to that in Catalonia with a progressive increase of the applied tax rate from initially EUR 15 to EUR 75 per ton within about 10 years[10]. The tax payments are also remitted to an Environment Fund that invests these revenues for a wide range of waste management purposes, among others collection infrastructure developments, enforcement and awareness creation measures.

Similar to a national flat tax per ton landfilled works an *additional tariff for material tipped* on a local landfill, the earnings from which may be redistributed across the user municipalities to fund diversion programs and facility investments. Quebec province in Canada has for example mandated such tariff regulation. Also this fee has increased over time as a method to discourage landfill use.

A second option for that can be found in the Czech Republic where the charge for disposal in landfills consists of two components. The first one, so called a basic component, represents the compensation to the municipality in which territory the landfill is based. This provides the municipality an additional revenue. This part of the charge is collected by the landfill operator who has to transfer it to the respective municipality. The amount is laid down in the National Waste Act. The second component of the charge is a risk component that is paid for the protection effort against hazards from the deposited waste. This component is transferred to the State Environmental Fund.

Example for what can go wrong:
Bulgaria in 2010 has also introduced a landfill tax for municipal waste deposited at the landfills. The tax is due by the landfill operators and calculated in the price for waste service. Considering that all municipal waste landfills are owned by the municipalities and the permits for operation are issued on their behalf, the taxes are actually managed by the municipalities. The revenues from landfill taxes are deposited into special accounts of the municipalities and the generated funds can be spent for financing of investments into waste treatment and recovery infrastructure after permission of the Ministry of Environment and Water. Similar to other countries it thus is the purpose of this tax is to stimulate measures at municipal level leading to the reduction of the quantities of landfilled waste and the development of waste recycling and recovery infrastructure.

In 2012 the tax was set at 30 Bulgarian Lev per ton of waste and since then has also increased gradually but very marginal to 35 Bulgarian Lev. An amount of EUR 35 million per year was expected in funds generated through the landfill tax[11]. Aside from that the tax instrument wasn't always applied very consistently, many municipalities missed to make the effort to reinvest the revenues from the tax into waste infrastructure improvements and even fell short in closing down the uncontrolled dumpsites. Tax payments could be evaded by disposing the waste on such sites whereas recycling progress is hampered in the result of further lacking separation offers and facilities.
European statistics about municipal waste treatment and on plastic waste recycling[12] reveal that countries with a landfill tax in place usually belong to the top performers, Bulgaria which adopted that instrument too but hasn't made proper use of it unfortunately ranks still very low in both sectors.

Concepts to be further considered to enhance the availability of waste management funds
It is often overlooked or receiving much less of attention that the spectrum of measures which can be adopted to improve the financing capacities of municipalities in waste management goes far behind initiatives on the revenue side. Governments, as shown above, can draw from a broad variety of revenue-generating instruments and creating new ones is certainly possible. However, carrying capacities of markets and society must be respected always as well and funds will never be sufficient unless efficiency and costs are controlled and optimized at the same time.

[10] see CEWEP, landfill taxes and bans 2017
[11] see GIZ, 2012: Economic Instruments in Solid Waste Management. Case Study Bulgaria
[12] Eurostat 2015, Consultic 2016

Enhancing the availability of funds to cover the recurrent waste management costs therefore should also take into consideration the options to

- *involve the private sector,*
- *free funds from current sources by operating existing services more efficiently,*
- *maximize revenues available from existing taxes or charges.*

Private sector integration

Involving the private sector can play an important role in the overall financing and reduction of financial burdens for municipalities in the waste management field. Where existing public service delivery is either becoming too costly or difficult to provide on full scale, private sector participation offers a means of enhancing efficiency and lowering costs through the introduction of commercial principles and greater attention to customer satisfaction.

Are local public funds chronically in short supply for investment, the private sector may be able to mobilize needed investment funds. The need for up-front investment finance from public sources sometimes can be avoided in this way.

The private sector in addition is well situated to draw on local and international experience in the waste management field and introduce proven and cost effective technologies along with management expertise. All that can offer municipal and state authorities a chance to optimize services as well as cost efficiency and bring financial relief for them.

Municipalities have following options at their disposal to realizing this and achieve a reduction in what they must spend for waste management tasks:

Public-Private Partnership (PPP)

A public authority establishes (a) joint venture(s) with the private sector to which each party contributes assets and resources, and each party assumes certain risks and responsibilities as defined in contractual agreements. The PPP model is for example adopted to organize the waste disposal services for large metropolitan areas.

Franchise

A public authority grants a private firm an exclusive monopoly to provide a specific type of solid waste service within a specific area. The firm collects its own revenues from generators within that area and from selling the recyclables and by-products recovered from the solid waste of the respective area.

Contracting

A public authority awards a finite-term service contract to a private firm to provide solid waste services and pay the firm for the services delivered. Alternatively a management contract to a private firm to provide management oversight of others who are providing solid waste services might be concluded.

Concession

Public authorities allow the private sector to utilize one of its resources for profit-making purposes. Landfills and the waste delivered can be such a ‘resource’, although concessions may also involve the construction of other long-term facilities to sort, treat or dispose of solid waste. Authorities provide a guarantee of flow control, so that amounts of wastes received match design and capacity of the facility. To avail of the treatment and disposal service, users have to pay a tipping fee or service charge.

Privatization of landfill operation at existing sites can be achieved by means of a service contract. For any new sanitary landfills, full design-to-operation privatization should be considered. The mode of such privatization would be a DBOO or DBOT concession agreement. An agreement of that kind is characterized by the fact that a firm designs, builds, owns, and operates (and/or transfers) a facility. The private sector typically prefers to design the facilities it eventually must build and operate. This is particularly true for sanitary landfills, because of the potential long-term liability for any pollution resulting from inadequacies in the design.
Said type agreements are generally referred to as concession types of contractual agreements between public authorities and the private sector and eventually end with a transfer of ownership to state or local governments. Usually this is done at the end of the concession period but, in some cases, already at the end of successful start-up operations. The size of the investment and the depreciation period are key differences between a contract, for which the private sector invests in equipment and supplies, and a concession, for which the private sector invests in a facility.

It can be misleading for municipalities to believe that involving the private sector means automatically reduced service costs. Ultimately, the beneficiaries, thus residents and commercial entities have to pay the complete costs for the services received to manage their waste. Also an investment made on behalf of the municipality represents costs which the private investor has to recover, usually added with a premium for the accepted risk, through contracts with the municipality. The municipality for its part charges these expenses eventually also to the beneficiaries of services or must cover them from the municipal budget otherwise.

Fund solution as a financing vehicle

Setting up special funds can create a diversified pool of funding resources, including official development assistance and national contributions, for dedicated financing of activities and investments that lack a budget at the level of municipalities. So created 'environmental funds' represent a fundamental instrument for the subsidized financing of environmentally oriented tasks including but not exclusively waste management activities. The model of national environmental funds is commonly applied and most particularly known from EU accession states where such solution is among the most popular tools to mobilize resources to finance certain waste management measures and development.

Growing awareness about the environmental threats from a maintained status quo and commitments to invest into improvements of the environmental situation, partly in the course of the accession negotiations, showed a strong incentive for implementing these funds. Both these factors also helped the countries in encouraging international donors and public-private partnerships to promote additional contributions. A particular importance of these funds hence lies in their function to provide a vehicle to administer financial inflows from diverse sources and to spent the funding properly and demand-oriented based on clear procedures and assessment criteria, and independent from public budget decisions and constraints.

Installed and governed at national and subordinate territorial levels these funds usually draw on a wider system of pollution charges, concession and license fees, loan repayments and interest but also penalties as typical sources of income. International transfers and donor aid as well as certain state contributions may provide an additional financial inflow into these funds.

The creation of a sound regulatory and programmatic fundament as well as appropriate institutional structures forms the basis for a fund solution. Main principles and structures of the funds are governed through specific legislative acts and articles and by way of setting up practical administrative bodies and hierarchies. Especially the institutional set up and administrative structures are determining which degree of independence the fund will be given. A programmatic framework defines the strategic direction and operating fields of the fund. From the decisions made about organizational setup, principal orientation and where the fund is eventually established

derive the target levels of action and main potential beneficiaries. Establishing charges levied for resource use, on burdening the environment with waste or on environmental pollution, penalties and fees from the aforementioned spectrum as the main income sources for these funds leads to a realization of the polluter-pays-principle and steering effects.

Croatia, the Czech Republic and Poland belong to the EU accession countries that established such environmental funds with a clear intention to use them as a means to provide secure financing also for specific waste management tasks and investments independently from the rather low revenues municipal administrations were expected to generate from environmental levies and waste service charges. Self-financing and a previously agreed utilization of the money from these funds became basic principles for their establishment.

The 'Státní fond životního prostředí ČR (SFŽP)' of the Czech Republic among others uses allocations from state budget and fees collected from polluters, including waste water discharge and air pollution fees as well as other fees imposed under the Act on Waste as income sources. Tasks dealing with environmental risks, contaminations and waste management objectives make up one of the seven focal areas for funding support.

Croatia has established the 'Fond za zaštitu okoliša i energetsku učinkovitost (FZOEU)' which is fed from dedicated revenues that include product fees, pollution charges and licence fees. From the fund comes the customer refund for packaging takeback, it has co-financed the setup of separate collection and waste treatment infrastructures and municipal collection vehicles.

Example for (best) practical application:

The Polish environmental fund system[13]

The system of environmental funds in Poland is showing the greatest degree of independence from state institutions whereas in many other countries these funds are administered from the environmental ministries. Different type charges, royalties and various penalties and fees[14], including product fees represent the main income flows into the funds operated in Poland. These sources supply over 40% of the financing for environmental protection in the country. Whilst at the beginning significant contributions to the funds came from EU-structural programs this has now changed and loan paybacks and interest take up quite an important position in the money inflow. Poland is meanwhile employing a multiple split of the fund solution, with funds created at the national, the voivodeship (regional), the poviat (district) and gmina (municipal) level. These funds are independently managed and provide financing at exactly the respective territorial level for which they were established but can nevertheless work complementary in certain fields. Payments which need to be made under the uniform rules to the fund are distributed in a split of 50:40:10 to the voivodeship, national and municipal fund respectively in order to facilitate this.

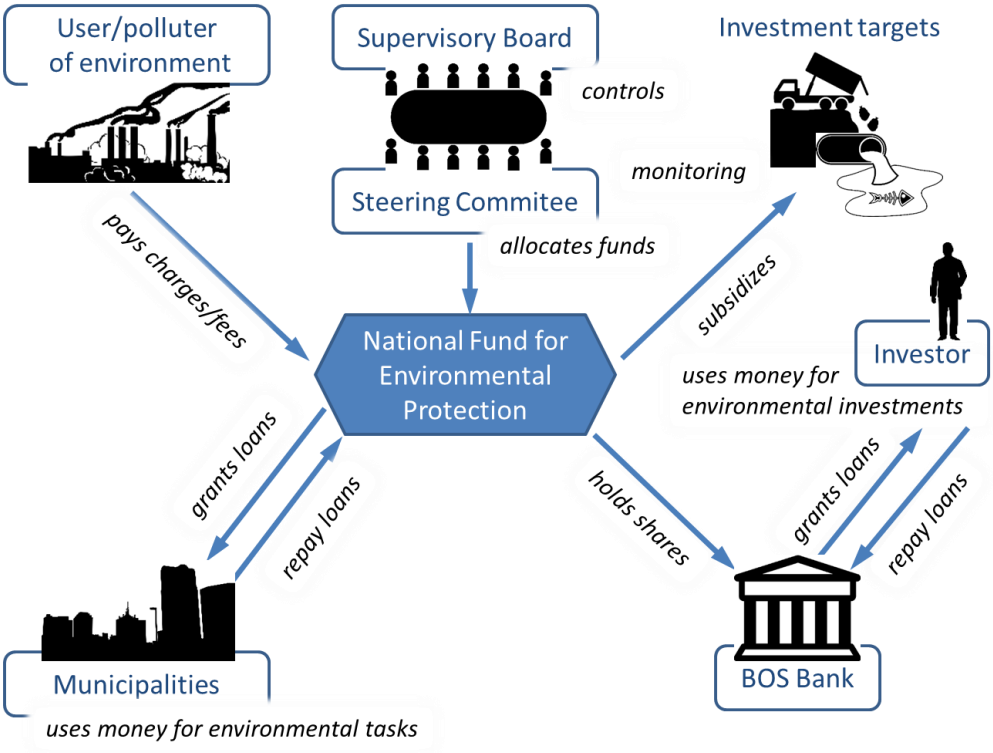
The National Fund for Environmental Protection and Water Management (Narodowy Fundusz Ochrony Środowiska i Gospodarki Wodnej - NFOŚiGW), was established as the first fund in 1989 to help executing tasks of strategic importance at the national level. The creation of the Voivodeship Funds (Wojewódzki Fundusz Ochrony Środowiska i Gospodarki Wodnej - WFOŚiGW) in 1993 and establishment of Communal Funds was an acknowledgment of the organizational success made with the system of financing environmental protection. This system was supplemented with District Funds for Environmental Protection in 1999. As a result of the reform of the public finance system in 2010 the Communal and District Funds became directly controlled by the budgets of individual local government units, however, subject to the requirement to transfer proceeds from environmental charges and fines for activities related to environmental protection.

[13] using information from 'Die zukünftige Abwasserwirtschaft in den EU-Beitrittskandidaten Polen, Ungarn und Estland ', Hochschule Bremen, 2000 and 'The system of financing environmental protection in Poland' Contribution to the Conference on Climate Change, Warsawa, 2013

[14] among others these are concession charges, energy sector charges, charges resulting from the Act on recycling of vehicles withdrawn from use, sales of greenhouse gas emission units

The divided system of environmental funds provides a great leverage for real and more rapid progress in environmental protection across the different territorial structures of the country. In the financing system based on environmental funds an important role is served by the Bank for Environmental Protection (Bank Ochrony Środowiska S.A.) that co-finances and co-operates with the funds.

The structures and main principles for operating the funds are governed by diverse legal acts with the Environmental Protection and Management Act being the main one. The necessary programmatic framework and orientation is provided by three main columns, these are a National strategy, an Action Strategy and a Joint Action Strategy. In the common action strategy for the National Fund and Voivodeship Funds have been formulated four primary directions for financing environmental protection in Poland, with one of these objectives being a sustainable waste management and protection of land. Funding outlayed from the National and Voivodeship Funds on pro-environmental tasks throughout the country exceeds an average of 7 billion Polish Zloty (approx. TL 2 billion) per annum, and has contributed significantly to create the country's present system for waste management.



The main administrative structures for fund management comprise a supervisory board and a steering or management board. Principal responsibility of the management board is the general management tasks which on the operational level involves, among others, to elaborate work plans, the preparation of funding decisions, taking orders for loan repayments and the suspension of payments, and to undertake decisions to fine and collect these fines in case of breach of fund rules. The supervisory board is the superior control organ for the fund and the management board. It does determine criteria for the selection of priority activities and sets up the lists of priority activities, develops the plan of operations, approves loan and investment decisions, monitors the capital operations and verifies the reports.

A separate and independent structure to govern the financial assets of the local environmental fund does not anymore apply at the level of the municipalities who administer the respective funds and money flows at their own discretion over municipal council decisions and budgets.

VI. Ideas and strategies to improve municipal waste management finance in Turkey

Turkish authorities and decision-makers are tasked by the Constitution to set up a sustainable waste management system which ensures a clean environment, the protection of the population from harm caused by waste and pollution, and corresponding efforts (services) at reasonable costs. The Turkish society itself is encouraged and obliged to make its contribution at all levels, including the personal level and a financial responsibility.

Revenue-generation to finance the diverse waste management tasks clearly is a main concern and in the focus of authorities as principal route how the current model in recovering waste management costs can be improved and economic pressure be utilized to induce a waste reducing behavior among all parts of society.

A revenue-generating approach ideally is

i. accompanied by the application of so called *non-revenue instruments* to exert the steering of material flows and incentivize market performance, and
ii. embedded in structures that ensure a high security in revenue collection on the one hand and an administration and dispersion of these collected revenues in the best effective manner to secure waste management progress and investments across all municipalities.

Incentives and steering effects for good waste management behavior derive also from *revenue-providing instruments*, the third category this guidance has mentioned as a valid component of a progressive waste management and financing concept. However, like the term indicates, these instruments are part of a mechanism to re-distribute revenues or funds for certain waste management objectives, money that thus must before come from somewhere. Against the background of the already strained budget situation of Turkish municipalities it likely is the case that such instruments initially are perceived an additional burden and luxury that is affordable in well-financed waste management system only. When later on in this paper the focus is turned on necessary enforcement and support, the meaning of revenue redistributing mechanisms might become more evident, however.

This guideline therefore contemplates the following options:

i. Continuing with the ECT as the main financing instrument
ii. Applying the municipal waste charge EKAT on full scale
iii. Introducing an additional landfill tax
iv. Using a dedicated fund as a financing vehicle

For all options these framework conditions are taken into account:

- The costs to keep a waste service and disposal system up and running (operating costs) often constitute a large majority (up to about 85%) of total waste management costs. Measures that ensure the recurring costs to be recovered hence are essential for making sure that waste management services can be of high quality and sustainably provided.
- Fair payment regimes and effective mechanism for billing are of huge importance when adopting financing instruments, such as fees and waste charges, which address the actual service users. Integrated billing with utility bills has some substantial advantages for payment security and cost recovery.
- The limits of affordability of larger parts of the population might be exceeded if user-oriented waste service charges shall eventually become the only means for covering the full costs for waste management. A wider range of complementary instruments should therefore be considered, including such that incorporate economic incentives or sanctions for a certain individual waste disposal performance, pricing signals towards the wanted direction of development and can assume cost-controlling and reducing functions.

On this basis, following questions are of particular interest:

Is the environmental cleansing tax a good instrument to continue with?

It does not seem so, for the following reasons:

- First of all, the ECT, contemplated as an economic instrument, could be considered as a kind of a charge because its revenues are earmarked for paying certain municipal expenses related to waste management. On the other hand it does not fulfill the cost recovery function of a charge, because its calculation is based on standardized assessment rates that lack a connection with the real costs of waste disposal. These preset base rates are multiplied with the units of water consumed from households in residential buildings or, in the case of other buildings, applied upon the building group for which an entity qualifies due to certain parameters characterizing the size of commercial activity. Thus, there is no correlation with waste generation or a corresponding amount of service received.
  The base rates moreover are determined for only two just theoretically matching categories, the metropolitan and the non-metropolitan municipalities. These generalized rates cannot properly reflect the specificities municipalities face in waste management, and which impact on their actual expenses.
- The rates determined for the ECT are set too low to cover the actual costs incurred for waste management. Municipalities consequently face large deficits between their real waste management expenses and the ECT revenues they are able to collect. The remaining waste management costs eventually must be covered from the general municipal budget reducing the availability of funds needed for other public tasks.
- The mechanism provided to adjust these rates over time does not take into account the evolution of waste management expenses, the development on the currency markets and for the inflation rate. This is the case, because a special rule disconnects the adjustment of the rates from the annual asset revaluation if its increase stays below a minimum threshold.
- Nowadays, the redistribution of the revenues collected via ECT to the providers of disposal services, the waste collecting municipalities, and the metropolitan municipalities and municipal waste unions as disposal facility operators lacks a connection to the actual costs incurred too. Even if a real cost assessment once gave the basis for the now fixed 80/20 revenue distribution split, no adjustment procedure whatsoever has been implemented since.
- The ECT rules grant numerous exemptions although the units exempted are waste producers as well. This actually seems inconsistent with the existing legal framework, e.g. Article 1 of the Law No. 4736 on Goods and Services Tariffs of Public Institutions, which applies also to municipalities that *"**goods and services produced by public institutions including municipalities shall not be provided free of charge or with discounts to any real or legal person."*** Therefore it seems to deviate from the requirement that waste service costs should be charged in the form of cost-covering tariffs and it not only includes discounts but also exemptions that allows waste services free of charge in multiple cases.
- No incentive for preventing and reducing municipal solid waste is incorporated in the ECT mechanisms.
- The general public and users of waste services perceive the ECT as a payment proportionate to the special benefit they receive from municipal waste disposal efforts. This is due to the purpose of the ECT and the manner of invoicing it. As a consequence, the willingness to pay another fee or charge like EKAT in addition is very low and hard to communicate.
- Invoicing ECT with the water bill results in a high payment security. However, the EKAT or any other user fee can be collected in the same manner.

STRENGTHS OF THE ECT

a. ECT is paid since the Law came into force in 1994 and has been gaining acceptance as a tax stipulated by the Government.
b. In application of the ECT, municipalities show a high level of technical knowledge and administrative capabilities.
c. Easy to apply by the municipalities without considering political concerns at the local level, because the ECT is the responsibility of the Central Government.
d. Easy to bill and collect since ECT is included into the water bills of the residential customers by the municipalities (if the bill is not paid water supply can be disconnected or legal follow up action can be initiated for enforcement. Therefore a very good collection performance is guaranteed.

WEAKNESSES OF THE ECT

a. No connection with the actual cost of service provision which prevents application of "full cost recovery" principle.
b. Uniform rates for all metropolitan / non-metropolitan municipalities across Turkey preventing application of "equivalence" and "affordability" principles.
c. Automatic annual increase in ECT rates in line with Asset Revaluation Rate increase, which reflects wholesale price inflation, not taking into account economic and household income growth and affordability at municipal level.
d. No incentive for preventing, reducing and/or recycling waste.
e. Arbitrary allocation of collected ECT amounts for cost coverage in metropolitan municipalities (80% for collection services and 20% for solid waste disposal services).

Could an adjusted environmental cleansing tax offer an appropriate solution?

In order to recover the full waste management expenses of municipalities, it is roughly estimated that ECT revenues need to be increased at least by 10 times, on the average. Based on 2016 figures, current ECT rates need to be multiplied by 22 in metropolitan municipalities, by 13.4 in non-metropolitan provincial central district municipalities and by 7.9 in non-metropolitan non-central district municipalities, to show cost coverage with the municipal waste services costs at current levels. Even if such adjustment seems feasible from the mere technical point of view, the question arises whether this is socially acceptable and manageable. For that, a look on some facts characteristic for general developments vis a vis the current ECT helps.

Development of the affordability of residential ECT rates

There is neither a requirement formally or legally that ECT rates have to be determined by taking affordability concerns in Turkey into account. However, affordability of current residential ECT rates can be assessed by comparing the ECT rates to the net minimum official wage assuming that there is only one minimum wage earner in a low-income household and no other disposable income.

Net minimum wage paid grew cumulatively by about 300% in TL terms within the period from 2005 to 2017. Assuming a typical water consumption of 10 m^3 per month for a low-income household, residential ECT bill per household in the same period increased in the range of 175-185% in the metropolitan and non-metropolitan municipalities, respectively. Affordability of ECT rates can be illustrated by dividing the ECT bill to the minimum official wage paid. That ratio decreased from 0.43% in 2005 to 0.20% in 2017 in the metropolitan municipalities and from 0.34% in 2005 to 0.15% in 2017 in the metropolitan municipalities. From this can be concluded that the residential ECT bill has indeed become easily affordable in recent years in Turkey even for the low-income groups given the considerably higher growth rates of household income compared to ECT growth. Additionally, the affordability rate in Turkey is considerably below the internationally accepted rates from which a substantial growth potential for ECT rates can be derived.

Assuming EBRD affordability rate of 1.5%, residential ECT rates can be as high as 7.5 times in metropolitan municipalities and 10 times in non-metropolitan municipalities compared to their current levels. Thus, ECT rate can be as high as 2.1 TL/m³ and still affordable according to internationally accepted affordability rates.
Affordability limits will be reached however through the need to have ECT levels increased by the factors mentioned above to achieve full cost coverage.

Further could be concluded, that the mechanism of the ECT has so many imperfections that only an increase of the base assessment rates would not suffice to turn this into an appropriate economic instrument for waste management financing. Actually the mechanism needs to be linked to real costs and their development, including waste performance-dependent incentives is likewise desirable. This would change the current shape of the ECT significantly. Taking into account that a good solution is already available with EKAT, it does not seem worth this considerable effort.

The current concept of ECT, although enforcing it means to realize the polluter pays principle, is showing big deficits in terms of full cost recovery and some serious conflicts with regard to the principle of equivalence and the fairness principle. A high payment security and the fact of being socially affordable make up the political attractiveness of the ECT by now. Even a drastic increase of the rates and necessary redesign of the complete mechanism to achieve cost coverage would not render this instrument better or more favorable than the application of EKAT.

Why should EKAT (the municipal waste service charge) be further applied and implemented on nationwide scale?

EKAT incorporates all fundamental elements and principles sought from a financial instrument geared towards achieving cost coverage. The instrument

- realizes the polluter pays principle;
- reflects total (municipal service) costs;
- includes indirectly an incentive for producing less costs (solid waste);
- orients on the generation of revenues for no other than municipal solid waste services;
- allows for a similarly high payment security like ECT as it is also invoiced with water bills;
- uses a method which prevents double charging in that other (such as the ECT) revenues obtained for the same service are deducted from the total system costs.

The ‘polluter pays principle’ in Article 11 of the amended Law on Environment, as enacted through Law No. 5491 in 2006, reads as follows:
“Metropolitan and non-metropolitan municipalities are responsible for installing/outsourcing installation of, operation/outsourcing operation of domestic solid waste disposal plants. Beneficiaries currently benefiting from and/or will benefit from these services are liable for participating in investment, operation, maintenance, repair and rehabilitation costs to be incurred by responsible administrations. ***Solid waste collection, transportation and disposal fees shall be collected from beneficiaries on the basis of tariff to be decided on by relevant municipal council****. Fees collected pursuant to this sub-clause cannot be spent on any service other than services related to solid wastes.”*
Further hereto is stated in Article 1 of the Law No. 4736 on Goods and Services Tariffs of Public Institutions, which applies also to municipalities that *“**goods and services produced by public institutions including municipalities shall not be provided free of charge or with discounts to any real or legal person.”***

These two pieces of legislation obviously demand that waste management costs shall be charged to the service beneficiaries on the basis of municipal-determined and approved tariffs and without discounts. Through the EKAT (Evsel Katı Atık Tarifelerinin Belirlenmesine Yönelik Kılavuz), published in the Official Gazette No. 27742 dated 27.10.2010, the principles for calculating tariffs and levying them by way of a full cost covering waste service charge have been unequivocally laid down. Thus, the necessary framework conditions to implement the waste service charge, legally, technically and methodically, are already in place.

Complementing or better replacing ECT by a solution such as EKAT is no new idea in Turkey. Ercan Çitil[15] and others[16] outlined this necessity already some years ago and identified cost-covering function, connection to actual waste disposal behavior, incentive for behavior change and influence on waste flows as missing components in the ECT, and the approach therefore as imperfect. The additional mismatch with the legislation on municipal service refinance in a number of points makes the adjustment and switchover an even more urgent and valid demand.

ECT is applied nationwide and also EKAT should be applied nationwide. Whilst ECT rates are set annually by the central government, it is the municipal administrations task to establish the actual waste management costs and determine EKAT within their jurisdiction. However, municipalities do not display a sufficient degree of eagerness and compliance with regards to adopting EKAT. Instead a general reluctance among the municipal leadership is observed to apply tariffs. Local political and social concerns or a lack of sanctions or necessary incentive measures by the government may provide an explanation for that.

STRENGTHS OF EKAT

a. Direct link with the actual provision costs of waste service (collection + disposal) ensures realization of “equivalence” and "full cost recovery" principles.
b. Cost covering tariffs apply to all users of services and independent of municipalities’ status which ensure "fairness" and the "affordability" principle to be met.
c. Charging of tariffs taking into account economic and household income growth and affordability at municipal level is possible.
d. Easy to bill and collect since charges shall be included into the water bills of the residential customers by the municipalities (if the bill is not paid water supply can be disconnected as an enforcement measure).
e. Incentive for waste reduction and lowering costs

WEAKNESSES OF EKAT

a. The awareness of people and commercial entities needs to be raised since many municipalities still need to introduce charging tariffs for the first time.
b. No accumulated technical knowledge and administrative capability for the determination and application of the tariffs by the municipalities.
c. Difficult to apply by the municipalities since political and social concerns at the local level must be taken into account.
d. Rising demand for transparency and proper communication.

What could help in the further rollout of EKAT (municipal waste service charge) on nationwide scale?

An irrevocable political will, good enforcement, promotion through incentives and good communication seem to be the key aspects.

If introducing EKAT is assumed simply as water tariff increase by the population since only the sum of the water bill is considered but not the breakdown (Water Tariff + Service Charge + ECT + VAT) then better communication and transparency is needed. Politicians understandably do not appreciate if the local electorate perceives EKAT as the introduction of an additional local tariff. Municipalities and their councils as those who are taking the decision about EKAT introduction and tariffs must be at the forefront of this communication policy. Central government and the relevant ministries likewise have a responsibility to communicate the facts and set the picture right.

[15] Çitil, E. (2009): Çevre yönetiminde ekonomik araç kullaniminin istanbul kati atik yönetimi üzerinde incelenmesi (An investigation of the impact of economic instrument use on environmental management in the case of Istanbul’s solid waste management)

[16] Çitil, E.; Kinanci, C.; Kayalica, Ö. (2010): Katı atık yönetiminde ekonomik araçların kullanımı ve çevre temizlik vergisi

Certainly a critical aspect in this communication must be to explain the public that EKAT is necessary to improve and develop waste management, to reduce budget deficits and thus free sources for other municipal investments, and that a double charging for the same service does not take place. This can be done by referring to the regulation for the calculation of tariffs which explicitly states that the ECT revenues charged in compliance with added Article 44 of the Municipal Revenues Law No. 2464 should be deducted from the total system costs. To display ECT and service charge together on the bill reflects the current legal reality and is correct to the point that the sum of both represents the full waste disposal costs. It is, however, only a more complicate procedure to charge these costs and confusing the public who will indeed see two parallel payments for waste services on its bill.

The mechanisms for the calculation and charging of EKAT have everything needed to achieve cost coverage without the application of ECT. As a financing instrument for municipal waste services ECT therefore can be abandoned. At this moment the only function of ECT is to collect revenues for waste services, although in a very imperfect way, in those municipalities which have not adopted EKAT yet. If the waste service charge is further rolled out, ECT will be losing in relevance and eventually become redundant at all. Implementation of EKAT on a nationwide scale will be much easier and faster, when ECT is given up as soon as possible.

Observations that the population after the initial year of EKAT introduction becomes relatively well accustomed to the situation and complaints become less or disappear almost completely may be taken as an encouragement. Likewise can be noticed a demonstration and pulling effect from charging tariffs. If one or more municipalities in the same province start levying the waste service charge, then the others are following them showing this new approach as an example to their population. For instance, Bulancak Municipality is one of the last municipalities in Giresun Province which introduced the waste service charges in 2016. Acceptance for this step was solicited through communication with the customers referring to the example of other municipalities.

Thus, local politicians are encouraged to introduce a waste charge to ensure full cost recovery, which is the legal requirement anyway. Careful attention should be paid by all stakeholders on the implications that follow the introduction of EKAT, especially in terms of improved budget situations, waste disposal behavior, service performance and social impacts. With many municipalities having just introduced the waste charges a short while ago, the results and developments will increasingly become recognizable in the next time. These insights will set a starting point to continue with the necessary corrections and for providing a more tailored support.

Again a matter of particular importance is the social dimension or affordability aspect of waste charges as also one of the assumed reasons for the reluctance of municipalities to adopt this approach in the past. For this a look on some facts characteristic for the developments vis a vis the current ECT again helps.

Affordability of EKAT vs. ECT

Compared with the base assessment rate fixed for ECT in the non-metropolitan municipalities (0.21TL/m³), the waste service charge in the two investigated municipal areas of *Giresun Province* is between four and five times higher. Residential waste service charges (excluding VAT) levied as of 2017 by the *Tekirdağ Metropolitan Municipality* with respect to its district municipalities for the waste disposal costs with TL 0.25/m³ are at almost equal level with the applicable ECT rate. *Isparta Municipality* calculated the net residential waste service charge for each water customer with 93.91 TL per year. Thus, in each water bill issued every month, a charge of 7.83 TL is reflected to the registered water customers for waste management expenses. In approximation this is about three times the amount a household does have to pay for ECT.

This provides a clear indication that the level of waste service charges Turkish municipalities require by now can be assumed to stay in a range which is still affordable for the large majority of Turkish citizens. EKAT and ECT at the moment make up complementary financing instruments, however. Without the additional effect of ECT in the total revenue generation, waste charges would eventually have to be as high as an ECT which has been raised to cost covering levels. As was outlined above for this scenario, certain limits of affordability might also be more quickly reached with EKAT then. This in turn increases the pressure for municipalities to providing and optimizing their services in future under clear consideration of cost efficiency, set

incentives for waste and cost minimization, and employ any additional measures leading to cost reductions.

It is, as a matter of fact, rarely politically or socially feasible to switch within short time from a funding of services mainly from general municipal budget to a policy of recovering all costs directly from users. Although the objective may be to achieve full cost recovery over time, charges for households will normally need to be raised progressively.

Concerns that the change and increase of payments could be all too quick and drastic might be also a reason which prevented municipalities in Turkey to adopt the scheme of EKAT unconditionally and swiftly. It must be noted though that numerous municipalities have indeed been able to establish EKAT in their jurisdictions within the decade following adoption of the corresponding tariff law. That not only depicts a sufficient time frame for preparing the introduction of EKAT but shows that this step is practically feasible and manageable. Analyzing thoroughly how this move was completed by these municipalities, see what lessons can be learnt and to make the experiences available for others should be given a great attention in the future.

Currently municipal waste charges are not realized on nationwide scale. So either the municipalities look for government support or the gap is going to be financed out of other municipal revenues in the worst case. A policy that incorporates incentives towards the charging of tariffs and/or sanctions to the mayors and municipal councils not adhering to this requirement would be useful to change the approach at local level. A government can encourage local authorities to shift from subsidies and budgets guaranteed by the state towards self-supporting service units which must themselves raise the revenue they need. Municipalities for this should be given a leeway and certain flexibility to adopt modifications of the available and define their own (even additional) set of instruments appropriate to their needs.

Incentives and also sanctioning mechanisms to enforcing compliance and respond to performance can be created by means of different economic instruments. Such can be imposed via general regulations for taxes, subsidies and budget transfers for example. Increasing legal tax shares allocated by the Government based on cost coverage performance could be one option (e.g. decreasing legal tax shares by 2% if cost coverage ratio is below 25%; decreasing legal tax shares by 1% if cost coverage ratio is between 25 - 50%; increasing legal tax shares by 1% if cost coverage ratio is between 50 - 75%; increasing legal tax shares by 2% if cost coverage ratio is above 75%). Other options exist through the set of waste management related (economic) measures or by using the financial means and distribution mechanisms of a fund.

Does a landfill tax provide a useful and feasible instrument for the Turkey?

Landfilling is still dominating waste disposal activities in Turkey, whereas a separation for recycling is not practiced on a large scale and recycling municipal waste is still a field, which requires a lot of development. With the funds currently available in municipalities it is not possible to develop a sufficient system for waste separation and recycling. The financial instruments in place do not provide for any incentive or pressure, neither on the municipalities nor the population to separate recyclables and thus to divert considerable waste amounts away from landfill. Charging cost-covering gate fees and perhaps an additional landfill tax on top is yet an outstanding step in Turkey. It would in any case help in diverting waste which is suitable for other options (such as composting and recycling) away from landfills and could make the private sector interested in it. Certain pressure could be exerted on the municipalities to reduce waste generation and mixed waste disposal, and through that their costs, which would include the landfill tax.
Introducing a landfill tax moreover could be a new source for revenues which are additionally needed for waste management improvements and development.

A landfill tax would indeed have to be introduced and managed by the central authorities (the state charging the metropolitan municipalities and municipal waste unions and/or metropolitan municipalities and municipal waste unions charging the municipalities) and perhaps require additional investments in order to ensure an exhaustive measuring and recording of actual waste deliveries to landfills. A next challenge lies in the application of an incremented tax to individual municipalities that are still dumping their waste on uncontrolled smaller landfills.

The running costs of a landfill will include the landfill tax as administrative efforts will become necessary for enforcement, control and revenue redistribution. A well-established control must ensure that, for example, the amounts, origin and classification of the waste delivered to the landfills are correctly recorded for that the right payments of the disposal tax can be initiated.

A possible practical difficulty for levying such a tax may arise from the fact that charging of gate fees is not everywhere a common practice for municipal waste landfills up to now. This has to do with the prevailing arrangement that allocates a fixed share from the environmental cleansing tax to the different acting levels on a lump sum basis. Charging gate fees is not encouraged under such a setting. Besides of that, exact measurements of the waste amounts from each delivering municipality would be a necessity.

As a financial instrument the waste disposal (or landfill) tax does not require an initial investment but an appropriate institutional and legal framework. It can be assumed that Turkey has the basic institutional framework to develop and adopt this instrument in the foreseeable future, but a legal foundation must yet be created. Combining the introduction of the tax with the initiation of a fund to administer and redistribute the revenues certainly can be considered a favorable concept. A centrally administered landfill tax is considered a valuable steering instrument to divert waste from landfills. It should increase disposal costs to a level, where recycling and recovery becomes economically feasible and advantageous.

How about the role of other instruments in the financing of waste management and their feasibility in Turkey?

There seems a broad range of realistic possibilities in Turkey to identify instruments that can be employed either complementary to secure funds for municipal waste services or to tap additional sources of revenues to finance waste management tasks or for an environmental fund. Such could be for example:

Eco/tourist taxes

Turkey has many attractive destinations for tourists and tourism makes a significant contribution to the national and local economy, but also to waste generation. Tourist taxes could be levied by accommodations, at beaches or by the managements of main tourist attractions and transferred directly to the respective local authorities. Or the tax revenues could go into a fund, which would create the possibility to let municipalities more equally benefit from them. Appropriate mechanism must however be found that prevent an undercompensation of those municipalities which are actually burdened by the tourists waste generation.

→ *preferably used directly by municipalities as funds for waste services/waste management improvements*

Site utilization/ host fee

The split responsibilities in the Turkish municipal waste management lead to the general situation that a large number of municipalities must only engage in waste collection whilst the final disposal facilities concentrate on a few locations. These locations receive the discards from outside waste generators and are therefore particularly burdened. A financial transfer from those using most intensively these sites for waste disposal far away from their territory might be justified as a compensation payment for the municipalities hosting the site. Introducing such a fee has a comparable effect to a gate fee or landfill tax but excludes the host from paying. Control and sanctions on attempts to bypass this arrangement on the side of the delivering municipalities must be tightened.

→ *preferably used directly by municipalities as funds for waste facility investments or improvements*

Performance-dependent (pollution) fee or bonus

A scheme as described earlier from Wallonia in Belgium could possibly be adopted in Turkey as a mechanism to sanction or reward for community waste reduction efforts and, initially, even support the implementation of the cost recovery approach on the basis of EKAT/waste service charges by all municipalities. Theoretically it might not be too difficult to initiate differentiated payments of state subsidies for this purpose, comparable to the above proposed differentiation of legal tax shares allocated by the Government to municipalities.

→ *preferably used as incentive and sanction mechanism which generates a certain income to an environmental fund from which top-performing municipalities get refunded/subsidies*

Earlier was explained that revenue-generating instruments ideally should be accompanied by mechanisms which by design can exert functions such as to steer material flows and incentivize market performance, thus the application of so called non-revenue instruments. One option is a

Deposit-refund system

These systems are in place in a number of countries to create incentives for returning products after the end of their useful lives. They can be implemented, where the product or its packaging does keep its integrity throughout its life-cycle and/or where there is a significant risk of fly tipping, or where the costs of improper dumping are high (as in the case of toxic products). Most commonly, deposit-refund systems are implemented for bottles but used as well for potentially hazardous products like batteries. The incentive is created by asking customers to pay a deposit when buying the product concerned and refunding them the same amount upon return of the product. The objective of deposit-refund systems is to make sure that valuable materials are not disposed of via landfills but incorporated in a recycling or re-use scheme. They have proven very successful in increasing collection and recycling rates for the products which they are covering. Deposit-refund systems usually address specific products and usually burden the administrative costs on the industry so as to enforce a producer responsibility/EPR. This increases the probability of significant lobbying and resistance from the affected industry. There exist certainly a potential for creating deposit-refund schemes and see the positive effects of it also in Turkey. Where and to what extent this might already be a common practice in the country has not been examined during this project.

Could a dedicated and autonomous fund give a suitable instrument for supporting the financing of waste management in Turkey?

Most probably, yes. It has been outlined earlier that revenue-generation for funding and governing waste management objectives can be done in different ways and levels but should be framed by structures that support the administration and dispersion of these collected funds in the best effective manner to secure waste management progress and investments across all municipalities.

The general concept of financing of environmental protection efforts via a fund solution is not completely unknown in Turkey. Principles for a "Fund for the Protection of Environmental Pollution" (Environment Fund) were defined and regulated in the initial "Law on Environment" (Law No. 2872, accepted by the National Parliament of Turkey on 09/08/1983) of Turkey issued in the Official Gazette No. 18132 dated 11/08/1983. Three articles on the establishment and beneficiaries of the Fund (article 17), the revenues of the Fund (article 18) and on the use of the Fund (article 19) provided initially the main regulating framework and were partly abolished or modified later on with the aim of constraining and controlling the funds established out of State Budget. Article 18 among others was altered to read as "Receipt of environmental contribution shares, other revenues and budgetary allocations" and reorganized by Law No. 5491 on 26/04/2006 with the objective of generating revenues to support environmental pollution prevention projects. The article, as contained in the current version of Law No. 5491, stipulates for example that from the cost, insurance and freight value of fuels, wastes and scrap materials permitted to be imported a

percentage share of 1% or below would have to be retained for such purpose. An additional contribution has been earmarked with 1% of the revenues collected via water and wastewater tariffs by the Water and Sewerage Administrations in the Metropolitan Municipalities.

These amounts together with all kinds of grants, aids and contributions to be received domestically and internationally, repaid loans and interest costs upon credits granted from the Ministry of Environment are accounted for as revenues that contribute to the budget of the Ministry of Environment. Out of this budget the Ministry finances diverse activities in the environmental field, including studies, planning and supervision works as well as education and publication activities that may also cover waste management issues. A detailed implementation by-law[17] provides the necessary basis for this. Article 7 of that By-Law explicitly states the possibility that for the procurement of solid waste collection trucks, suction trucks, road sweeping trucks and other machinery and equipment, which are used by the public administrations and service unions (associations), money from the budget of the ministry created by above fund regulations can be used. Capping, maturity periods and repayment principles for other investment loans coming from this budget are regulated in the by-law as well.

It can be concluded that although certain rules and principles for generating extra funds for environmental activities have been already adopted, there is no separate administration of an "Environmental Fund" so far existent in Turkey. The current regulation on collecting environmental contribution from predefined revenue sources basically serves the creation of a budget, which the Ministry of Environment administers to finance certain investments and sovereign duties to prevent environmental pollution. In a way this comes very close to the solution of an Environmental Fund as a recommendable and internationally practiced concept (☞ see the earlier explanations). The principal difference lies in the fact that for the time being this is not an autonomous fund because all dues are fully allocated to the state governed budget. This however entails an influence of economic constraints and political priorities on the spending, a steady and targeted support for specific financing needs and waste management developments thus has very limited assurance.

A separate fund model not necessarily administered by a state institution and largely independent from government priorities but governed by its pre-defined principles and program could hence offer an alternative. Setting up the legal, organizational and programmatic structures should, the necessary political support provided, not pose a problem for Turkey. The example of Poland, where at different levels of territorial administration independent but complementary funds for financing of environmental tasks have been established, could give a good orientation for Turkey. The split arrangement realized in Poland might give a suitable model for Turkey too, considering the country's provincial structure and the division of responsibilities for municipal waste management between the metropolitan and non-metropolitan provincial municipalities respectively the waste management unions.

Creating an autonomously managed 'Environmental Fund' in Turkey can have advantages to open up new sources of revenue and making targeted funding of waste management in a manner independent from certain constraints possible. Both, a separate or a complementary solution to the existing national regulation for the "Fund for the Protection of Environmental Pollution" governing certain shares liberated from general budget administration might be options. Also the ECT, given up as an instrument to recover recurring waste management costs, could be developed into a source of revenues for such a new environmental fund whose purpose (and justification) shall be to finance/subsidize specific environmental and waste management investments and development projects.

[17] Çevre gelirlerinin takip ve tahsili ile tahsilat karşiliği öngörülen ödeneğin kullanimi hakkinda yönetmelik

Discussion of options among stakeholders

Communication is an indispensable component in the process of identifying workable solutions and making them as practical as possible.

A workshop on 26th of October 2017 at the Ministry of Environment and Urbanization in Ankara allowed a constructive discussion on appropriate solutions taking into account the perspectives of various stakeholders. In total 19 representatives from the Ministries of Environment, Interior and Finance, the Metropolitan Municipalities of İstanbul, İzmir, Tekirdağ, and the Waste Management Union Afyonkarahisar, and the Association of Turkish Municipalities took part in the event and contributed their experiences and views.
None of the options discussed in this Guidance was rated as being a potentially infeasible or even unwise instrument by the stakeholders.

The participants emphasized the importance of a legal obligation for waste generators to hand over their waste to municipalities or any other parties. The different types of cost administration for the various municipal services and their involvement in the establishment of tariffs or determination of a regime of charges and levies were identified as important. Both issues are of general nature, but need to be taken into account when studying options to improve waste management finance in Turkey. It was discussed that implementing a cost-based charge could be less difficult for the municipalities, where service contracts regulate the immediate transfer of the waste to a municipal commissioned third party and the enforcement of charging is done by that party itself. Smaller municipalities and sometimes municipal unions currently lack the human resources and qualifications to create a proper and compliant tariff calculation. Larger and experienced municipalities and their public bodies are not under any constraint with regard to tariff calculation as they can draw on enough expertise.

When applying EKAT, the temporal offset of costs incurred and the corresponding adjustment of the tariffs, which can form a subsequent step only, could be a particular problem for the municipal budget. Creating and securing financial reserves to compensate for temporary shortfalls in the waste management budget is not common for Turkish municipalities or it is still a largely unknown or even unregulated subject. For this reason it is advisable to include fixed fee components in a waste charge (multi-tiered fee model) and to consider additional revenue-generating instruments and funds as a backup. In addition, a fixed fee component can also be regarded as part of a solution to the problem of charging waste services to temporary and summer residents especially in touristic areas. The stakeholder discussion confirmed that the potential socio-economic impact or even the generating of social hardship in the implementing EKAT is only of minor concern.

A particular challenge however is that, first of all, the tariff mechanism has to be fully understood by the responsible administrative units, in particular with regard to the correct cost allocation and adjustment dynamics. This is a precondition for avoiding litigation that is still observed in connection with charging waste tariffs in Turkey, and demonstrates the need for training. It has also proved helpful to clearly indicate to the recipients of the waste management services in advance that a cost-based levying mechanism will be applied to them. Good public relation therefore is another important issue.

One aspect stakeholders give particular meaning and emphasis in view of the existing conditions and experiences in Turkey seem to be that central authorities and central government rules still provide the strongest means of enforcing waste management and waste management financing regulations. This is one of the reasons why the model of the environmental cleansing tax as a centrally managed instrument continues to gain widespread trust from many sides.

Enforcing and extending the application of EKAT, which in the discussion process has been widely considered indispensable for making progress, requires further considerations in terms of what useful framework conditions can be created for that in addition. Not only the advantage of a more centralized component, as it has been emphasized from the stakeholders, deserves special attention here. Also the prevailing legal uncertainties, limited technical competences and communicative or propagandistic issues which done some damage to the acceptance of a tariff mechanism for waste services lately need to be taken into account.

The creation of a central institution, possibly furnished with regional substructures but outside of direct municipal influence, which acts as a calculation, auditing and advisory body for the implementation of EKAT, can be regarded and discussed here as an interesting approach[18].
Such an institution can initially be referred to as a 'clearing house' for protecting different parties' interests[19]. Supported from certain reporting obligations (comparable to that enjoyed by an audit office or General Accounting Office) it could perform a supervision of the waste management costs in the municipalities, calculate the fee requirements appropriately and convert them into tariff proposals. These proposals could be formulated in the form of tariff corridors which would keep certain flexibility for the application but let the adoption of the proposal become compulsory too. An allocation of certain decision power over the waste tariffs to a third, preferably central institution, that municipal politicians apparently prefer, could be achieved as well in this way.

There exists also the possibility that the said body does not develop these tariff proposals itself, but municipalities must submit them. Principal tasks for this body would then be the critical monitoring and examination of the incoming proposals eventually resulting in a notification of disobedient municipalities or a confirmation, correction and/or recommendation for adjustment of the tariffs. Another already mentioned and extremely important task for this authority would be the training and qualification of municipalities in all waste tariff matters.

A connection to the option of a supplementary fund for waste management financing would also be conceivable in this way. Under such an arrangement the right of benefiting from the fund should be linked to the requirement for the implementation of waste tariffs. As an essential or fulfilling criterion can be defined the submission and application of a tariff proposal vis a vis the 'clearing house' whereby this body also has a say and right to accompany the application for funding or subsidies supplied from the fund to municipalities.
Through that, an additional motivation to engage local governments in cost-covering financing mechanisms can be created, by the way a factor ('political will') whose importance stakeholders rated very high in this field.

[18] The stakeholders first drew comparisons with İSTAÇ, which could possibly prove useful to get a picture on structures and practices for the technical enforcement, however, such a comparison unlikely reflects the institutional neutrality, decision autonomy and client requirements (including protection of information of the municipalities) that this institution is supposed to meet in a proper way.

[19] A 'clearing house' stands between two clearing entities (also known as members or participants) and in this specific case could be a central office/bureau which determines, controls and monitors municipal waste tariffs .and thus acts as an intermediary between municipal administrations and the entities (including the public) obliged to pay for waste services (protecting the interest and rights of both sides).

VII. Outlook

Continuing with the ECT by raising its revenue to the level of cost-coverage would require a significant, more than ten-fold increase of the charge, a repeal of all exemptions and other adjustments to its legal basis. Though the centralized administration of the ECT is considered an advantage in terms of enforcement, the determination of ECT rates in order to cover the expenses of all municipalities will always be a weakness considering the specific situation and waste management challenges they are facing.

To repeal or withdraw the regulation on the determination of municipal tariffs and implementation of EKAT/waste service charges would not only mark a huge backward step in financing waste management, but would even weaken significantly the institutions, in particular the ministries. On the one hand, the efforts already made by numerous municipalities to implement the tariff regulations would be rendered useless. On the other hand the application of EKAT is in line with the existing legal framework and fulfills the requirements and actions by the Court of Accounts. Taking all the different aspects together, the application of EKAT will be more advantageous than the upgrading of the ECT.

Perhaps a prospective approach to facilitate the full transposition of EKAT for all Turkish municipalities and attain cost recovery from service beneficiaries would be that for a transition period a part of the recurrent funding needs is still provided from general municipal sources by way of financial support/refunds, preferably from a dedicated autonomous environmental fund. By applying this strategy, waste charges can be reduced to a reasonable level at the outset (subject to affordability assessments) with the balance for recurrent costs received from other sources. The process of adjusting tariffs to obtain cost-covering levels should be pursued in parallel with studies being undertaken into affordability and the willingness to pay.

Applying a landfill tax as complementary revenue-generating instrument may lead to further advantages and provide extra funds. In re-distributing its revenue all municipalities should benefit and get the financial support for investments or subsidies they need. In this way, the full recovery of the running costs could be achieved at affordable tariffs. The redistribution should be implemented by a fund administration, which is independent, specially dedicated to this purpose, based on clear procedures and transparent criteria and decision-making.

Municipalities should have it at their discretion to employ also other complementary instruments to generate revenues which allow them to avoid undue hardship and cover extra expenses. A tourist or eco tax could provide such an instrument to subsidize the increased needs and costs of waste management during tourist season in accordance with the polluter-pays-principle.

Cost reduction and enhancing cost-efficiency is simultaneously important. Monitoring carefully all costs and the development of the different cost items for waste service provision must become a matter of course. It shows where the potentials for cost reduction are the biggest and gives thus an instrument for optimizing the efficiency in waste management. Adopting EKAT or improving ECT goes hand in hand with a continuous critical analysis of the actual cost dynamics. A reduction of costs without compromising service quality is the best way to raise acceptance for levying waste service charges since the rates to be charged will be reduced correspondingly.

This finally makes clear that the financial sustainability of a waste management system eventually derives from applying various measures and instruments in a manner that every part of society has a share in the responsibility and financing but opportunities for exercising self-responsibility as well. Given the range of challenges and financing needs faced from Turkish municipalities and policy makers in waste management, no single measure and policy prescription could possibly be adequate for all the problems involved.

Communication between different levels, in particular across government and administrative structures, is important at each stage in the process to design a sustainable financing system. Different instruments need to be introduced and managed at specific levels of government (national, regional or local) and involve specific responsibilities at each level. Certain economic instruments require a nationwide regulation and approach in order to be properly established and coordinated with markets and concerned institutions (e.g. product fees, feed-in tariffs, deposit-

refund systems). Plans for their introduction and the discussion about must become subjects within the national agenda.

Collaboration between national, regional and local government levels and national regulations granting financial powers to local governments strongly influence which economic instruments will eventually be adoptable by waste management authorities at which level.
For certain economic instruments, such as the landfill tax, a national regulation and laws stipulating specific targets such as on the reduction of landfill amounts, a pre-treatment obligation or recycling quota can be a strong catalyst for the introduction. Evaluating the pros and contras of different instruments should include analyzing the legal framework in which local government operate, as this might already exclude certain instruments or require coordination with higher level authorities when seeking to change certain provisions of legislation.

Legal backing, capacity building and complementary measures for local authorities in order to be able to adopt economic instruments for cost recovery properly and successfully are required and should be tasks of the central authorities. Experiences made during the application of various financing instruments, with their efficiency and possible incentive mechanisms should be exchanged and widely disseminated. The learning process necessary for successfully employing these instruments under certain conditions and environments should never be underestimated or ignored. Part of this exchange should be dedicated to efficient enforcement and monitoring as well as the implications for different groups of society, and to optimization potentials which can be used.

Since more and more emphasis is being placed on good governance at city, regional and national level, financial dealings and decision-making should be transparent. The reasons for decisions, especially the selection of certain financing mechanisms and the management of public funds should be open before the public. Public support can be expected to result in more widespread willingness to pay charges or taxes, and in more individual engagement to contribute to sound waste management practice and lowering the costs this requires.