

User charge pricing for Municipal services: Principles, fixation, process and guidelines

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Abstract

Urban Local Bodies (ULBs) provide a wide range of civic and other infrastructure services to the citizens – both basic services viz., water supply, sanitation/ sewerage, drainage, street lighting, roads and solid waste management, as well as other services viz, parks, play grounds, crematoria, recreation centres, community halls etc. The mandate for the delivery of these services as well as the authority to recover costs associated with them is also provided in municipal legislation. Yet, several of them are not fully geared up enough to achieve it. This is partly due to the lack of full awareness of the process, resources and systems in place for achieving the same.

The recovery of Operation & Maintenance (O&M) costs incurred in the delivery of the services is not adequately planned in the current system and the user charges are not fixed on any economic/financial principles, which affect the financial self-sufficiency of services delivered. This paper gives an overview of user charge system in ULBs in general – the rationale for levy, levy principles and pricing of infrastructure services - and also discusses the principles as well as the process of user charge fixation, including the framework for tariff fixation/ revision. This paper also suggests a methodology for identification/assessment of O&M costs and the tariff fixation/ revision process for user charge levy among major civic services rendered by ULBs.

Keywords: Civic services, ULBs, O&M Costs, User charges and Tariff structures

1. Background

Urban areas are administered by the Urban Local Bodies (ULBs) of different size, structure and jurisdictions. These ULBs are also categorised into municipal corporations, municipal councils and municipalities of various classes, based on the parameters like population, revenue generation and any other historical or special features. ULBs are the major local government institutions that are responsible for the delivery of these services as mandated under Municipal law i.e., Municipalities Acts of State governments and Municipal Corporation Acts of respective cities¹. Although there are a number of services rendered by ULBs, important among them are civic infrastructure services. These include: (a) basic civic amenities like water supply and sanitation, sewerage and

¹ Some times, para-statal agencies like Water Supply and Sewerage Boards undertake water supply and sewerage functions within and outside corporation limits of city.

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drainage, street lighting and roads (solid waste management was later added to the list) and (b) other civic services viz, parks, play grounds, crematoria, recreation centres, community halls etc.

Historically, the ULBs were dependent upon the benefit taxes and grants from State/ Central governments to meet the expenses. However, over a period of time, both tax resources and grant support remained either stagnant or had grown at a very slow pace. Yet, the responsibilities or functions of the ULBs had been increasing with ever increasing population and move towards decentralisation. Although the authority to recover costs is also provided under the municipal legislation, the levy of user charges is neither adequately exploited to the potential nor integrated with the delivery of services. Consequently, there is a steady decline in the quality and quantity of service delivery.

One of the prime reasons for the poor state of urban infrastructure services is the inability of ULBs to adequately price the services that they provide to the users of civic infrastructure. The issue of recovering costs adequately in order to sustain urban infrastructure services has received some attention in the recent years, as the cost of producing these services is no longer easier and cheaper. To this background of the provision of municipal services is increasingly becoming costly, the municipal revenues are increasingly becoming inadequate to meet with the costs adequately, which has been resulting in the neglect of service and maintenance of asset. The decline of asset results in poor service and unwillingness to pay that further deteriorate asset formation.

In several municipalities, civic infrastructure projects meant for the provision of civic services have been running at loss for years because they are not only failing to recover the capital investments but also failing to generate enough revenues from services to finance even operations and maintenance (O&M) costs of the services. In summary, these result in the formation of a vicious circle of poor civic infrastructure and inadequate cost recovery, thereby perpetuating the decline of infrastructure asset service life, quality and coverage. As noted by Bahl and Linn (1992), user charges on public services are appropriate instruments when benefits are measurable and beneficiaries are identifiable.

The situation referred above is also attributed to the lack of commercial orientation of the municipalities towards the services that they provide. Even if an urban infrastructure project is unable to recover the capital costs initially, it should be able to generate enough revenues to fund its recurring costs of O&M. Therefore, it is important that the local government (or the municipality) shall levy user charges appropriately to recover the costs to local government or its agencies so that the resources mobilised are adequate to meet the expenditure commitments.

2. User charges and Pricing of Infrastructure Services

2.1 Characteristics of Infrastructure Services

The infrastructure services rendered by municipalities are different from the goods and services produced by industrial or business firms i.e., they are not private goods/services by nature. In the case of private goods, market acts as an instrument of competition and regulation, and the prices are determined by supply-demand conditions; in efficient and competitive markets, the price of good/service is arrived at from the

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market clearing operations. Based on these prices, the individual firm takes production decisions i.e., how much and when to produce.

It needs to be mentioned that civic infrastructure services provided by the ULBs have certain characteristics similar to the public goods/services that make them different from private goods/ services. Therefore, the pricing of civic infrastructure services differs from the very notion of market prices of private goods/ services. The following are some of those distinguishing characteristics:

- (a) *Non-excludability*: excluding the users that do not pay for the service is not possible for such category of public goods/ services.
- (b) *Non-measurability*: linking payments to the quantum of service used is not possible, at least, some for civic infrastructure services.
- (c) *Natural Monopolies*: scale economies operating for many civic infrastructure services tend to lead to monopolies.
- (d) *Externality*: the benefits from infrastructure services may not be reflected in their demand or the users' willingness to pay for them since users do not perceive the external effects e.g., public health costs/benefits, of their consumption choice to be important.
- (e) *Lumpiness of Infrastructure Investments*: the lumpiness of infrastructure investments renders the marginal cost pricing principle become inappropriate.

2.2 Rationale for User Charges

The primary rationale for the levy of user charges to adequate levels is to provide financial stability and effective recovery of all costs associated with a particular civic urban service. Such financially viable user charges may even generate resources for expanding or upgrading the service. User charges facilitate efficient investment decisions and better delivery choices. This is often referred to as 'efficiency pricing' as it allows an efficient allocation of resources

User charge enables the civic authorities to provide these services from a demand perspective i.e., the authorities will respond to demand by providing appropriate service with the costs being fully recovered. They discipline people at large since policies can be framed in such a manner that they can discourage any wastage of Municipal Infrastructure Services.

User charge can also be used as a redistributive mechanism (or, cross-subsidisation) in order to address some of the social/economic issues like concerns of the poor. The pricing policies were not seen as an instrument of redistribution *per se* but now user charges can be made non-regressive by using either differential or progressive tariffs or through means testing, with reduced tariffs or exemptions for the old and the poor (implicitly using cross-subsidisation principles).

User charge enables allocative efficiency, i.e., by fully recovering the operational costs of the municipal infrastructure service, the government or government agency does not consume resources meant for other services or sectors. In essence, the rationale for the levy of user charges is not only to generate revenues but also to promote economic efficiency. Implicit in this line of argument is that the ULBs have adequate capacity (organisational, technical and manpower) to provide these services.

2.3 Costs Estimation: Principles of Inclusion

The basis of user charge levy is recovery of cost, particularly that component involving the operation and maintenance of the service. Hence, it is necessary to define and calculate the costs of service to be included in the estimation. This involves the following factors/issues.

Estimating the service costs has some issues: (a) the costs of a particular service (b) the costs of general public services in a locality and (c) general administrative overheads of the municipality. Therefore, the costs that may be used include:

- On-site costs of service
- Offsite costs of infrastructure
- Extensions to trunk infrastructure
- Costs of providing social and community services
- Administrative overheads.

The actual costs of an identical level of service may vary considerably across municipalities for several reasons, primarily due to variation in input costs. The costs also vary with population density i.e., a low-density population may require less infrastructure services than a high-density one, but fixed costs for providing public infrastructure services do not fluctuate proportionately. Amortisation of capital costs will vary with the age of capital assets because of inflation and fluctuations in interest rates attached to any loans (when the capital is financed through loan or loan/grant mix).

Location also affects costs - it is costlier to supply to outlying areas because of the conveyance costs involved but recovery of which needs to be carefully worked out. If wealthy groups choose to live on plots away from the city, they should bear the heavy costs of pumping water. However, if the poor live on the outskirts because the housing in city is unaffordable, burdening them further with above-average unit costs may not be justifiable. Charging has to be made with respect to affordability of groups.

Therefore, the balance must be struck between the extent to which the service meets an essential human need and the degree to which individual consumers choose the conditions - particularly the location - that affect the cost of the service they use.

There are many examples of services that are meant to be self-financing but where consumers are only charged the O&M costs. The capital costs of such services are funded through general public revenues or capital grants or from loans that have been fully discharged. Many long-standing water supply & sanitation systems fall into this category. Clearly, where the debt servicing charges i.e., interest payments, are still current, they may be included in the chargeable costs of a service unless it is deliberately subsidised. Debt service charges may be below market level in the case of soft loans, for instance.

Box 1 Inclusion of Capital Costs

There are different arguments for including capital costs in user charges, irrespective of whether the authority administering the service is currently discharging these costs or not. It is argued that any capital investment entails an opportunity cost, that

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is, the capital could have been used on some other public expenditure or left in the taxpayer's pocket. Hence, capital investments in any service can only be justified if they earn a rate of return that is comparable to alternative forms of public or private use. The public's willingness to buy a service at the resulting charge level is comparable to its readiness to buy goods or services from a commercial operator that uses the same amount of capital; it is the essential market test of viability. It is even argued that the comparison can only be complete if the user charges include the tax equivalent that a private operator would face e.g., service tax and/or income tax.

Theoretically, it is improvident that the users should not contribute to the capital costs of assets only because the public body has already discharged them. All physical assets wear out over time and will need to be replaced at current costs. Hence, to forego capital costs is to live off the sacrifice of previous and future generations. User charge should, therefore, wherever possible, include the amortisation of capital assets at their current rather than historical value. However, where the infrastructure works are taken with public money to provide stimulus to economy, incorporating capital costs into the user charges may render with the defeat of the stimulus expenditure. It is important to distinguish the source and means of financing and pass on the relevant costs rather than make provision for all capital costs or related costs.

Although providing for future capital requirements through depreciation charges, current cost accounting, and marginal cost pricing or similar approaches is prudent in theory, in practice, it has its dangers. The adoption of such principles can considerably increase user charges, which conflicts with counter-inflation policies. It can also generate substantial cash surpluses that discourage service managers from efficient and economic expenditure. Surplus funds held against capital commitments can also be diverted to cover deficits in other services. Cost estimation practices, therefore, vary widely. It is also widely prevalent practice that the local government or a similar agency adopts a two-part tariff: (i) a fixed charge for capital installation costs and (ii) a variable charge based on consumption.

2.4 Feasibility of Cost Recovery from Municipal Services

While fixing the user charges, it is also important to examine the feasibility of cost-recovery, which may vary with respect to the type of service provided. The extent of cost recovery from civic infrastructure services also depends upon the nature of benefits that accrue from a given service and the extent and nature of the subsidy likely to be available.

The extent of cost recovery also depends on the practical aspect of whether it is possible to apply the principle of exclusion to that service or not. To the extent that the benefits are direct, private and the exclusion principle can be applied, direct beneficiaries will tend to bear a higher share of the costs and the cost recovery will be almost 100 per cent. Urban local Bodies, thus, need to move away from the typical classification of projects and services into remunerative and non-remunerative categories to a classification based on the extent of cost recovery feasible. Table 1 depicts the extent of cost recovery feasible in the case of civic infrastructure services provided by the ULBs.

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Table 1: Extent of Direct Cost Recovery Feasible from Users

Service	High (Full)	Medium	Low	None
Water Supply	X			
Sewerage		X		
Storm Water Drainage				X
Solid Waste				
Collection	X			
Conveyance			X	
Treatment & Disposal				X
Roads		X		
Street Light			X	
Parks & Recreational Facilities		X		
Playgrounds				X
Fire Service			X	

2.5 Pricing Systems

Pricing is an important component of user charge system and tariffs are normally used to the consumers for the services provided. A user charge system needs to adopt an appropriate pricing mechanism after taking into account current practices in the urban local body. The following types of pricing systems are common in the levy of user charges on the services (Green 2003):

- (a) *Flat rate tariff*: In the case of water services priced under this system, water fees are not directly related to the quantum of water used
- (b) *Unit rate Charging*: price per unit of water remains constant no matter how much water is consumed
- (c) *Variable block pricing*: This includes declining or increasing block pricing, that is, the more you use, the less you pay per unit or the more you use, the more you pay per unit
- (d) *Seasonal Rate Schedule*: Periodic adjustment to historical tariffs and other tariffs and practices
- (e) *Marginal cost pricing*: Cost of producing an additional unit of service
- (f) *Average cost pricing*: Service costs are divided by the total number of units expected to be sold
- (g) *Average incremental cost pricing*: The cost incurred as a result of an additional user. The charge is designed to not only ensure full cost recovery but also be computationally feasible in the real world of the public sector
- (h) *Two-part or Multi-Part tariff*: This combines a fixed price component and average cost pricing

2.6 Principles of Tariff Structure Design

A well defined tariff structure is the fundamental requirement of user charge finance. Various criteria may be used to evaluate the appropriateness of elements in a tariff structure and the level at which the elements are set. A tariff structure is often judged according to the following criteria (Boland 1992):

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Adequacy:

Any Charging system should be so designed that it will generate sufficient revenue to meet the urban local body's financial requirements. In general, it would mean meeting operating and financing costs.

Fairness

As far as practicable a pricing system should be fair. To be fair, prices should be cost-related. Logically it would mean a wide variety of charges for different categories of consumers in discreet geographical areas.

A further aspect of fairness is to give due consideration to income levels of users: some may be unable to afford either the costs they impose or the benefits they receive. To be really fair any tariff system should be sufficiently flexible to ensure that a low income level of service. In other words it may be necessary to subsidize a minimum level of service on public health grounds.

Simplicity:

For the widest acceptability and support a charging system should be simple to operate and to administer, and should be easily understood by the consumers. Administrative Simplicity helps in keeping the costs to a minimum, in avoiding disputes with consumers and facilitates collection of dues.

Service Conservation:

The tariff structure should be such as would discourage wastage and extravagant use of service and encourage user economy.

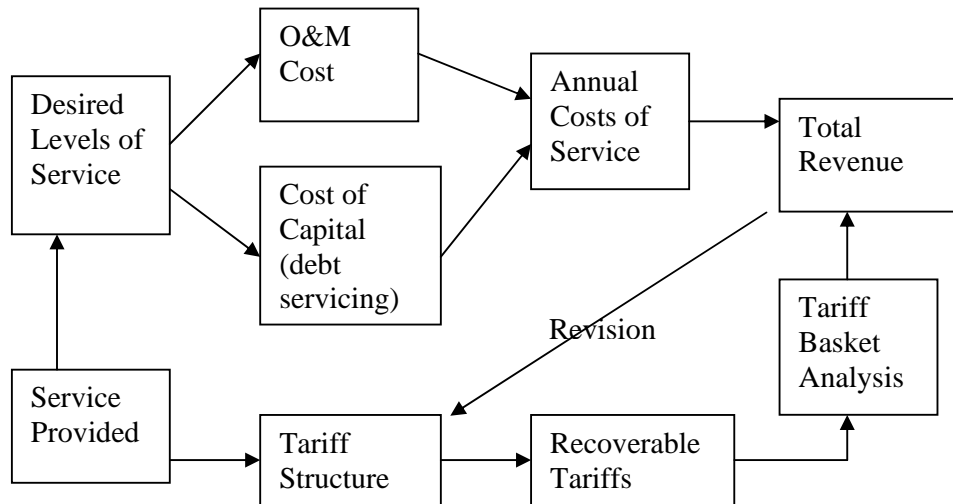
Service Quality & Transparency

The final issue is about service quality and transparency in fixing prices. User charge mechanisms are not linked to service quality. Also, the minimum lifeline rates are not defined. Greater transparency and lesser political interference are required while setting user charges.

3. Fixation Process of User Charges

A proper user charge system is important in order to ensure the financial viability of the infrastructure services, efficient investment allocation and distribution systems, equity, and minimum life-line rates. To achieve this, it is important to roll out a tariff setting process, which is shown in the following diagram. The steps involved are described hereunder

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Tariff Setting Process

- ✦ First, the services provided currently have to be given careful consideration and the desired levels of services needs to be defined. This involves identification of service parameters and benchmarking/ aspiration setting. Depending upon the service characteristics, it is essential to identify the appropriate tariff structure. For example, a two-part tariff for the consumption of the poor and other households is useful for water supply. The access fee and connection charges need to be recovered through own policy/ bye-laws. For sewerage/sanitation, a surcharge/ cess on water supply charge may be sufficient. For solid waste management, a charge may be levied per household and other types of users identified. For parks and playgrounds, entry fee per visit or per certain number of visits (monthly or weekly pass) may be fixed.
- ✦ Second, estimation of the marginal or average incremental costs for each dimension of the service. These costs must be adjusted to reflect the true market costs, especially of capital resources used for the service. Wherever possible and appropriate, the variations in costs across zones or regions, user groups (size of connection) and time (seasons) may be identified. Table 2 provides the costs that must be covered while assuming that at least, the costs of O&M and debt servicing should be recovered. Inclusion of capital costs i.e., amortization costs and other related costs, as may be planned, need to be worked out separately.

Table 2 Type of Annual O&M Cost Estimate (Abstract)

Item	Rs in Lakhs						
	Water supply	Roads	Drains	Solid waste	Street lights	Sanitation	Total
Operating costs							
A. Salaries							
B. Power and fuel							
C. Consumables							
D. Equipment hire							
Maintenance costs							
E. Maintenance							
Total annual O&M costs							

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- ✦ Third, assess the willingness to pay of different user groups for different dimensions of the service through occasional surveys. It is important to identify the affordable levels of payment for the services with respect to household/personal income in order to be able to levy charge that is linked to affordability. It is important to identify the maximum affordability level, especially among low-income groups and for other users, identification of the costs of alternative sources or modes of supply may give an indication of coping costs / costs of alternate service.
- ✦ Fourth, determine the initial tariff structures based on the average incremental costs of O&M and willingness to pay. It is important to identify and classify the users based on the parameters like the property value (capital or rental) and the consumption volume of service (as measured from the metering or any other non-standard method). For the distinguished users, the differential tariffs may be adopted but the overall revenue must be sufficient to cover the O&M costs. Also, it is important to allow for lower charges in order to ensure lifeline rates. For water services, it is important to address the metering issue and adopt a suitable cross-subsidisation scheme in order to render it useful and meaningful.
- ✦ Since inevitably, user charges are politically determined to some extent, it is important to provide an adequate consultation process with affected groups and reviews by the public and a central regulatory agency to ensure that the user charges are reasonable and acceptable and that subsequent adjustments can and will be made, as appropriate.
 - Provide clear and strong incentives to political and non-political managers to impose efficient user charges. If the prices set by a particular agency are subject to review by the centre or a regulator, the principles that will guide the review should be stated clearly and their application demonstrated to managers and the public
 - Public interest means in the interest of the population as a whole and not the direct beneficiaries of the service alone. Efforts must be made to persuade affected groups on price increases but the decision should be in the interest of the entire population
 - The real concern that people have about user charges is that they are unfair and regressive. User charges should be made fair and progressive and must be persuasively presented and explained to the public

4. Process and Guidelines of User Charge Levy in ULBs

As the circumstances under which a ULB sets the charges/ fees for the goods or services can vary, each of them may charge different charges/ fees for different categories of goods/ services, with different legal authorities and separate policy justifications and cost structures. While setting user charge/ fee, the public entity shall consider the following:

- (a) Legal authority to levy charge/fee
- (b) Identifying different goods and services
- (c) Estimating the volume to be produced and cost of resources
- (d) Calculation of the costs involved
- (e) Determining the basis for setting and charging fees
- (f) Recordkeeping and transparency in decision making

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(a) Legal Authority

The legal authority for the levy of user charge/fee is under the respective Municipal Act. The scope of the authority to levy charge/fee as well as the purpose for which the levy is made has to be consistent with the authority. As the situation and context differ between each of the local authority, the levy itself might vary as the sources of funding as well as the costs of providing the services might vary. The scope of costs to be included in arriving at the costs may be specified through a common policy adopted by the State government. The user charge/fee for a good/service should reflect the costs estimated to be incurred by the public entity in producing the same.

(b) Identifying the different goods/ services being produced

The ULB should be able to identify the range of goods/services it produces before it decides how they should be grouped for costing and charging purposes. For practical purposes, complex products can be divided into smaller components and several related products can be grouped into one. Once the goods/services have been identified and grouped logically, the public body needs to determine and cost the resources used in their production. These include but not limited to the mix of labour, materials, overheads, fixed assets and related costs and any other relevant costs.

The costs analysis should identify the costs incurred in the related functions and the role to be performed by the public body so that a clear choice can be made about whether to allocate these costs to production process and to recover through the fees it charges.

(c) Estimating the volume to be produced in a given period, and the volume and cost of resource required to do so

The ULB should estimate the future demand for each good or service in the period for which it makes estimates of the costs. Forecasting may be done based on the past experience or demand analysis may be done specifically. Once the forecast volume is ready, the resources and the costs may be prepared.

When quantifying the costs of resources that are needed to meet the expected demand, the entity should take into account of fixed and variable costs: fixed costs are stable within a certain volume range and change only when significant changes in volume occur; variable costs change continuously with changes in volume

The entity needs to make assumptions of the prices it would pay for the resources that it will need to produce the goods/services. It should make reasonable and logical assumptions about the level of resources needed to produce the goods/services, based on the information known or anticipated changes e.g., cost changes.

(d) Costing the use of resources

The costing analysis should include all likely/foreseeable costs to be incurred in the forecast period. Cost is a monetary measure of resources to be used in producing a good/service. Sound methodologies that identify the cost of resources and that allocate the costs to individual goods/ services, are essential aspects of charging practice. The

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ULB needs to have a system to collate the cost information. The type of systems developed should take account of the context and should be in proportion to the level of revenue and costs that it needs to track.

While identifying the resources, and hence the cost, involved in providing the forecast volume of goods/ services, the public body has to make use of information available to it and make reasonable assumptions about prospective information. It could be appropriate use sampling to determine standard or unit rates. A standard or unit rate is the average amount of resource expected to be used to produce or contribute to a good/ service. If the costs vary with the way services are delivered, there the public body has to decide the level significant enough to be reflected through the costing or fee setting process.

(i) Types of costs

The typical costs that are incurred in producing goods/ services are:

Labour:

The cost of labour includes remuneration paid e.g., salaries, wages and benefits, and other employment-related costs viz., service tax etc.

The amount of time devoted to the activity is an important measure and the estimate of it needs to be made either by informal or formal methods

Materials:

The average quality of materials required to produce the good/service needs to be determined based on past experience or estimates.

Overheads:

Overheads include all services received or purchased from other divisions or sections of the organisation, or from third parties e.g., rent, telephone or travel costs.

Fixed assets, depreciation and other costs related to capital:

Generally, capital expenditure (purchase of fixed assets such as land, buildings and other physical construction/ equipment) is not included in the calculation of costs for setting charges/ fees.

While calculating the costs, public body has to be careful to avoid including expenses funded through other means in their analysis for levy of charge/fee.

(ii) Direct and Indirect costs

The costs discussed may be directly or indirectly linked to the goods/services being produced. Direct costs are those that can be traced to a single product viz., labour or material costs, which need to be allocated to that product. Indirect costs may include the costs of external costs, depreciation etc.

Some costs may contribute to producing a product but are not incurred exclusively for that purpose e.g., rent/energy costs. Indirect costs should be allocated in proportion to the extent to which they contribute to the good/service production.

The method of allocating costs should be formulated once and the bases for allocation may include their relationship with direct costs, number of staff, amount of service and space used. Incidentals viz., legal charges, are difficult to allocate, but attempt may be made to include them as indirect costs.

The identification of direct cost is done based on its relationship to the good/service. The type of cost and the organisation part of it may not be relevant. For example, legal costs

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may be direct costs if they are directly related to good/service; otherwise, they are categorised into indirect overhead costs.

Allocating indirect costs may not always be straightforward, but the entity should make a reasonable and logical assessment of indirect costs and their allocation against goods and services. This should take account of the type of entity and its overall structure, to determine what level of cost allocation is appropriate. The context could suggest that a comprehensive coverage of overheads is not appropriate or necessary. The period for the analysis needs to be specified e.g., 2-3 years.

(e) Determining the basis for setting and charging fees

Once the costs structure, and individual cost components are identified, and volume of demand as well as its cost are estimated, it can decide on setting the fees. At this stage, it needs to factor in any policy changes that have been made about the proportion of costs to be recovered through the fees. Fees can be expressed as a monetary amount for each good/ service produced or each unit of resource (hourly/monthly rate).

The appropriate basis for the levy of charge/fee will depend on the nature of what is produced. If the goods or services are standardised, it may be simple average costs i.e., total costs/ estimated volume of production. However, if the costs incurred in producing individual goods/ services vary significantly, more specific charges may be needed.

(f) Transparency in setting the fees

The fees should, wherever possible, be set before the goods/services are produced. If not, the incentive for management to control costs could be reduced. Also, consumers would like to know fees in advance to decide whether want to incur the costs associated with the goods/ services. A ULB/ any agency that levies charges/fees should have:

- ✦ a documented approach to charging systems that refer to legal authority, scope of charging, rationale for charging etc
- ✦ a sound cost allocation process appropriate to the entity and the fees
- ✦ a clear audit of assessment of charges/fees i.e, costs incurred, forecast demand, arriving at the fees etc.

As a public entity, it should be able to demonstrate to external reviewers of the department or government that it has rational and reasonable process for identifying the costs of activities and for setting its fees. Once the charges/fees are fixed, the entity should monitor and record the revenue generated from it. A summary of accounts shall be prepared with details of opening balance and adjustments and maintained every year.

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