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**METHODOLOGICAL GUIDELINES FOR STUDIES TO
ESTIMATE THE COSTS OF PSYCHOACTIVE SUBSTANCE
ABUSE**

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METHODOLOGICAL GUIDELINES FOR COST ESTIMATION STUDIES OF PSYCHOACTIVE SUBSTANCE ABUSE (LEGAL AND ILLEGAL).

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Summary

The abuse of psychoactive substances adversely impacts not only the health and the capacity for social interaction of the user, but also those around him and even extends to the community as a whole.

There is great need for improved estimates of the economic costs of substance abuse.¹ Those estimates help prioritize the problems brought about by drug use, provide useful information to better target and focus programs, and to identify gaps of information. At the same time, the development of these estimates, which provide crucial and necessary information, also offer the potential to develop more complex and complete analyses to evaluate alternative projects to mitigate the consequences associated with drug use.

This manual introduces a general methodological framework to develop cost estimates. Economic cost studies of substance abuse are described as a type of cost-of-illness studies in which the impact of substance abuse on the material well-being of a society is estimated by examining the social costs of treatment, prevention, research, law enforcement and loss of productivity plus some measure of the quality of life years lost, compared to a counterfactual scenario where there has never been any substance abuse. These guidelines show the type of costs to be taken into account, classifies them and analyzes how they should be estimated. Special emphasis is placed on the costs associated with combating the production and trafficking of illicit drugs (applicable to countries where illegal drugs are produced and/or where drug trafficking is established and has become one of the primary concerns). In addition, the document provides a discussion of other topics relevant to economic analyses that have to be considered, such as: avoidable costs, budgetary impact, comparing social costs and gross domestic product, and the use of cost estimation studies in the economic evaluation of programs.

¹ It should be made clear that, given that the studies about social costs are essentially economic studies, it is important to define substance abuse in economic terms. Economists state that, substance abuse exists when its use is such that it implies social costs in addition to the costs of the resources necessary to procure that substance. Therefore, when the term “substance abuse” is used, it should refer to the use, improper use or abuse of tobacco, alcohol and/or illegal drugs.”

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Introduction

The abuse of psychoactive substances adversely impacts not only the health and capacity for social interaction of the user, but also those around him and, as a result, the entire community.

When looking at the whole of society, the individual adverse effects resulting from the abuse of psychoactive substances (PAS) spread and accumulate not only in the human welfare area but in the social and economic sectors as well. Those adverse consequences manifest themselves, primarily, in the user's abnormal behavior induced by the abuse (accidents, fights, material damages caused by action or omission, crimes, individual costs and costs to the health system); family problems derived from PAS abuse (intra-family violence, sexual abuse, negligence and abandonment, frequent conflicts, poor communication); problems brought about by the user's lower productivity; health problems of the user and also of other persons; and legal problems (arrests, judicial actions, providing for the user's welfare in prison, customs, airport controls, crop destruction, deaths resulting from combating criminal organizations), etc.

The community becomes aware of the social consequences of abuse when, in order to address the sum of the individual consequences and limit the increase of present and future damages, it has to allocate additional resources (beyond what would be necessary if there were no abuse) to cover needs in various fronts, which implies costs to the health system, government entities, loss of productivity, etc. Therefore, in all societies, governments develop and implement various policies and interventions to mitigate the unwanted effects associated with drug use. In that regard, having reliable cost estimates of drug abuse is necessary and determinant in order to underscore the importance of prioritizing this problem in the national agenda and to be able to develop the most efficient and effective policy instruments to confront it.

Within the framework of *the Cost Program*, this document is a continuation of the commitment undertaken by the Inter-American Observatory on Drugs (OID) of the Inter-American Drug Abuse Control Commission (CICAD) of the Organization of American States (OAS), to establish a methodology to help the countries in the continent estimate the economic impact of PAS abuse.² After compiling the cost estimation models of substance abuse of the most developed countries, and developing a simplified version to be applied in Latin American and Caribbean countries included in the previous Researcher's Manual (2005)³, the methodology was updated incorporating experiences and lessons learned in pilot countries and in other countries that have developed their own cost estimates, with better access to data and information in the region, and with the recommendations of the Peer Review of the Costs Program of CICAD.

These *Methodological Guidelines* begin with a brief summary of the methodological background and then go on to explain the relevance, pertinence and interest in developing estimates of the social costs of PAS abuse. The first chapter introduces the framework to carry out cost-of-illness studies in general, adding certain specific characteristics to be taken into consideration in PAS abuse cases. The following chapter provides the general guidelines to be followed in cost estimation studies of PAS abuse; outlines the stages and steps to be followed to produce economic cost estimates; provides a classification of costs and offers certain recommendations for consideration. Likewise, it is recommended that, where applicable and necessary, countries should follow the protocols developed by OID/CICAD

² Pursuant to the mandate received from the Summit of the Americas, Quebec, 2001.

³ "Methodological guidelines for economic impact studies of psychoactive substance abuse."

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based on international experiences in order to develop certain specific estimates. Chapter 3 presents other topics that are relevant to the economic analysis of the drug problem, such as: avoidable costs estimates; budgetary impact of policies and programs relating to drug use; comparison of social costs with the Gross Domestic Product, and the use of cost estimates to evaluate policies and programs. The need and usefulness of epidemiological and specific research studies in order to develop cost estimates is emphasized here as well. Last, some conclusions are offered.

Methodological background

In essence, economic impact studies of PAS abuse try to measure the social costs to a society, at a given point in time, compared with a hypothetical situation where abuse never existed.

Several decades ago, in an effort to minimize the distortions attributable to factors outside the problem itself, bearing in mind the complexity of the subject to be analyzed and the difficulty in obtaining basic statistical data, it became apparent that it would be necessary to introduce a certain degree of homogeneity in concepts and categories. In addition to making it possible for analysts to speak the same language, this also allowed for direct comparisons between studies. Consequently, in 1978, the United States government, through the U.S. Public Health Service, put together a working group responsible for developing methodological guidelines for cost-of-illness studies that were either carried out or financed by that service. The highly regarded expert Dorothy Rice chaired the group. Later, in 1994, the Canadian Centre on Substance Abuse (CCSA) organized the first International Symposium on the Economic and Social Costs of Substance Abuse in Banff, Alberta. At this meeting, a working group comprised of analysts of various nationalities and led by Canadian expert Eric Single, was charged with developing a set of international guidelines. The first version of the guidelines became available in 1995 and was revised in 2001. A second version was published by the World Health Organization in 2003 and was distributed widely.

In 2001, the OAS, determined to help to eliminate the existing gap in the field of cost-of-illness studies in American nations other than Canada and the United States; following up on the recommendation of the CICAD/OAS Multilateral Evaluation Mechanism (MEM) in the 1999-2000 Evaluation Round, and, further, based on the mandate issued by the Summit of the Americas held in April 2001, in Quebec, "to develop a long term strategy that includes a 3-year-program to establish a basic and homogenous mechanism to estimate the social, human and economic costs of the drug problem in the Americas, and to support the countries with whatever technical assistance may be necessary," embarked, through CICAD's OID, on a process to develop a methodology to help the countries in the continent measure the economic impact of PAS abuse. To that end, the organization took on the challenge of developing a simplified version of the Canadian and US models, with the expectation that it would provide credible and useful results, although based on the more limited and less accurate information available in Caribbean and Latin American countries. The outcome of this process was the document "*Methodological Guidelines for Economic Impact Studies on Illicit Psychoactive Substance Use,*" developed by a team of internal and outside CICAD experts with the support of the Robert Wood Johnson Medical School of the University of Medicine and Dentistry of New Jersey (UMDNJ/RWJMS), and the contribution of the participating pilot countries selected by CICAD to test the simplified methodological design before recommending its implementation in other countries. These countries; Barbados, Costa Rica, Mexico and Uruguay in 2002, and later Chile and El Salvador in 2004, expressed their willingness to participate in the project. Later on, in 2005, Argentina also expressed interest in the project and carried out its own cost estimation studies based on the same document.

Approximately nine years worth of economic impact studies of psychoactive substance abuse in seven countries in the American hemisphere are currently available. Some countries have only studied the use of illicit drugs while others have looked at the use of both legal and illegal drugs. Although the extent and accuracy of the resulting estimates differ from country to country, due essentially to limitations in access to information, the exercise has been extremely

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useful to the countries in order to strengthen their domestic research infrastructure, to detect information gaps, to establish and/or strengthen stable inter-institutional relations, increase awareness about the importance and usefulness of cost estimates of substance abuse, and to show for the first time, even with the limitations specific to each case, the magnitude of the drug problem in a country. The results obtained in the pilot countries, as well as a comparative analysis of those results, are included in the “Final Report of the CICAD Pilot Program to Estimate the Social and Economic Costs of Drugs in the Americas.”⁴ The individual country reports are also available on the OID website.⁵ The results of the cost estimates produced by Argentina are available on the country’s official website and on the OID website along with the other country reports.⁶

This document follows the international guidelines and includes the recommendations of the Peer Review of the Cost Program of the Scientific Committee of CICAD and of the Final Report of the Pilot Program, as well as suggestions from the countries in the hemisphere and from the international community regarding various topics to be considered and/or incorporated. Likewise, the lessons learned in the countries that conducted their cost estimates on drug use (pilot countries and others) as well as improved access to information and data in the countries make it possible and timely to update the *Manual* to include tobacco and alcohol.

The origins and background of this *methodological guide* can be found in the following documents: “*Economic Costs of Drug and Alcohol Abuse in the United States – 1992*,” developed by NIDA; “*International Guidelines for Estimating the Costs of Substance Abuse - Second Edition 2003*” developed by CCSA and published by the World Health Organization; “*International Guidelines for Estimating the Avoidable Costs of Substance Abuse - First Edition 2006*” developed by David Collins, Helen Lapsley, Serge Brochu, Brian Easton, Augusto Pérez-Gómez, Jürgen Rehm and Eric Single, at the request of the Government of Canada, and “*Methodological Guidelines for Economic Impact Studies on Psychoactive Substance Use*,” developed by CICAD and UMDNJ/RWJMS.

This is the appropriate moment to acknowledge the above cited institutions for their efforts in defining a common basic methodology with general validity. As previously stated, that has been the basis for the first methodological guidelines and a point of reference for this document.

With regard to these methodological guidelines, it is expected that they will help facilitate the adoption of the international methodology to measure the social costs of PAS abuse in developing countries which, despite improvements, characteristically evidence significant deficiencies in the quantity and quality of the information available. This implies that participating countries must make a continuous and concerted effort to carefully and systematically gather relevant data for their cost calculations.

CICAD is committed to ensuring that more and more countries in the hemisphere become aware of the importance and contributions of cost estimation studies on substance abuse to the understanding and analysis of the problem, and to the decision making process. Likewise, CICAD also aims to emphasize the need and usefulness of epidemiological and specific research studies as a primary source of information and data for cost estimates.

⁴ Available at www.cicad.oas.org

⁵ Barbados produced estimates for 1998 to 2000; Chile for 2003 and 2006; Costa Rica for 2000 to 2003; El Salvador for 1998 to 2004; Mexico for 1998 to 2003 and Uruguay for 2002 to 2004.

⁶ Argentina completed the “*Cost-estimate Study on Psychoactive Substance Abuse in Argentina*” for the years 2004, 2006 and 2008, available at www.observatorio.gov.ar
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Last, but not least, in the context of the new *“Hemispheric Strategy on Drugs”* (adopted by CICAD on May 3, 2010, in Washington), where the evaluation of programs, projects and policies is a priority, cost estimation studies will provide critical and essential information to carry out the economic and epidemiological evaluations of those interventions. In this regard, the next challenge is to raise awareness of the need and usefulness of avoidable costs estimates, cost-benefit analyses and cost-effectiveness analyses, and to promote their use by countries in order to achieve the efficient allocation of public resources.

Along the same lines, CICAD, through the OID, seeks to strengthen and expand the Cost Program to more countries in the hemisphere by providing the necessary technical assistance and institutional support.

Importance and usefulness of cost estimation studies of psychoactive substance abuse and its economic impact.

The need to estimate the social costs of PAS abuse is obvious. There is no doubt that PAS abuse adversely impacts the health and capacity for social interaction of the user which, in turn, results in social consequences. It is for that reason that, in all societies, governments develop and implement policies and interventions. Having reliable estimates of the costs of drug abuse is essential in order to justify the importance of maintaining the problem on the government's agenda and to identify the most efficient and effective policy instruments to combat it.

Estimating the social costs of PAS abuse serves several purposes. First, these estimates help justify the priority that the social problem engendered by PAS abuse needs to be assigned in the national agenda, given that, without any information regarding its economic impact, it would be easy for the government to either postpone addressing the problem or misplace its focus.

Second, estimating costs helps to better visualize and quantify problems and, therefore, to better target specific policies. It is important to know the relative weight of each substance in economic terms in order to more efficiently allocate the budgetary resources of the government. At the same time, knowing the different components of the total cost can help identify which areas need more government attention and which interventions are the most effective.

Third, cost estimates are useful in detecting statistical information gaps and areas where further research of relevant aspects is needed in order to better understand the phenomenon. The international guidelines argue that, to the extent possible, the development of improved comparable international methods to estimate the costs of substance abuse should be done within the framework of the existing System of National Accounts (SNA) in each country. This system, which is the best known method to estimate the Gross Domestic Product of all market activity, is aimed at market production and activities and does not generally take into account important activities outside the market, or that affect quality of life and death. But if so desired, the SNA could be expanded and modified in the future to facilitate economic costs studies which are also concerned with activities outside the markets and with mortality. The development of cost estimates of substance abuse within the framework of SNA could be the last step in improving and refining the national accounts systems, increasing their relevance and usefulness.

Fourth, improvements in estimating the costs of substance abuse could provide guidelines to measuring the effectiveness of policies and programs aimed at controlling the social problem and contribute useful information to the design and evaluation of alternative policies to select the most cost-effective intervention. At the same time, to the extent that certain minimum standards can be developed to allow for international comparisons, the results of those studies could help compare the effectiveness of the domestic policies of various countries. Thus, comparative studies, for example, could provide useful information regarding whether, in terms of penalizing production and consumption, a more restrictive line of action would be preferable to a more liberal line of action; or if, all other factors being equal, there is less drug abuse in countries where most of the costs are assumed by private parties as opposed to countries where the government assumes responsibility for the majority of the costs.

Last, in any country, cost estimation studies of PAS abuse can contribute to the construction of social-cost functions to help optimize tax policy and define policy objectives in search of better living standards for the whole population.

Chapter 1: Economic cost studies. Certain characteristics for psychoactive substance abuse cases.

In summary, an economic cost study of psychoactive substance abuse is a cost-of-illness study in which the impact of PAS abuse on the material well-being of a society is estimated taking into account the social costs resulting from allocating resources to: specialized treatment, general health care, prevention and research for supply and demand reduction, and law enforcement in combating drug trafficking. Add to this, productivity losses in the national economy as a result of illness, premature death and judicial problems attributable and/or associated with drug use and/or drug trafficking; costs associated with the environmental impact of growing and processing illicit drugs (in countries where applicable); and some monetary compensation for the quality of life lost. However, in cases of countries where illicit drugs are grown and produced, it would be advisable to also estimate the “cost of alternative production” in order to learn the magnitude of the problem and have more information available to make decisions and evaluate alternative policies. But, the other costs should not be added since they are private rather than social costs.⁷

1.1- Economic cost studies: a type of cost-of-illness study.

Cost-of-illness studies (COI) are a specific type of economic impact studies. Their purpose is to increase the degree of understanding of the nature and environment of a specific illness and of its foreseeable consequences for society as a whole.

In order to develop the necessary estimates, cost-of-illness studies must combine epidemiological data that facilitate understanding the characteristics of the problem, with financial information necessary to develop a monetary measurement of the cost of a specific illness to a society.

An essential concept in economic theory is the *opportunity cost*, meaning that the allocation of resources for any purpose (as an illness, for example) will inevitably represent an equivalent loss of social investment in another front or fronts. Therefore, (COI) studies respond to the proposition that had the illness not existed, then the resources that a society allocated to treatments and other activities could have been used on another problem

In addition to the opportunity cost there is another concept, the *counterfactual scenario*, described as an alternative state of affairs in which the opportunity cost can be evaluated. This totally hypothetical and, therefore, unreal scenario, is stated as the situation that would prevail in the absence of the illness. Comparing the economic circumstances in each case (the real or factual against the hypothetical or counterfactual) provides an approximate estimate of the economic impact of the illness.

Usually, the counterfactual scenario in COI studies is not controversial, but in substance abuse cases the alternative is more open to argument. In the case of alcohol abuse, for example, the counterfactual scenario would be that abusers turn to mineral water and other healthy choices, or become drug users. The latter is an extreme example and, usually, COI studies assume that abusers will not direct their consumption toward harmful choices but, sometimes, the specific

⁷ The general assumption of this *Guide* is that the decision to produce illicit drugs is made by “rational” individuals who are aware of the costs and potential benefits. Thus, the resulting costs and benefits are private.
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counterfactual is not so obvious.

In any event, there is more disagreement and debate among economists over how to value or measure costs than there is over the counterfactual scenario. Essentially, the framework that has been agreed upon is the “*theory of value*” with the role and interpretation of market value. In that regard, one of the assumptions of the theory of value is that users put a price on their own consumption and that they rationally choose to maximize the value of their consumption, subject to their budgetary limitations. But addictive behavior seems to undercut this assumption of rational behavior. We are then faced with the problem of determining how economic analyses will address this situation. For non economists, an essential goal of the economic approach of cost estimation studies is to maintain the established paradigm of the theory of value, and adapt it to users with addictive behavior implications.⁸

1.1.1- What constitutes cost? Private costs vs. social costs.

In the case of assets whose costs are essentially private, the economic impact is estimated at approximately zero. But in the case of PAS abuse, there is an economic impact since this situation implies not only private costs but social costs as well. In the case of tobacco, for example, the counterfactual scenario is one in which there is not now and there never has been tobacco use so smokers direct their consumption toward other goods (potatoes, for example). At first, this situation would seem equivalent to that of the potatoes, but tobacco use leads to health problems that require medical care. Ceasing tobacco use would mean that a significant portion of health care resources would not be directed to treating illnesses resulting from tobacco use and could be then allocated to other needs. Although the counterfactual scenario is not entirely clear, the essential point is that smoking has consequences on the allocation of resources and those are not compensated by some benefit or advantage to smokers when they decided to start smoking.

Following the international guidelines, the terminology used in this *methodological guide* differs from that usually found in the economic literature addressing these topics. What the guide calls “*social costs*,” the literature usually calls “*external costs*” or “*externalities*.” The costs that accumulate only for the person engaged in the activity in question (tobacco use, for example) are private costs. Therefore, in the traditional terminology, private costs plus external costs equal social costs. But, again, “*social costs*” in this *guide* means the costs imposed on a society (what the economic literature calls externalities).

At the same time, it is important to differentiate between private and social costs and benefits because, in general, private costs do not justify State intervention. In order to determine the appropriate levels for any intervention in society, the government is interested in knowing the cost that intervention imposes on the rest of the community. Although certain activities, such as PAS abuse, may generate private benefits, those are irrelevant to the rest of society. Thus, social cost studies of PAS abuse should only estimate net social costs.

In COI studies, only social costs are taken into account. Those may be incurred either by other persons in the private sector (as when insurance premiums increase due to payments to smokers) or may be public sector costs. Consequently, in the context of COI studies, “social” is

⁸ For details on approaches used by drug users to value their own consumption see, “*International Guidelines for Estimating the Costs of Substance Abuse – Second Edition 2001*” and “*Theoretical Issues in Abuse Cost Estimation*” (Collins and Lapsley).

not synonymous with “public,” nor is “private” synonymous with “private sector.”

Another problem with PAS abuse is to try to determine whether the costs imposed by the abuser on other members of his own family constitute a private or a social cost. The magnitude of the estimates of the cost of abuse will depend significantly on whether the costs imposed on relatives are treated as social costs. Although it could be argued that some of these costs are internalized as private costs by the abusers, it would be hard to accept that the effects on the other members of the family should be considered only as private costs.

1.1.2- More complex costs: loss of productivity.

The reduction in health care costs in the counterfactual scenario is not the only important change. Even more important, is the impact on the Gross Domestic Product of a country. Total production could be increased if old abusers were more productive in their jobs and had less morbidity and fewer absences. This additional productivity in the counterfactual scenario is the loss of productivity due to substance abuse in the actual situation.

Although it is possible that some substance abusers may assume part of the loss of productivity themselves, receiving less pay for example, the total impact of the loss of productivity is shared by the worker who abuses PAS, the employer who experiences a reduction in benefits, other workers who receive lower salaries and/or the government which collects less in taxes. These losses are included in COI studies.

1.1.3- The most important cost: assigning value to life itself.

There is still another difference between the actual situation and the counterfactual scenario that economic costs studies must take into account: substance use and abuse may lead to death. In comparison with the counterfactual scenario, the population is smaller and the resulting drop in productivity must be included in the COI study, taking into account the loss of income due to premature deaths.

But what happens with the premature deaths of those who are not part of the workforce, such as housewives or retired individuals? That loss of life due to substance abuse cannot be ignored. There must be an explicit recognition of the years of life lived under each scenario, and a dollar value must be assigned to the work of individuals outside the workforce and to retirees.

It is not easy to place value on those years of life or the quality of life years (disability-adjusted life years (DALY) or *quality life years* (QALY). –See footnote 35 for more details), and the difference between this situation and the counterfactual scenario is also part of COI studies.

The idea of assigning a dollar value to human life is strongly opposed by many people, cultures and religions. But in the case of policy recommendations and the ensuing decision making process, it is impossible to avoid assigning life a value. The problem of assigning value to human life cannot be avoided by ignoring the problem because that would be the equivalent of assigning life zero value. Anyway, since economic costs studies do not specifically make policy recommendations, they can sidestep the issue by enumerating the number of life years lost due to premature deaths without assigning a dollar value to those years. This last approach, however, does not allow for comparisons between illnesses and determine which

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one is costlier.

Last, a COI study includes both the value of the existing damage in the life of an addict as well as of the effects of mortality.

1.1.4- Intangible costs.

The intangible social costs of substance abuse evaluate the loss or deterioration of life above and beyond any material cost. The main intangible costs are those caused by death, pain, suffering, and losses. The main characteristic of intangible costs is that their reduction does not lead to any freeing of production or consumption resources for other uses. For example, the reduction of pain or suffering, although an important benefit, will not translate into a direct transfer of that benefit to another person. An important implication of this characteristic is that there is no market for the reduction of this cost, in other words, the benefits cannot be sold or bought.

Based on the preceding, it is extremely difficult to assign value to intangible costs. Therefore, they are usually not taken into account in social cost estimations. As it will be explained later, this guide acknowledges the existence of these costs but it will not address them here.

1.1.5- The positive impact of consumption.

It is frequently argued (by the tobacco industry, for one) that if the industry that produces an addictive substance ceases to exist, there will be a significant social cost involved in terms of lost products, revenue and employment. However, this analysis is based on two very questionable assumptions: 1) the absence of any expenditures on substances, the money would not be used on any other type of expenditure and would only go to savings; and, 2) the resources used in the production of substances (land, labor, etc) would not have any alternative use. Both assumptions are highly unconvincing and improbable and, thus, this guide will not consider the positive impact of consumption.

1.2- Demographic approach vs. human capital approach.

There are two different approaches to estimating the economic costs of substance abuse: the most widely used is the *“human capital”* approach and the most recent is the *“demographic”* approach. The difference between them is the way in which the cost of premature mortality is addressed. On the one hand, in the human capital approach, the value of the production of a deceased worker is estimated by present income plus a discount rate for future earnings (current value of future earnings). On the other hand, the demographic approach compares the size and structure of the current population to another “healthy population,” for instance, a population where there are no drug related deaths.

The key point is that these are complementary rather than contradictory approaches and that they answer different questions. Whereas the human capital approach estimates the present and future costs due to drug related mortality in the current year, the demographic approach estimates the present costs of drug related mortality which occurred in past years as well as in the current year. Consequently, it is impossible to expect both approaches to produce the

same results in all circumstances. In periods of consumption increase or reduction, different results should be expected. Equivalent results should only be achieved during a long period of time, with stable consumption and with no major impact from prevention and treatment programs.

Thus, there is no need to reconcile the two approaches but, rather, to bear in mind the origins and meaning of each one. The choice depends on the counterfactual scenario used for the analysis. The preferred and recommended process would be, to the extent possible, for economic cost studies to use both approaches and compare the results afterwards.

1.3- Prevalence-based vs. incidence-based approaches.

The terms prevalence and incidence come from the epidemiological field. The prevalence based approach aims to establish the total number of cases of an illness or disorder existing in a population at a given moment in time (for example, how many marijuana addicts are there in a country in a certain year, regardless of when they became addicted). On the other hand, the incidence based approach tries to measure the number of new cases of an illness or disorder within a period of time (typically a year) for the purpose of assigning that illness or disorder an evolutionary trend.

It follows then, that prevalence-based COI studies estimate the social costs in any given year of all the abuse cases which presumably exist among the population, independently of the date of onset. Incidence-based studies, on the other hand, estimate the costs that the onset of new cases in any given year will generate from that year into the future. Therefore, it can be stated that prevalence-based studies measure the cost of present and past abuse, while incidence-based studies measure the cost of present and future abuse.

In theory, studies based on one approach or the other would be expected to produce approximately equivalent results in those societies where the illness (PAS abuse, in this case) remained more or less stable in its general state of incidence.

Either way, the difficulty in obtaining the necessary information to develop cost estimations of PAS abuse explains the fact that only a few countries (mostly developed countries) currently have those studies. Most of them are prevalence-based studies.

1.4- Selecting the appropriate discount rates.

Economic cost estimates related to substance abuse are based on a specific period, generally a recent year. The effect of the counterfactual scenario, however, perhaps implies cost savings in future years. The standard economic method is to discount these future costs by an equivalent amount in the base period.

The real amount discounted can be very sensitive to the discount rate selected. There is no international agreement regarding the discount rate and, even within a country, economists argue over the appropriate discount rate to be used. International guidelines regarding this topic suggest that, whenever discount rates need to be applied, various discount rates ought to be used in order to obtain several estimates. Although the preferred discount rate varies from country to country, discount rates of 5 and 10 percent should be included among the rates selected in order to facilitate comparisons of studies from different countries.

1.5- What is NOT a cost estimation study.

It is important to emphasize what a cost estimation study is in order to avoid confusion with other types of economic analyses. Although a cost-of-illness study is very useful in making political decisions, it is not a study of avoidable costs, nor is it a budgetary impact study or a cost-benefit analysis (See chapter 3).

In the first place, an economic cost estimate does not provide the amount of money or the number of life years that could be saved through the implementation of effective policies and programs. The counterfactual scenario in cost estimation studies is a situation in which problems related to substance abuse do not exist. This counterfactual scenario is hypothetical and usually not achievable under any circumstances. Cost estimates include both avoidable and unavoidable costs. The reason for this is because, even if fully effective policies in reducing demand and supply without significant costs were to be found, they would not be implemented immediately and there would still be adverse effects from past substance abuse.

In second place, cost estimation studies are not studies of the budgetary impact of drug use on a government. The costs included in COI studies refer to the society as a whole and not only to the government accounts. An economic cost study of substance abuse may be of great use in measuring the budgetary impact of PAS abuse, and to provide estimates of many government expenditures. However, government costs do not include all the costs imposed on society. Moreover, the budgetary impact also includes revenue and other benefits for the government that are not part of a COI study.

Third, economic cost studies do not attempt to take into account all the economic benefits of substances and should not be mistaken for cost-benefit or cost-effectiveness analyses. These last two types belong to a group of analytical tools used in evaluating alternative policies and programs. They are also frequently used in the health care area to evaluate the effectiveness of costly treatments or policy proposals, comparing the cost of interventions with their benefits.

Cost-benefit analyses (CBA) are based on the theory of value as are COI studies, and economic cost studies (ECS) may be conducted to provide the number of cost-components in a CBA. However, there are slightly different assumptions which may cause the CBA to produce different estimates and results. The most significant differences have to do with the counterfactual scenario and the approach to the sector outside the market. While the CBA asks what would happen if the costs associated with a particular behavior (smoking tobacco, for instance) were to end today, the counterfactual scenario of the COI study asks what would happen if tobacco smoking had never existed. Even if all smokers were to stop smoking instantly, there would still be morbidity and mortality consequences resulting from past smoking. Therefore, the public sector, for instance, would still have to provide assistance to those former smokers who needed medical care. These social costs are inevitable and, thus, they would not be included as costs in the typical cost-benefit analysis.

The other major difference between a CBA and an ECS that use the framework of the System of National Accounts is that CBA take into account the impact of events in activities outside the market. For instance, if the substance abuse problem implies keeping patients hospitalized and the counterfactual scenario assumes reinserting them in the community, the CBA usually includes the unpaid extra labor that the counterfactual scenario would imply (such as when members of the family are burdened with doing extra work and providing care at home).

The expansion of ECS to cover unpaid and non-market activities does not, in principle, present any major difficulties but it has not been given priority in development. If ECS were expanded to cover unpaid and non-market activities and, if avoidable and unavoidable costs could be separated, it would be of great help to those who want to develop CBA of drug policies and programs. An economic cost estimate is practically the benefits side of a CBA and, if done correctly, it could be easily adapted to the whole benefits side. The reason why a COI study is almost akin to the benefits side of a CBA, is because the avoidable costs associated with substance abuse represent the benefits of a CBA, contrasting the current situation with the counterfactual scenario in which a policy or program is introduced. Thus, there could be significant practical advantages to integrating ECS with CBA.

Last, it should be borne in mind that COI studies, as do most economic analyses, only take into account the economic costs of licit markets. But, in drug producing countries, there could be significant economic costs derived from the abuse of substances that are not included in the framework of the COI study. For instance, in general, the cost of corruption and the costs incurred in legitimizing businesses created by large scale production and distribution of illicit drugs are not included in COI studies. Taking these factors into account requires a broader and more demanding economic framework, such as the general equilibrium model. (These topics are addressed later in the alternative production cost section).

1.6- Interpretation of substance abuse cost estimates.

Estimates of the aggregate cost of substance abuse tend to attract much public and political attention. However, while the significance of the individual components that make up the aggregate cost (for instance, health care costs or costs associated with crime) is relatively simple and clear, the interpretation of aggregate estimates demands great precision and care. In order to understand this point, it is necessary to revisit the difference between estimates based on the human capital approach and estimates based on the demographic approach.

As it was previously mentioned, both approaches aim to value the loss of productivity as a result of drug abuse related deaths of individuals who, otherwise, would have been productive members of society. Both approaches compare productivity and the cost of abuse in the actual situation, with the alternative hypothetical scenario which could have existed in the absence of the disease. The difference between the two approaches rests on the way each measures the costs of productivity loss due to premature mortality.

One implication of the way in which substance abuse costs are calculated is that the aggregate amounts will probably not change significantly between short periods of time. This is because the prevalence rates for abuse and illness, which are the determinant factors of substance abuse costs, tend to change slowly. Therefore, it would be an extravagant use of research resources to develop these estimates at intervals shorter than three to five years.

Chapter 2: Estimates of the social costs of psychoactive substance abuse. Methodological guidelines.

2.1- Psychoactive substances.

Psychoactive substances (PAS) are substances whose consumption affects the central nervous system, can modify its functioning and alter consciousness.⁹ By general international convention, a distinction is made between legal or licit psychoactive substances (alcohol, tobacco, prescription drugs) and illegal or illicit psychoactive substances (all the rest, including prescription drugs obtained without prescription or used in unauthorized ways or doses).

In countries that have conducted cost-of-illness studies on PAS abuse, the practice has been to base their research on studies of the consequences of alcohol and tobacco abuse. These substances share the characteristics of being legally approved for public consumption and being the drugs most users prefer among the vast universe of PAS consumers. Usually, studies of abuse of the other illegal PAS, and, for that same reason, not as broadly used, do not make a significant effort to distinguish between the various substances due to the lack of basic specific data. All psychoactive substances other than alcohol and tobacco are usually grouped together under the category of “illicit drugs.”

It is important to bear in mind that each PAS group has particular characteristics that may determine the use of different approaches to calculate the costs associated with the abuse of that substance. For instance, the fact that both tobacco and alcohol are subject to taxation in various countries, makes it relatively easy to find an indicator of the size of the market in the records kept by tax authorities (subject to adjustments due to the impact contraband of these substances has in certain countries). The fact that alcohol is usually a far more likely target of clandestine production than tobacco makes it harder to estimate. At the same time, there should be fairly reliable records of morbidity and mortality associated with the use and/or abuse of these substances since treatment of the illness and its consequences are legally admissible within the social welfare framework. On the other hand, the fact that alcohol intoxication leads to behavior that tends to cause accidents that result in injury to persons and/or property could help explain, to a large extent, the more significant costs associated with alcohol abuse. Tobacco use presents an entirely different situation.

Developing cost estimates of illicit drugs is, understandably, the most difficult to accomplish precisely because the cloak of illegality makes it very difficult to size the market through its production or consumption. There are no tax, production or sales records. And, on the other hand, neither producers, nor sellers, nor consumers are willing to identify themselves or provide any type of information. Likewise, those who do abuse illicit drugs are not likely to seek specialized treatment or admit to having used drugs even when requiring hospitalization to treat the effects of abuse. The treatments these patients need are usually not included in the basic social welfare programs. Consequently, the basic data available regarding illicit PAS abuse present unavoidable shortcomings that limit their reliability which, in turn, demands researchers to process the information with extreme care. The more rigorous the handling of that data, the better the quality of the studies based on that data will be. Obviously, the causality factors between abuse and consequences (also called attribution factors, or etiologic factors) that can be identified in those circumstances will always be the result of inferences,

⁹ CCSA glossary.

more or less plausible, based on indirect indicators that are subject to the same limitations and shortcomings as the basic data.

That may be the reason why most countries began developing their cost-of illness studies with alcohol and tobacco, given that, in those two areas, there is comparatively easier access to essential basic data. With time, progress has been made in this field both in terms of the economic theory to analyze it, as with the development of new studies and tools that help gather more information in a more reliable way.

Despite their limitations, studies that take into account all PSA, both licit and illicit, are indispensable. Without them, it is impossible to develop a credible vision of the magnitude of the problem. Although the accuracy of the information may be debatable, it is still very valuable when decisions need to be made, and “some information” is always better than “none.” Therefore, it is advisable for Caribbean and Latin American countries that have not yet done so, to gradually begin to experiment in this area, perhaps with small projects that can methodically grow in complexity and scope. Likewise, countries that have already taken the first steps are encouraged to continue along this path and to continue to improve their estimates both, with regards to coverage and to the quality and accuracy of the data.

2.2- Stages of a cost estimation study of the social costs of psychoactive substance abuse.

As previously stated, a cost estimation of the economic costs of PSA abuse is a cost-of-illness (COI) study in which the impact of PSA abuse on the material well-being of a society is estimated taking into account the social costs generated by the allocation of resources to specialized treatment, general health care, prevention and research of supply and demand reduction, and law enforcement and judicial efforts in combating drug trafficking (direct costs). At the same time, indirect costs due to productivity loss, environmental impact resulting from the growing and processing of illicit drugs (in countries where applicable), and some monetary compensation for the loss of quality of life must be added. In the case of countries where illicit drugs are cultivated and processed, developing an “alternative production cost” estimate is recommended but it should not be added to the other social costs.

The conceptual framework of a cost-of-illness study on PSA abuse does not present any major difficulties. It is based on the definition of PSA abuse as a situation in which the private use of certain individuals leads to social costs for a whole community and follows a three-step process:

1. Identifying the negative consequences of abuse.
2. Documenting and quantifying the degree of causality between abuse and the negative consequences.
3. Assigning costs to the negative consequences.

However simple this process may seem, successfully completing each of the steps constitutes a real challenge. The negative consequences of substance abuse are first detected in the health of those who abuse substances and of those around them, but the effects expand until they reach every corner of the social fabric. It is quite possible that the long list of negative consequences has universal validity, an assumption that, at the very least, allows us to take advantage of the efforts of researchers who have carried out their studies in societies with greater awareness of the importance of carefully gathering relevant statistical information. But,

it is also possible that the prevalent conditions and circumstances in various cultures may determine different lists. It is then advisable to start by analyzing the list of studies conducted in order to make the decisions best suited to each country. In any event, there is quite a bit of evidence and international agreement regarding some negative consequences of PSA abuse such as: illnesses resulting from alcohol and tobacco abuse; deaths associated with the use of all PAS; and, vehicle accidents, crimes and offenses, workplace absenteeism and lower labor productivity due to the use of alcohol and illicit drugs, among others.

In some cases, the causal relationship and incidence of the negative consequences of substance abuse are more apparent than in others. The etiologic fractions or attributable fractions (AF)¹⁰ express the relationship between one or any group of causal factors and consequences. That is the case, for instance, of AF for illnesses resulting from tobacco or alcohol use.

In other cases, the causal relationship cannot be established (or it is extremely complex and costly to accomplish), but it is possible to talk about an association between substance consumption and unwanted situations. Such is the case, for instance, of vehicle accidents or offenses and crimes related to alcohol and/or illicit drug use. In this case, it is not accurate to talk of AF, but it is possible, under certain circumstances and depending on the availability of data, to estimate “associations” (A).

At the same time, it would not be reasonable to expect the degree of causality or association between PSA use or abuse and the accompanying negative consequences to remain unchanged through time and cultures since the type and magnitude of its impact is shaped by multiple factors that are either not present everywhere or, if they are, do not necessarily have the same incidence. Therefore, the same AF and A would not be strictly applicable to different societies nor would they remain unchanged through time.

The identification of such causal factors and associations assumes conditions that are not found in most Caribbean or Latin American countries, primarily, with regard to the careful and systematic gathering of health statistics (morbidity and mortality), cause of accidents, cause of offenses and crimes, etc. The absence or lack of scientific rigor in epidemiological studies makes it difficult to develop even an approximate estimate of the costs associated with an illness. But, it would not be too far off target to apply AF developed by other countries (generally more developed countries) to certain causal relationships, given that exposure to those factors does not vary significantly from one society to another. Such is the case of AF of illnesses resulting from the use of tobacco or alcohol. Therefore, in those cases, the obstacle posed by the absence of statistical data regarding characteristics of morbidity and mortality in one society could be overcome by using the AF published by the World Health Organization (WHO) for sub-regions.¹¹ Another option, if feasible, would be for countries that have prevalence-based studies to calculate their own AF based on the relative risks (RR) estimated by other countries but applying the local prevalence. This way, with a relatively simple operation and no need for additional financial resources, AF that better reflect the local reality can be obtained. With either option, countries that find it applicable and necessary may follow the guidelines established in the protocol “SIDUC_2010_Protocol for calculating attributable fractions and associations” developed by CICAD.

¹⁰ When analyzing the behavior of causality it is important to know the proportion attributable to the cause. In the health field, epidemiology estimates this through the “attributable risk,” also called the “attributable fraction” or “etiologic fraction.” AF can be expressed as the proportion to which the effect on those exposed can be attributed to the presence of that factor.

¹¹ “Comparative Quantification of Health Risks”, Ezzati et al.; 2004, published by WHO.

For other negative consequences that are more closely related to the local social, economic, cultural, legal, etc. context, as, for instance, in the case of crimes, offense and accidents, it would not be appropriate to use AF and A developed by very different countries. In this case, it is recommended that countries make the effort to gather and compile the necessary statistical data to develop estimates of A. It is also suggested that, in this cases, countries consult the respective protocols.

2.3- Classification of costs.

The preceding chapter addressed certain essential concepts of general economic theory and, specifically, of cost-of-illness studies: opportunity cost, counterfactual scenario, how to value or monetize costs, what constitutes cost, and the difference between private and social costs, loss of productivity costs, and the controversial task of assigning value to human life. At the same time, the differences between the human capital and the demographic approaches and between prevalence-based and incidence-based studies were also addressed. The chapter also covered the need to discount the results and the problem of selecting the appropriate discount rate for each country. Last, some essential clarifications were made that are necessary in order to make the correct interpretation of the results and their implications.

The purpose of this chapter is not to analyze in depth the economic theory that underpins estimation studies of the social costs of PAS abuse. On the contrary, the intent is to provide some guidelines to help countries develop their own estimates of the social costs and to present the basic issues to be considered. Each country must analyze and define what questions are to be considered in the studies and how; but, based on the methodological developments made by international experts in this field, there are certain points that should be followed. At the same time, given the usefulness and relevance of conducting international comparisons, it would be advantageous for countries to follow the same methodology. Beyond the existing differences among the countries in the hemisphere with regard to the gathering and compilation of data, access to statistics and other information necessary to develop cost estimates, sharing one methodology would at least allow for partial comparisons of those negative consequences resulting from substance abuse and associated costs. It is for that reason, that the proposed methodology includes a classification of costs by concept area and, to the extent possible, it is recommended that countries identify who bears the burden of the costs and list them by substance. Thus, even if one country has developed an estimate of all the costs of PAS abuse, and another country has only estimated certain components of the total cost (for instance, estimates of medical care associated with alcohol and tobacco abuse), in principle, the results of both countries would be partially comparable. It is also suggested that countries identify which of these costs are for supply and demand reduction in order to be able to regroup them and analyze the relative economic weight of each one.

As previously mentioned, PAS use and abuse implies numerous and varied negative consequences that, based on the international bibliography, can be translated into four types of costs: (1) health care costs, (2) productivity costs, (3) law enforcement and crime costs, and (4) other costs, such as-loss of value or destruction of property and/of assets costs due to crimes or accidents attributable to drug use, drug prevention costs, welfare costs, etc.

Although a discussion of each type of cost and recommendations regarding compilation of data and estimation methods are presented later in this document, Table 1 shows a summary with some examples of costs associated with PAS abuse, according to the classification

proposed and identifying who bears the burden of these costs and whether they are demand reduction or supply reduction costs. As the table shows, costs may be tangible or intangible and the burden of those costs may be borne by the user himself, other individuals, the government, by the business community or they may be exported. Intangible costs and the private costs of users are not usually included in cost estimation studies. These guidelines do not address intangible costs, but, as stated in the preceding chapter, they do acknowledge the existence and importance of those costs and, above all, they point out that it is a topic to be considered when interpreting the total estimated social cost.

It is important to be reminded again, that the counterfactual scenario in these cost estimation studies (costs in Table 1) is a situation in which there are no health problems associated with the use of tobacco, alcohol or illicit drugs. The comparison of the actual situation with the counterfactual scenario does not take into account certain opportunity costs that ought to be considered in different counterfactual scenarios. For instance, if any illicit drug became available through government prescription or monopoly, there would certainly be tax revenue for the government. Thus, it could be argued that this loss of tax revenue is a “cost” in the actual situation. The legal availability of these drugs, however, is not the counterfactual scenario in cost-of-illness (COI) studies; therefore, the loss of tax revenue is not considered a cost. In any event, tax revenue from the sale of drugs simply represents a transfer of resources from the drug buyers to the rest of the community. It does not generate extra resources for the community as a whole. Thus, a loss of revenue cannot be a social cost but, rather, only a budgetary cost under a different counterfactual scenario.

Last, another consideration with regard to the classification of costs is that those may be direct (goods or services used or provided) or indirect (lost or unpaid human productivity, environmental impact from the cultivation and processing of illicit drugs). The table below shows the classification of costs.

Table 1 : Types and examples of costs associated with substance abuse.

		Dda/Of.	Private costs (usually not included)	Social costs (included in cost estimates)			“Exported” costs (not included in estimates)
			Users’ costs	Costs to other individuals	Government costs	Business community and other private costs	Costs to other countries, international and/or regional organizations
Costs							
Tangible costs							
Health care costs.	Treatment for PAS abuse.	Dda.	Insurance premiums paid by the user, extra costs not covered by insurance.	Excessive health insurance premiums.	Hospitalization and other health care costs.	Contribution to health insurance.	Damage reduction programs, medical care, treatments.
	Treatment for morbidity.	Dda.	Insurance premiums paid by user, extra costs not covered by insurance.	Excessive health insurance premiums.	Hospitalization and other health care costs.	Contribution to health insurance.	
Productivity costs.	Premature mortality.	Dda.			Loss of tax revenue.	Production losses.	
	Mortality associated with combating illicit drugs and drug trafficking.	Of.			Loss of tax revenue.	Production losses.	
	Morbidity due to absenteeism of patients/workers.	Dda.	Loss of net tax revenue.		Loss of tax revenue.	Production losses, reduced productivity, workforce compensation.	
	Morbidity due to absenteeism of victims and injured persons associated with combating illicit drugs and drug trafficking.	Of.	Loss of net tax revenue, penalties (fines).	Loss of net tax revenue from victims.	Loss of tax revenue.	Production losses, reduced productivity, workforce compensation.	
	Mortality and morbidity in non-workforce source.	Dda.					
	Due to incarceration and/or arrests.	Dda./Of.	Loss of net tax revenue.			Loss tax revenue.	Loss tax revenue.

Law enforcement and crime costs.	Expenditures of the police-judicial-legislative structure.	Dda./Of.			Judicial system costs, combating drug trafficking costs, enactment of legislation, etc.		
	Prison system costs.	Dda./Of.			Costs of providing for inmates.		
Other costs.	Research, education and law enforcement costs.	Dda./Of.			Expenditures for research, training, etc.	Corporate research.	Research, prevention and combating drug trafficking programs.
	Costs of prevention and other public health care efforts.	Dda.			Expenditures on prevention, materials.	Prevention in businesses.	
	Destruction or loss of value of property and assets costs.	Dda.	Non-reimbursable property damages.	Losses of or damage to property and assets due to fire, robbery, theft, accidents, etc.	Accident and fire prevention, fighting fires.	Loss or damage to businesses due to fire.	
	Welfare costs.	Dda./Of.			Disability pensions/benefits for users due to illness (Dda); compensation for families of victims of drug trafficking (Of).		
	Costs of environmental impact due to the cultivation and processing of illicit drugs.	Of.					
	Alternative production costs.	Of.					
Intangible costs (not included in estimates)	Dda./Of.	Pain and suffering of the user, healthy life-years lost.	Suffering of the user's dependents, suffering of victims of crime, restrictions to the public's legal right to speed up execution.				

2.3.1- Health care costs.

2.3.1.1- Substance abuse treatment costs.

It refers specifically to the financial resources allocated to treatments to limit or stop PAS abuse, listing in detail the type of institution, treatment and duration. All “episodes” should be taken into account independently of whether one person accounted for more than one “episode.” At the same time, all cases must be included, individuals who completed the treatment as well as those who interrupted treatment for any reason, and then develop the cost estimate according to the effective duration of each treatment.

In theory, this information should be easily accessible in most countries since all institutions providing treatment to drug abusers routinely maintain records of who seeks treatment, regardless of whether they remain in treatment until completion or not, or even whether they formally started the treatment. With regard to other institutions within the health care system (hospitals, clinics and other health providers) not specialized in treating drug-dependent persons, those records are kept using the international coding system [International Classification of Diseases (ICD)], which includes the following diagnostics relating to alcohol and drugs: alcohol or drug dependency, alcohol or drug abuse, psychosis due to alcohol or drug use, poisoning or overdose due to alcohol or drug use, among others.¹² This way, services or treatments provided based on the diagnostics relating to drugs and alcohol can be identified and attributed to substance abuse without any ambiguity.

The reality in Caribbean and Latin American countries is a little different. Even when institutions keep records, that information is not always reported to an entity that will compile it and make it public. Thus, in practice, some countries will face difficulties trying to access that information. Consequently, it is recommended that all countries in the area take the necessary steps to pass legislation and establish procedures that will guarantee that the information will be available within a short period of time and that it will be centralized in an easily accessible entity.

The difficulties may be due to, among others, the following factors:

- In many countries, the institutions responsible for providing treatment don't report routinely the number of persons they treat (and, sometimes, never do). Worse yet, many institutions keep poor and disorganized records and, in some extreme cases, no records of any kind are kept due to the lack of regulations and/or government control.
- Some users visit different treatment centers during the course of the same year. This leads to multiple records for the same person.
- Each country tends to develop its own classifications for types of treatment, but the institutions fail to define specifically what each name means.

The following strategies and actions are proposed in order to begin addressing and solving the above mentioned problems:

- The entities responsible for developing cost estimates of PAS abuse in each country shall promote and insist on adequate record keeping of all cases treated at all public

¹² ICD -10 has its own categories and diagnostics.

and private institutions. It should be stipulated that the information must be reported at least annually, and that the right of the persons undergoing treatment to remain anonymous be protected. Taking into account the importance of this information in the public health area, there is no reason why those reports shouldn't be mandatory. That is the law in most developed nations where those records have been kept for many years, and the measure could be implemented gradually in the developing countries.

- The existence of multiple records of persons who seek assistance at different treatment centers is probably not a significantly large source of error, and, in any case, it is not a problem for the development of cost estimates since it is necessary to account for all episodes, even if they all involve the same person. However, avoiding multiple records for the same person and having the institutions produce more accurate reports, are necessary and essential elements to patient follow ups and to the resulting evaluation of the various treatments in order to identify the most effective ones. In that regard, and observing all due ethical considerations, CICAD has promoted the development and use of specific software for maintaining records of the episodes and of patient follow ups.¹³
- In the gathering and compilation of data, each country must follow the categories for method of treatment and institutional type in force, approved and regulated by domestic laws.
- As a first and transitory step, until it becomes possible to fully, consistently, and systematically gather data from the health care system (classified mandatory reports by law), countries should develop estimates of the number of cases treated with data generated by other studies. For instance, with data from the “Module on Treatment Information” of the Survey on drug use in households (See “SIDUC_2010_Protocol for a survey on drug use in households”).
- In cases where no information is available regarding the distribution of treatment by type of treatment, substance that originated the need for treatment or which substance is associated with the treatment, and what the duration of each case is, the use of information and results from other specific studies is recommended. For instance, the “Study on drugs in patients undergoing treatment” provides information to establish distribution percentages for treatments according to the type of treatment and substance (See “SIDUC_2010_Protocol for a study on drug use in patients undergoing treatment”). It is also suggested that, in order to establish the duration of treatments by type of treatment and the effective duration, countries consult the results of specific studies.¹⁴

2.3.1.2- Costs of treating morbidity associated with PAS use.

It refers specifically to financial resources allocated to “hospital admissions/discharges” for emergencies resulting from overdoses and intoxications due to PAS abuse; any other type of

¹³ For instance, the software “Fundasalva” has been promoted by CICAD and Chile has developed and implemented its own software.

¹⁴ For references on length of treatment see “*Principles of Drug Addiction Treatment: A Research-Based Guide*” (NIDA). With regard to the rate of effective duration, see “*Evaluation of treatments in substance abuse patients – AMBA 2009*” (SEDRONAR) y “*Treatment Outcome Prospective Study (TOPS): Client Characteristics and Behaviors Before, During and After Treatment*” (NIDA).

emergency associated with substance use; and any other type of consultation and hospital admission directly or indirectly related to the use of substances, including detailed description of type of illness (ideally conforming to ICD-10) and length of hospitalization.

The use and abuse of tobacco, alcohol and illegal drugs are related to numerous health problems, such as: cirrhosis of the liver, nutritional or metabolic disorders, viral infections like hepatitis or HIV/AIDS, trauma due to traffic accidents, other accidents or attacks on persons, certain mental disorders, etc. There are two challenges confronting the analyst who must develop estimates of costs attributable to substance abuse. First, it is necessary to estimate the health care costs related to these health problems. Second, it is necessary to develop estimates of the proportion of these costs that can be plausibly attributed to substance abuse.

The capacity to overcome the first challenge depends on the level of development of the data system in the national health system. In cases where studies of the level of development of the system have analyzed the level of services related to specific health problems using a coding system (the ICD-10), it will be easier to develop cost estimates for specific diagnostics. Without the benefit of representative studies, the analyst will need to resort to specific studies (a sample of medical services provided, for instance) and use them carefully.

The other great challenge in developing cost estimates for treatments due to morbidity is to estimate the proportion of the costs for a specific health problem that is attributable to substance abuse. It is unheard of for standard data systems to have the necessary information for this purpose. In fact, the analyst will need to identify specific studies that have examined the underlying causes of specific problems, gathered detailed epidemiological information and developed analyses with the goal of identifying the causal roles of various “risk factors.”

The determination of the “attribution fraction” is very complex and any analyst developing an estimate should carefully evaluate the rigor and depth of the research literature available regarding the role of substance abuse in a specific health problem. Studies of simple “association” are not suitable for this purpose. In that regard, as it was previously mentioned, Latin American and Caribbean countries should use the AF published by WHO for the sub-regions or, to the extent possible, use their own prevalence data (national) to calculate the AF. In the case of associations, it is recommended that countries try to estimate their own proportions based on local data and, if this is not possible, use the associations developed by similar countries. For these calculations see the protocol “SIDUC_2010_Protocol for calculating attributable fractions and associations.”

With regard to which illnesses and disorders can be attributed to or associated with the use of substances, countries are advised to follow those established in the protocol “SIDUC_2010_Protocol for a study on mortality related to drug use.” This would facilitate subsequent analyses and comparisons between countries.

With regard to the source of information on medical consultation visits and admissions due to the reasons described in the preceding paragraph, countries should use, to the extent possible, hospital admission and discharge records in their country (usually under the jurisdiction of the Ministry of Public Health), which should follow the ICD-10 coding system. In many developing countries, these records are probably lacking in several aspects: coverage does not extend to the whole country and/or includes only the public but not the private sector; the compilation of statistical data is slow and there are gaps. Furthermore, there is usually lack of agreement and consistency in the criteria to classify illnesses.

Those countries that are not in a situation to access records, or where fairly reliable records with significant coverage of the health care system do not exist, should rely on estimates based on the records of only some of the main public and private health care providers while reliable national data gathering systems are being developed. For example, use specific research studies on this topic, such as “SIDUC_2010_Protocol for a study on patients in emergency rooms,” which has been approved and financially supported by CICAD in many countries for several years.

2.3.1.3- Cost of treating morbidity associated with combating drugs and drug trafficking (includes victims and victimizers).

The magnitude of this cost and the subsequent interest in estimating it will vary from country to country in the hemisphere. Countries where drug trafficking is among their major concerns and where fighting between drug trafficking groups or guerrilla forces is a constant and permanent element, will probably have the most interest in estimating this cost. In these situations the negative consequences are large scale and the economic impact on the country is very significant (affecting society as well as politics, the economy and the country’s development). However, countries where drug production and trafficking have not expanded significantly or become established, will perhaps consider that the effort and resources necessary to estimate this cost are not justified, given the presumed modest impact on society and the economy as a whole.

On one hand, the production and trafficking of illicit drugs generate “drug market crimes” (pay backs, fights over territorial control, confrontations with law enforcement, etc.) and “legal crimes” (violating the country’s narcotics law). Under those circumstances, both victims and victimizers are frequently injured or harmed (also killed, but those losses are accounted in the productivity and welfare costs). On the other hand, in these societies, combating drug trafficking is one of the major concerns of governments as it is in the implementation of policies and actions designed to combat and control it, and a significant number of personnel such as police officers, members of the military, cartographers, nurses, physicians, etc (victims) are injured or die. These situations clearly impact the health care system and, therefore, the costs associated with them should be taken into account.

In order to estimate this cost, countries must identify and quantify the cases (injured, harmed) and the treatment provided to each one and then place a monetary value on them according to the cost of each treatment.

2.3.2- Productivity costs.

In most cost-of-illness (COI) studies estimating the cost of substance abuse, the most significant cost is the loss of productivity caused by premature deaths, disabled or seriously impaired persons with diminished work potential, workforce absenteeism and other causes of lower labor productivity. Productivity cost estimates require, above all, robust estimates of premature mortality and morbidity that can be attributed to substance abuse.

2.3.2.1- Productivity costs due to premature mortality.

This cost refers to what an economy as a whole loses as a result of reduced national production due to deaths associated with drug use during a given period of time. In order to

estimate this cost, it is necessary to, first, calculate the number of premature deaths associated with drug use and, then, assign a value to human life.

In previous sections, this document addressed the controversial notion of assigning value to human life and the alternatives with regard to the method of placing a value on the cost of productivity lost using either the human capital or the demographic approach. In this section, as it was mentioned in the beginning, the intent is to provide a guide to the steps that need to be taken in order to develop the various estimates. However, there is no intention to overlook attention to analysis or discussion of the topics involved in this estimate, and each country is encouraged to reflect upon them.

That being said, the steps to be taken in estimating the productivity cost due to premature death are:

a- Calculate the number of premature deaths associated with PAS use according to cause, substance, age, and sex for a given year.

It is recommended that countries take into account the cause identified in the SIDUC_2010_Protocol for mortality attributable to the use of psychoactive substances” which follows the ICD-10 coding system. That system defines the indicator as *«the annual number of deaths that were an acute reaction to the accidental use, intentionally self-inflicted, or of undetermined intent, of one or several psychoactive substances, considered an underlying cause of deaths in a specific territory»*. Deaths are classified according to direct and indirect causes (in other words, secondary to infections such as HIV, hepatitis, accidents or other causes related to drug use). In the case of indirect causes, attributable fractions (AF) or corresponding associations (A) must be used. The recommendations regarding AF and A are the ones mentioned in paragraph 2.3.1.2. It is advisable to regroup the results by substance (tobacco, alcohol and illicit drugs) in order to have costs associated with each substance.

The National Death Registry, usually within the purview of the Ministry of Public Health, is the primary source of information. The secondary sources of information are: Special registries, Medical Examiner registries or judicial registries, Security Forces registries, etc.

b- Valuation of loss of life.

Each country will have to study and decide whether to use the human capital or the demographic approach based on the available data and what is deemed best for the country.¹⁵ It is recommended that the median-income be used to estimate value.

The source of information for socio-demographic data will depend on the country, but, in general, the data are available in the national entities responsible for maintaining social and economic statistical data in each country.

2.3.2.2- Productivity cost due to mortality associated with combating drugs and drug trafficking (includes victims and victimizers).

¹⁵ For an example of an estimate following the human capital approach, see “The costs of substance abuse in Canada 2002”, “The economic costs of drug abuse in the United States 1992-1998”, “Economic cost estimate for mortality attributable to tobacco in adults in Argentina.” For demographic approach, see “The social costs of drug abuse in Australia in 1988 and 1992”.

Interest in estimating this cost will vary from country to country in the hemisphere based on the magnitude of illicit drug production and trafficking present in the particular country.

This cost refers to deaths (victims and victimizers) mentioned in paragraph 2.3.1.3. Once the number of deaths has been determined, the valuation of lives lost must be carried out following the same methodology as for the other deaths.

2.3.2.3- Productivity cost due to morbidity – lower employment or productivity.

There is no argument regarding the impact PAS use has on the economy of a country. Unlike other areas where it is difficult to establish cause-effect correlations, in the labor market, reduced productivity due to the use of any PAS can be clearly and amply demonstrated.

In fact, PAS abuse by workers not only reduces the amount of time they spend on the job but it also has an adverse effect on their productivity (lower quality, less effort, higher frequency of errors, etc.). Furthermore, it can affect the productivity of coworkers, supervisors and subordinates.

In a perfect market, any reduction in worker productivity would lead to a reduction in wages but this is not the case in the real world; therefore, it is necessary to estimate the costs associated with these situations. Various sources of productivity loss due to morbidity can be identified: patient absenteeism, worker absenteeism and lower productivity, and absenteeism of persons injured and victims associated with combating drugs and drug trafficking. Each one of these sources has a cost associated with it, and they are:

2.3.2.3.1- Productivity cost due to patient absenteeism.

It refers to persons who do not take part in the productive process for any period of time because they are undergoing treatment for substance abuse or have been hospitalized due, directly or indirectly, to the use of substances. It should take into account the number of persons undergoing treatment for recovery, rehabilitation and reinsertion and the number of persons registered in hospital admission/discharge records for causes related to PAS abuse. Therefore, cases of patients estimated for cost of substance abuse treatment (2.3.1.1) and cost of treatment due to morbidity must be taken into account (2.3.1.2). In order to determine the monetary value, the length of treatment (in days) is multiplied by the median daily wage for the whole population.

2.3.2.3.2- Productivity cost due to worker absenteeism.

It refers to persons who do not participate in the productive process for any period of time because of being absent from work due to PAS use.

The complexity of estimating this cost lies in calculating the number of days (total or partial) a worker is absent due to PAS use. The source of information for determining the number of absences should be public or private social welfare entities, professional risks administrators, insurance companies, etc. It is probable, however, that even if reliable records are available, these do not segregate or specify whether the absenteeism is related to or caused by PAS use. Therefore, countries should take the necessary steps (most likely, initiatives by national entities responsible for drug control) to, at least medium term, make it mandatory to report absenteeism and the reasons for it to a national governmental entity. In the meantime, it is necessary to develop data collection strategies, either through specific studies or by resorting

to other general studies.

It is suggested that, short term, countries use data from the “Information module on the workforce” of the “Survey on drugs in Households” (See “SIDUC_2010_Protocol for a survey on drug use in households”) full days of absence from the workplace due to drug use and extrapolate for the total population. This is a simple way to estimate, at no additional cost, bi-annually (or according to the periodicity each country uses to conduct the survey) the number of full days of absence associated with alcohol and/or drug use. Last, once the total number of days of absence has been determined, a cost estimate must be developed based on the median daily wages of the labor force.

2.3.2.3.3- Productivity cost due to absenteeism of persons injured or victims of combating drugs and drug trafficking (includes victims and victimizers).

In this case, interest in estimating this cost will also vary from country to country in the hemisphere based on the magnitude of illicit drug production and trafficking in each country. In short, the intent is to try to estimate the amount of time persons- whether they are victims or victimizers who have not been arrested or convicted- lose due to combating drugs and drug trafficking.

The method to estimate this cost, and how to account for it in estimates of the social costs of substance abuse, is a topic that merits analysis given its relevance for several countries in the hemisphere and because of the complexity of identifying the cases and obtaining all the necessary data.

In the case of victims, it means the amount of time that persons, other than the PAS abuser or the drug trafficking chain, lose due to police raids or judicial actions of all kinds: from preventive arrests to unjustified incarceration and including interrogations, being subjected to judicial questioning and investigations, serving as jurors or fulfilling other civic duties. All these activities, which usually force persons to take time from their occupations, sometimes even with serious consequences, turn people into victims of situations for which they were not responsible.

Part of the cost, although small, is derived from the loss of employment experienced by victims of crime. Estimates of this type of cost depend on the availability of data on the number of crimes experienced by victims per year; data on the amount of productive labor time lost due to crime, and the proportion of various types of crime attributed to PAS. Basic data on the number of crimes can be gathered and recorded by criminal justice authorities, but it should be borne in mind that that these data probably underestimate significantly the number of crimes. Studies have shown that the vast majority of crimes are never reported by the victims to authorities in the criminal justice system. Therefore, studies of crime victims should be used to develop estimates of how many crimes have been experienced and what level of work disruption victims have suffered. This type of data is generally obtained from studies on loss or destruction of property associated with crime. This still requires the analyst to address the question of attribution or the relationship between crimes and the use and/or trafficking of PAS.

In the case of victimizers or offenders, the cost is defined by the international guidelines as “costs of the criminal profession.” These are probably the most hidden and ephemeral costs associated with drugs and are difficult to estimate. The concept behind these costs is that some users, who are either not healthy or not smart, “leave behind” the legal economy in order to produce or sell psychoactive substances or to obtain income from crime in order to satisfy

their dependence on drugs. From an individual perspective, these illegal activities could become productive beyond measuring given that, because of their irregular nature, they do not contribute anything to the community in terms of tax revenue or value added to the normal production of goods and services. However, not all criminals involved in the use or trafficking of drugs are caught by the justice system (in fact, there are countries in which the number of criminals prosecuted represent a tiny minority), therefore, these costs must be accounted for and, to do that, they need to be valued in some way.

Estimating this component of the cost is truly a great challenge and would probably carry little or no statistical significance because the estimates used would be based, perhaps, on the judgments and opinions of experts. Very few studies have produced estimates of populations of this size that were statistically rigorous and valid. There is data of some type on this population, such as: addicts who demanded treatment or medical care, or drug users and drug traffickers arrested. This type of data can be combined to develop low level estimates of the populations in question. However, anthropological studies of this population have found that, surprisingly, a large proportion of addicts has never undergone treatment, has never received medical care and has never been arrested. Some studies have also tried to use sophisticated statistical inference techniques to indirectly estimate the size of the population (for instance, the capture-recapture model and the epidemiological models for HIV transmission among users of injectable drugs). Consequently, analysts should search extensively for data in order to develop these estimates. In the final analysis, it will come down to a matter of judgment as to what data to use, if available, and how to combine estimates from different sources. The most significant test for this estimate, if developed, is for it to be considered credible –not statistically rigorous- by those who have studied the problem carefully and extensively from various perspectives. It should be made clear that this cost refers to offenders who have not been arrested or incarcerated (those are covered further down in the paragraph on “Productivity cost due to incarceration and/or arrest”).

2.3.2.4- Productivity cost due to morbidity and mortality in the non-working force.

The valuation of lost production as a consequence of the use of substances could be defined as the value of wages lost (since wages are equivalent to the productivity of the worker) or based on some estimate of average GDP-per-worker. However, this cost estimation approach is not satisfactory because it does not assign any value to unemployment, to retirees, and/or to women outside the paid workforce since they do not receive wages.

This issue could be made clearer by distinguishing tangible from intangible costs. There will be no loss of paid production as a consequence of morbidity or mortality among the unemployed, retirees or other persons outside the workforce. But there will be a valuation for the loss of unpaid labor, as well as for the loss of life suffered by these persons. Value estimates of unpaid labor assign these activities the value of some equivalent service that can be purchased from an outside source. For instance, the child care activities of “stay at home mothers” may be replaced with the income of baby-sitters.

If a country has neither data nor national estimates of the value of the productivity of the unpaid population (such as homemakers, for instance), estimates of these productivity costs due to morbidity and mortality in the non-working force could be estimated as a percentage of the median wages for the total population. A sensitivity analysis can be done with various assumptions regarding what the value of a homemaker’s productivity is, -in other words, 25%, 50%, 75% or 100% of the median salary. In any event, it is always preferable to be

conservative in developing cost estimates, and assign zero cost in cases where no data is available, but indicate that those costs do exist.

2.3.2.5- Productivity cost due to incarceration and/or arrest.

It refers to persons who do not participate in the productive process for a determined period of time due to the fact that they are under arrest or serving time in prison for violations of the Narcotics Law (the scope depends on each country) or for crimes –as the cause or consequence-related to drugs.

The limitations in gaining access to this type of information and, therefore, the recommendations for developing estimates of the number of persons arrested and convicted and the average number of days for arrests and for incarceration are included in the paragraph “Expenditures of the police-judicial-legislative structure.” Once the number of cases and the number of days spent under arrest or in prison are obtained, a cost estimate must be developed based on the median daily wages for the total population.

2.3.3- Costs due to law enforcement and crime.

2.3.3.1- Expenditures of the police-judicial-legislative structure.

Similar to what happens with expenditures in health care, some of the services of the police-judicial-legislative structure are born exclusively out of the effort to control PAS trafficking and, in that case, they are directly identifiable. In the rest of the cases, attribution proportions for expenditures that are only partly connected to drugs need to be established. This is no simple task, not only because it is already sufficiently complicated to break-down law enforcement actions in multiple components based on their effects (surveillance, arrests, trials, incarceration and prison), but also because it is not always clear what role substance use and abuse play in criminal conduct to be able to determine which cases should be counted in order to establish proportionality. Three types of situations for developing cost estimates come to mind depending on the various types of services provided by the police-judicial-legislative structure: 1- Activities targeted exclusively to combating the consequences of PAS abuse; 2- Activities carried out in general by the entities that are aimed at the illegal use of PAS, and 3- Activities carried out in general by the entities that are aimed at crimes which are believed to have been caused by PAS use.

In principle, these estimates can be developed by law enforcement authorities (police and prosecutors), courts and correctional authorities (prisons and jails). Data from the units dedicated solely or mostly to combating the illegal use of PAS can be generally obtained from government sources. If these units exist, and if the data is available, these are the least ambiguous costs in the criminal justice system.

The great challenge lies in the analysis of the costs of general units, especially of judicial and law enforcement services. It is very difficult to assign efforts and costs across the spectrum of missions of such entities. In the case of law enforcement, there may be data on the type and number of arrests. This arrest data provides a baseline for assigning effort and cost across the various types of offenses. However, this raises the question of how much effort and how much cost is involved in making an arrest for each type of offense. That data is probably available, therefore it will be necessary to make and acknowledge certain assumptions when assigning

costs.

The most difficult cost estimates will imply making attributions regarding the role played by PAS use in other types of crimes such as robbery, assault, prostitution and gambling. Lately, academia has been paying a lot of attention to the possible link between the use of substances and crime. It should be noted, that the data on the proportion of offenders who were intoxicated with alcohol or drugs at the time they committed a crime is only data on association and provides circumstantial information regarding causality. Analysts must be very careful and clear in discussing how the attribution fractions or the associations were estimated for these crimes.

In order to facilitate the organization and collection of data, as well as the estimates and later analysis, it is suggested that expenditures or costs be grouped following the political criteria: Executive Branch, Judicial Branch and Legislative Branch. The expenditures are divided as follows:

Expenditures of the Executive Branch:

It refers to the expenditures to defray the costs of all activities and interventions carried out by a country (at the national and/or local level) to enforce the law and combat drug trafficking. For instance, military and police expenditures, customs, subsidies for crop substitution, among others. In principle, these estimates can be developed by law enforcement authorities and the data is usually available from government sources.

Expenditures of the Judicial Branch.

It refers to the expenditures of the Judicial System across the country related to PAS. The biggest expense is generated by judicial proceedings (from the moment the case is initiated until a judgment is issued, or acquittal, or the case is archived) of all cases for crimes related directly or indirectly to PAS. Here, again, there is a difference to be made between offenses due to violations of the Narcotics Law and, therefore, completely attributable to PAS and easily identifiable and quantifiable, and other crimes potentially related to PAS (robbery, assault, prostitution, etc.). In the latter case, there is the problem of how to estimate the attribution fractions or the associations between crimes and the use and/or trafficking of drugs. In that regard, countries should make every effort to carry out specific studies (on detainees or convicts in prisons and/or police stations) that can provide them the necessary data to make the calculations. If this is not possible, countries should use the estimates developed by other countries with similar characteristics. Those countries that are in a position to research these areas are encouraged to follow the protocols "SIDUC_2010_Protocol for a survey on drug use among adult prisoners," "SIDUC_2010_Protocol for a study on drug use among the adolescent offender population," "SIDUC_2010_Protocol for a study on drug use among recent detainees" and "SIDUC_2010_Protocol for calculating attributable fractions and associations."

In general, all countries have statistics on cases and judgments segregated according to type of crime. That information may be available within the Judicial System, Tribunals, Courts, and other government entities engaged in these subject areas. Once again, the complexity arises when it comes time to determine what proportion of the cost is attributable to PAS use.

Last, the number of cases must be assigned a value (full or proportional) by multiplying it by an average unit cost of prosecuting a case which usually varies depending on the stage (preliminary proceedings, trial or issuance of judgment phase).

Expenditures of the Legislative Branch on supply reduction.

It refers to the expenditures of the Congress or Parliament of the country (and sub-national levels if applicable) for debating and enacting legislation related to supply reduction. Each country should, based on the information available, analyze and determine how to do the calculations. The data necessary to accomplish this should not be difficult to obtain.

2.3.3.2- Prison system costs.

The first economic consequence of the arrest and imprisonment of criminals in connection with drug use and/or trafficking is their temporary removal (sometimes long term) from the productive system. At times, there is a minimal compensation through the labor of inmates, but there is probably no way to generalize the circumstances. These circumstances have been previously addressed in the paragraph “Productivity cost due to arrest and/or imprisonment.” But the prison system also entails the costs inherent in its establishment and operation. Although, at first glance, there would not seem to be any major obstacles in obtaining the relevant information to estimate these total costs, the attribution of proportions for connected drug crimes do encounter them. In that regard, what was previously mentioned applies.

In order to estimate this cost, it is necessary to obtain the statistical data on persons convicted for offenses totally attributable to PAS (for instance, crimes against the Narcotics Law) and for offenses in which PAS played a role or there was some connection to them. In the latter case, the data should be segregated by type of offense since the attribution probably changes.

The bibliography recommends that analysts rely on surveys on the population deprived of liberty to develop these estimates. These studies usually research and analyze factors that are believed to be related to criminal behavior, including if the individual has a history of PAS use or was under the influence of PAS when committing the crime for which he was imprisoned. As indicated in several opportunities, the analyst should attempt to develop estimates that reflect “causality” if the data and the analysis are reliable. Otherwise, the estimate should reflect “connection.” But careful judgment will always be required. On this topic, consideration of the protocols “SIDUC_2010_Protocol for a study on drug use among adult prisoners” and “SIDUC_2010_Protocol for estimating attributable fractions and associations” is recommended.

2.3.4- Other costs.

2.3.4.1- Research, education and law enforcement costs.

Some costs that are clearly attributable to the use of substances are the result of public decisions to reduce abuse more so than the direct effects of substance use. Costs in this category include expenditures on researching the impact of substance use, prevention education campaigns, research to better understand the phenomenon, etc. These are discretionary expenditures in the sense that the government can decide not to spend the resources or, on the other hand, chose to spend at higher levels.

It is appropriate to indicate the social costs incurred in these expenditure areas, but the costs should be categorized as “policy costs” rather than direct costs. Thus, these costs would be

identified as being incurred in relation to substance use but are classified as avoidable costs.

2.3.4.2- Prevention and other public health costs.

Usually, the main source of information and data for this item is government budgets. Many of these services take the form of public service announcements in the communications media, education efforts and materials. However, other services and activities are also considered useful in combating substance abuse such as, for instance, after-school activities for adolescents and interventions with at-risk youth who have abandoned school. Consequently, financing these services may be motivated by the drug abuse problem and, therefore, included as part of the effort targeted at combating drug abuse. Addressing this topic, the first International Symposium on the Economic and Social Costs of Substance Abuse (1994) recommended that these costs be listed as costs of discretionary policies rather than as unavoidable costs of substance abuse.

2.3.4.3- Legislative Branch expenditures on demand reduction.

It refers to the expenditures of the Congress or Parliament of the country (and of the sub-national levels if applicable) for discussing and enacting legislation related to demand reduction such as, for instance: laws to prohibit the sale of alcohol to minors, smoking restrictions in public facilities, public service announcements on drug prevention, etc. Every country should, based on the information available, analyze and determine how calculate the costs. The data necessary to accomplish this should not be difficult to obtain.

2.3.4.4- Costs due to the destruction or loss of value of property and assets because of crimes or accidents attributable to PAS use.

Relatively speaking, including the cost of the destruction or loss of value of property due to accidents caused by PAS abuse is beyond discussion. However, property loss due to crimes caused by PAS abuse is still arguable. While the transfer of property through robbery is, in general, treated as an economic transfer and, therefore, not a cost to the economy as a whole, typically, stolen property is significantly less valuable than before it was stolen. In such case, the procedure to value the cost should follow local practice (whether it takes into account the reduced value of property due to robbery or not) and state it explicitly. The most frequent accidents are vehicle collisions, traffic accidents in general, and fires. The most frequent crimes are robberies, both, violent and non-violent.

Two types of data are necessary to estimate these costs; one, incidence data and costs for each type of event; and, two, estimates of the proportion of the national total that can be attributed to substance abuse. Usually, the source of information for national data on total incidence and the costs of these effects are: criminal justice system studies on the incidence and nature of crime; police records as well as records from forensic institutes or entities responsible for prosecuting this type of cases; insurance companies' records and fire departments' records. To complete these estimates, there must be investigations regarding the participation or causal role played by substance abuse in cases relating to property damage. While records of motorized vehicle accidents (and other transports) are more and more frequent and provide data on the involvement of alcohol and other psychoactive substances, this is less probable for other causes of damage to property. Consequently, there is a need to seek the involvement of academia to study these problems and be aware of the general warnings regarding the use of such studies.

It is also important to bear in mind that, generally, it would not be appropriate to use the attribution fractions for one cause of damage on another cause. Different types of crimes typically imply alcohol and other psychoactive substances in varying grades, and the same has been found to apply to vehicle collisions of different severity. For instance, alcohol use has been found to be a far more probable factor in fatal vehicle collisions than in no-fatal collisions.

Last, once again, with regard to developing estimates of AF and A, countries should take into account “SIDUC_2010_Protocol for estimating attributable fractions and associations.”

2.3.4.5- Welfare costs.

With regard to welfare costs attributable to drug abuse, great care should be placed in distinguishing between actual costs of resources and costs which are simply monetary expenditures (for example, transfer payments). The welfare costs addressed here have to do with social security payments made by the government to victims of drug use, to their social workers and to dependents (for instance, disability pensions or benefits due to illness), and to those injured or killed in combating and controlling the production and trafficking of illicit drugs (compensation and benefits to the injured and compensation to the families of those killed, for instance). The calculation of welfare costs should also include some estimate of the proportion of total administrative costs of the social welfare system related to substance abuse. These administrative costs are actual costs of resources and should always be taken into account.

Every effort should be made to ensure that there is no double accounting of costs or benefits. If a person who was previously in the workforce receives welfare benefits as a result of contracting an illness related to drug abuse, there would be double accounting if the social cost estimate included both, loss of productivity and the cost of welfare benefits. The loss of productivity is a loss of actual resources while the provision of social security benefits simply represents a redistribution of consumption capacity from the rest of society to the drug abuser. However, if the drug abuser is rational and fully informed, the cost of private resources will be fully internalized and should not be included as part of the social costs. But, on the other hand, in these circumstances welfare costs represent an externality imposed on the rest of the community and should be included in the social costs. In summary, it is never appropriate to account for both, productivity costs and welfare costs. Which one should be accounted for depends on the assumptions regarding the rationality of the abuser and the amount of information available about the individual. But all welfare costs must be included in the estimate of the budgetary impact. In principle, drug use could lead to an increase or a reduction in welfare costs (because some individuals who die prematurely would otherwise receive welfare benefits).

2.3.4.6- Environmental impact costs of cultivating and processing illicit drugs.

For more than three decades, activities regarding the illicit cultivation of marijuana, coca and poppy plants have been ongoing in certain countries and regions of the hemisphere which have also led to the establishment of the processing and trafficking of narcotics derived from these plants. All activities related to illicit crops generate adverse environmental effects, many of them with irreversible consequences. For instance, sometimes, the crops are grown in primary and secondary forests, where, until the implementation of crop growing, anthropical activities did not generate any environmental impact of great magnitude. That is the case in certain

areas which are inhabited by indigenous communities who have always lived in harmony with nature and have used the forests in a sustainable manner.

It is obvious that the implementation of single-crop farming (coca, poppy or marihuana plants) implies a significant environmental impact because the original biomass represented by a great number of higher plant species and an unknown number of microflora, not even counting zoological species, was already adversely impacted from the very moment humans migrated to select and implement the crops to be grown.

According to the study *“Environmental impact generators in the growing of illicit crops and alkaloid extraction and refinement,”* developed by the government of Colombia in the case of coca leaf crops¹⁶ to evaluate the environmental impact generated by illicit drug production, it is necessary to determine the stages of the process. In the first place, growers must select the areas where they intend to grow the crops, which must be prepared for planting; facilities for processing the leaf and extracting the drug must be built; cellars to hold chemical substances must also be built and, sometimes, it is necessary to have facilities to refine alkaloids which implies the construction of “crystal laboratories;” areas to recycle substances; “cambuches” or dorms for the drug lab workers; and drying areas in others. On the other hand, it should not be forgotten that, in addition to the stages of production, in cases where crop growing is going to be established in forest areas, the first environmental impact is caused by the heavy migration to areas that cannot satisfy basic needs, since these are areas dedicated to the preservation of forests. Therefore, first come the primary settlers, (itinerant labor responsible for opening up the forest); then come the secondary settlers who buy the land from the primary settlers and begin planting the crops either with their own resources or financed by large scale investors. At harvest time, hundreds of “raspachines” (leaf collectors) arrive, joined shortly afterwards by informal merchandise peddlers, prostitutes, coca base processors and buyers, sellers of chemical substances, etc. Rather than becoming a developmental factor in the regions, this immigration has a damaging effect on ecosystems.

Although estimating the *cost* of this environmental impact is extremely complicated (no methodologies have been developed yet to measure several of the costs that need to be considered, and not even exact estimates of the actual effects have been developed both, from a quantitative or from a qualitative perspective), and it cannot be addressed here either, its existence and potentially significant magnitude should not go unmentioned. In any event, identifying and specifying possible sources of environmental contamination and impact is a necessary and a very important first step. In that regard, the stages in the process of cocaine production are listed below, for example, (what different stages and environmental effects may be generated in the production of other substances derived from other illicit crops), identifying the environmental effects and their sources. In the future, it would be desirable to be able to begin addressing the quantification of the costs associated with the impact created by the illicit drug industry on ecosystems.

Selection of crop growing areas:

Illicit crop growing is located in strategically selected areas that meet certain requirements, among them: geographical areas isolated from urban centers; proximity to large bodies of water; ecosystems with abundant plant biomass; areas populated by armed groups. Therefore, drug traffickers basically select sensitive and environmentally significant ecosystems.^{17 18}

¹⁶ Bernal Contreras, Dirección Nacional de Estupefacientes, 2007.

¹⁷ It is estimated that the establishment of illicit crops has impacted, in Colombia alone, 2.2 million hectares (approx. 5.4 million acres) of forests with the most biodiversity in the world.

OEACICAD-OID METHODOLOGICAL GUIDELINES FOR COST ESTIMATION STUDIES OF PSYCHOACTIVE SUBSTANCE ABUSE (LEGAL AND ILLEGAL).

Crop preparation:

The grower's first task is to prepare the soil in order to adapt it to the conditions necessary to be able to grow drugs. Depending on the geographical features of the land, different methods are used to achieve the conditions necessary for growing (clearing by machete (socola), logging or burning) which have an impact on the ecosystem (for instance, destruction of native plant cover; destruction of ecological niches and food chain; destruction of unknown genetic potential –microscopic plant and animal life–; effects on endemic species; edaphic erosion; changes in rain cycles and local climate; deterioration of water sources; a significant increase in CO₂ emissions, and the disappearance of scenic beauty with the consequent destruction of the ecosystem), and erosion (due to the fact that the selected ecosystems have edaphic qualities that make them fragile).

Implementation of crops:

In this stage of agricultural processes inherent in the planting, care and harvest of crops, the impact on ecosystems intensifies due to the introduction of chemical products into the environment.¹⁹ Possible effects generated include: contamination of water resources; soil contamination; impact on microscopic plant and animal life in the soil; persistent presence in the food chain;²⁰ impact of insecticides and other pesticides on beneficial insects and plants; direct or indirect environmental contamination (due to the disposal of pesticide containers and remnants of the crop dusting process, and of the impact of aspersion systems on the environment, soil and water sources; incineration; burying of materials, etc.).

Alkaloid extraction:

The process to extract and refine alkaloids uses enormous amounts of chemical substances and, furthermore, it utilizes more water than any other substance. Even more alarming, the water utilized invariably comes from sources surrounding the crops and it is returned to the environment in a highly contaminated form.^{21 22}

Alkaloid refining:

The refining and crystallization stage to obtain cocaine hydrochloride takes place in the refining laboratory or "crystal" lab, which is a complex with the characteristics of an industrial production plant. In this stage, large amounts of oxidants and solvents (ketones, acetates, ethers, thinner,

¹⁸ It will take each hectare of ecosystems with the most biodiversity on the planet destroyed to plant illicit crops, between 50 and 100 years just to recover its plant cover.

¹⁹ Given the poor growing conditions of the soil, coca growers, in order to obtain the highest possible production volume of coca leaf (biomass), tend to use large quantities of fertilizer and pesticides to control pests and weeds. The survey "Agro-cultural characteristics of coca cultivation in Colombia", carried out by DNE and SIMCI/UNODC, determined that practically 100% of growers use 32 different brands of fertilizers which include sources of nitrogen, potassium and phosphorus. It was estimated that for the area dedicated to coca cultivation in 2005 (close to 86.000 hectares) approximately 81,000 tons of fertilizer and 2,640.000 gallons of such substances were used.

²⁰ Insecticides with the chemical structure of chlorinates (DDT, Chlordane, Heptachlor), have the capacity to become affixed to animal fat tissue. This is a very dangerous characteristic because of the accumulation of the substance in food chains of herbivores up to level two and level three carnivores until reaching concentrations that produce physiological damage. When persons who live in regions where these substances are used in large quantities eat animals from that area, they increase the concentration of pesticide molecules in their organic systems. And since these substances cannot be metabolized they reach intoxication levels (a phenomenon called biological magnification).

²¹ It is estimated that in 2005, in Colombia, more than 200 million liters of liquid substances (including water as a universal solvent) and approximately 80,000 Kilograms of solids were used just on the solvent extraction phase alone.

²² More than 200 million kilograms of highly contaminating chemical substances are dumped annually into the fragile, strategic and most biodiverse ecosystems on the planet.

aliphatic solvents, etc.) are used. The adverse environmental effects of the substances used in this phase begin being generated from the moment they are stored until the moment they are discarded after being used. For that reason, when speaking of “laboratory” it is necessary to take into account not only the “refining area” (where considerable amounts of chemical waste and all kinds of trash and contaminants are generated) but, also, the “chemical substances storage” (underground, in creeks or ravines); the “distillation area” (where high thermal pollution is generated on water sources which results in negative effects on microscopic plant and animal life); the “drying area” (where thermal pollution is generated by the use of drying lamps or microwaves); the “power plant” (which generates thermal, sound and chemical pollution); and the “basic materials storage” (it is necessary to have storage for all types of materials that are frequently used, and for which it is necessary to resort to logging to clear the forest with the resulting environmental impact).

2.3.4.7- Alternative production costs.

There are countries or regions where illicit drug production represents an important segment of the economic activity and its implications for the economy of the country and its society are truly significant and complex.²³ In particular, the illegality of the industry and the complexity of its economic impact make any analysis of the industry a serious challenge for various reasons:²⁴ first, the nature of the industry demands continuous change in order to minimize risks and to adapt to probable and actual changes in government policies. Consequently, the impact of the industry varies significantly through time. Second, there are many unknowns regarding its size and structure which make it difficult to identify its effect on the economy and on society, which, in turn, leads to cautious statements about its effects and to the careful examination of common beliefs. Third, the effects of the illegality of the drug businesses vary significantly from country to country. These differences depend, primarily, on the type of activities taking place; on the significance of the participation of local citizens in the industry; of the size of the added value, and of the employment level generated by the illegal industry in relation to the total level generated by the domestic economy; of the ways in which illegal income is laundered, spent and invested in the economy; on the levels of violence associated with the industry, and, last, on the macroeconomic policies pursued by the various governments.

Based on the preceding, cost-benefit estimates of illicit drug production in each country are particularly difficult to calculate. However, economic impact studies of illicit drug production have been done in Bolivia,²⁵ Peru²⁶ and Colombia²⁷, where the findings have not always

²³ Bolivia, Colombia and Peru are the three Latin American countries most affected by the illegal drug industry. During the last few years, this problem has also gained significant importance in Mexico.

²⁴ «The economic impact of the illegal drug industry and the policy agendas in Bolivia, Colombia y Peru» (Thoumi; 1995).

²⁵ In the case of Bolivia, macroeconomic analyses of the impact of coca production conclude that both the flow of currency and the employment generated by the industry played an important role in facilitating the economic adjustment process the country experienced beginning in 1986. These analyses conclude that the structural adjustment would have caused very serious social uprisings had there not been a simultaneous growth in the coca production industry (Painter; 1994).

Estimates of the proportion of the added value that remains within Bolivian borders played an important role in determining the impact of the illegal industry. If most of the income that remains in the country is generated in the agricultural sector and simply represents remuneration for farm labor, the benefits of the industry are then concentrated on poor farmers and will not engender any significant changes in the power structure of the country.

²⁶ The literature on the illegal drug industry in Peru focuses primarily on rural aspects and there is a dearth of analysis on the economic impact of the industry on the country. The few estimates of the macroeconomic impact of the illegal industry suggest that the effect is not very significant. At the same time, there is no doubt that the illegal

OEA-CICAD-OID METHODOLOGICAL GUIDELINES FOR COST ESTIMATION STUDIES OF PSYCHOACTIVE SUBSTANCE ABUSE (LEGAL AND ILLEGAL).

pointed to negative effects. In that regard, in Colombia, there were cities (Barranquilla and Medellin) and producing regions that experienced the symptoms of “Dutch disease”²⁸ during the years of bonanza from marihuana and cocaine production (Molano, 1987), but that was not the case on the national level, due to the fact that most inflows of “narco-capital” into a country respond to the macroeconomic circumstances at the moment and not to the value of illegal exports. In the case of Bolivia, studies on the illegal industry indicate that it helped the economic adjustment process the country experienced beginning in 1986 (Painter, 1994) and, in the case of Peru, it has played an important role during periods of poor macroeconomic management. At the same time, there are some studies that analyze the explanatory factors and the effectiveness of eradication and alternative development policies.^{29,30}

With regard to estimating the “alternative production cost” in particular, it will depend on the situation in each country (producer or not, small or large scale) and it will also be up to each country to determine whether or not to consider this cost, or to, at least, explain the variety of problems and implications derived from and associated with the illegal market even if it is not yet possible to place a value on it. For those countries that find it convenient and necessary to take this reality into account and develop estimates of the resulting costs, these *methodological guidelines* provide certain conceptual elements of the economic theory necessary to do so, but it does not, by any means, constitute a complete methodology to develop estimates. As it was previously stated, and examined in more detail shortly, these estimates are very complex due to several reasons and demand the development of a specific methodology that is not yet available.

Once again, it is important to remember that this cost should not be added to the rest of the social costs of drug abuse since it is a private cost (based on the assumption that individuals “rationally” decide to produce illicit drugs).

The guidelines described in this document are based on the assumption that the production factors used in local drug production (land, labor, capital, etc.) can be easily transferred to

industry has played an important stabilizing role, even if its total impact is not known with any certainty (Álvarez, E.; 1992; 1993). In summary, the coca and cocaine industry in Peru is an important employer in the rural sector; it is a substantial generator of foreign currency, which has been very important during periods of poor macroeconomic management, but it is not perceived as a very large industry than can threaten the economic and political power structures.

²⁷ Most Colombian economists who have studied this phenomenon conclude that, in the end, the illegal industry has had a negative impact on the behavior of the Colombian economy (Urrutia, 1990, Sarmiento, 1990, Thoumi, 1994). Specifically, the illegal industry has acted as a catalyst in accelerating a process of “delegitimatization” of the regime and contributing to economic stagnation. This process has produced a very noticeable reduction in the trust to do business, which increases the cost of doing business; it has contributed to increases in violence and impunity which have triggered the flight of “clean” capital, and it has increased the private cost of security; it has created expectations of great returns quickly which have resulted in highly speculative investments and increases in the number of bankruptcies, embezzlements, etc. There are also studies that conclude that the Colombian economy can function quite well without the illegal drug industry (Sarmiento, 1990, Thoumi, 1994).

²⁸ The *Dutch syndrome*, also known as “Dutch disease” is the general name given to the negative consequences produced by a significant increase in a country’s income.

²⁹ Carvajal (2002), using Becker’s theory of crime to identify the determinant factors of illicit crops in Colombia in 2000, found that the presence of coca was positively related to the presence of guerrilla groups and paramilitary forces, the level of unmet basic needs, and geographical features. At the same time, Carvajal found a negative relationship with income from temporary and permanent crops and the efficiency of government control.

³⁰ Tabares and Rosales (2005) evaluate the effectiveness of eradication and alternative development policies in controlling production of coca leaf in Colombia and find that an investment of US\$ 1000 in alternative development projects translates into a reduction of 0.169 hectares in crop cultivation while the same investment in eradication efforts means a reduction of 0.128 hectares.

other industries if there is a reduction in demand (or if the substances are imported, the foreign currency saved is used to supply other imports). The underlying methodology is what in economic theory is called “partial equilibrium.” However, in some cases, the counterfactual scenario may imply a bigger adjustment in the economy (and in society) because changes in the drug production sector of the local economy are significant enough to impact the economy as a whole. In the latter case, in countries that have large scale illegal drug production, the evaluation of costs should then imply a more complex analysis, using the “general equilibrium” approach –which is a well established procedure to evaluate, among other things, the demise of an industry.³¹ A general equilibrium analysis can provide an estimate of the value of the GDP when the industry is functioning (the illegal drug production industry, in this case), and compare this value with the estimate of the value of GDP after the industry was closed down or significantly reduced. The difference (after adjustment to account for price changes) is loss of social welfare, or the social cost of closing or scaling down of the industry.

This paragraph, then, outlines these questions, first describing how the production side is addressed in most economic evaluations where the drug production industry is small (or non-existent), and, then, expanding the analysis to where the industry is large, indicating the differences that arise in the technical treatment. It is important to emphasize that the essential analysis is the same in both cases. The differences arise, as mentioned, because in the case of the small industry there are certain acceptable analysis simplifying assumptions (which in technical terms means that the “partial equilibrium” analysis can be used in place of the “general equilibrium” analysis).

It is also important to be clear about the real difference between small and large industry, since the distinction determines whether the simplifications are justified or not. This is generally an unencumbered judgment in the case of whole economies, but perhaps a little more ambiguous in the case of regions. In addition, it should be noted that, basically, illegal drug production operates illegally, which also impacts the evaluation.

As always, the counterfactual scenario is essential for the cost evaluation method. There is a wide variety of possible scenarios which will reflect particular circumstances. For instance, the counterfactual scenario of a small illegal industry is probably a consequence of the assumption that local or national consumption ends. In the case of a small legal industry, the elimination of local consumption will probably not end the industry and its production will turn (or increase) toward exports (unless it is highly protected or inefficient). A legal, large-scale production industry is, probably, already a major exporter and its closing or scaling down reflects, perhaps, some international activity that has nothing to do with changes in local consumption. There are several possible factors that may cause a large illegal-industry to fail, including a reduction in world demand or effective supply control policies. The following discussion is based on a generic closing, but the specifics of the counterfactual scenario could affect a particular estimate.

Illegal drug production on a relatively small scale.

Although a particular industry may be considered big in one region, this section covers illegal production industries which are small in relation to the national economy as a whole. There may be transition effects but, generally, it is assumed that medium and long range following

³¹ For references on general equilibrium see « *Theory of value. An Axiomatic Analysis of Economic Equilibrium* » (Debreu G.; 1959); “*Principles of Microeconomics*”, Chap. “*General equilibrium and the efficiency of perfect competition*”, Case K. E., Fair R.C.; 1997).

the closing of the industry (or scale down), the factors of production (labor, capital, land, etc.) will be repurposed in the same amounts as they were used in the past. Depending on the degree of mobility, it is possible for some factors (labor, for instance) to migrate to other regions and, in that case, the social cost of the region's industry may differ from that of the economy as a whole.

However, it could be that some of the production resources are specific to the industry. This usually applies in the case of land. The next best use for land currently being dedicated to drug production may have a considerably lower market value. Opportunity cost estimates ensure that the social loss of the industry equals the reduction in profitability in the market of those specific factors; but it does not equal the total value of the production resource. Let's assume for instance that an industry is producing coca valued at \$100 million annually and that the next best alternative is to produce potatoes with an annual value of \$90 million. It follows that the social cost of the closing down of the coca industry would be \$10 million not \$100 million a year.

It is important to emphasize that the value-added output of an industry is not the social cost of its closing. That applies only when none of the resources used in small-scale illegal drug production can be repurposed in any other economic activity. The economic cost is the difference between the profitability of the factors of production in the illegal industry and the profitability of the next best option.

Please note that the counterfactual scenario may imply complex adjustments in other industries. This does not assume that users of illegal drugs (coca in this example) simply decide to buy potatoes. Therefore, the estimated social cost is the *net* effect. In any event, since the industry is small, there is no need to elevate the impact of its closing on the economy as a whole.

In addition, two other factors that are specific to illegal drug production must be borne in mind. First, when illegal production is reduced or eliminated, the factors of production may move from the informal economy (not measured) to the formal economy (measured) and, therefore, give the false impression of GDP growth. Any compensation of a reduction in the informal economy should be taken into account. Second, depending on the assumptions, there could be a real gain for the economy if there were reductions in control efforts and other costs related to the enforcement of the law.

An important consequence of the closing of the illegal industry (which avoids paying taxes) and its replacement by legitimate industries is that the taxable base would increase. This is a benefit for the economy since other taxes and the tax burden could be reduced.

Last, the industry of small-scale illegal drug production can also be associated with corruption (as it will be shown in the large-scale case), but the magnitude would not be large, the consequences would be less endemic, and the evaluation of its impact on production and on the public sector would be manageable.

Illegal drug production on a relatively large scale.

The essential difference between large and small scale industry is that the closing –or significant reduction in production – of a large-scale industry could have an impact on the whole economy resulting in big adjustments. For instance, if an industry is a great exporter, and if there is no substantial outside support such as international financial assistance, and the

next best use of the production resources is far less profitable, the closing of this industry would entail a great loss of foreign currency inflows into the economy; the real exchange rate would fall; there would be a drop in real income; and the response would be great structural changes in the long term. At the same time, it is conceivable that the closing could lead to a depression in the short term.

Due to the size of the industry in the economy, it is not possible to resort to the special case of “partial equilibrium” analysis used for the small industry. On the contrary, the “general equilibrium” analysis is needed. It should be noted that the data required for the general equilibrium analysis is substantial (considerably more than the data from national accounts used in the partial equilibrium analysis). In fact, there are many countries that do not have the information and data available to use this technique.

In order to understand the meaning of the estimated social cost of the closing of the industry using a general equilibrium model, it is assumed that there is zero local consumption and, therefore, all the production is exported. In this case, the reduction in GDP represents real loss of production and, therefore, loss of consumption and welfare standard for the country.

The loss of living standard due to the cessation or scaling down of large-scale illegal drug production in a specific country is compensated (subject to secondary effects) by gains in other countries where consumers have abandoned or reduced addictive drug use (assuming that is the counterfactual scenario). Afterwards, total gains and losses will depend greatly on the geographic unit used in the analysis. Based on the preceding, in the case of a large-scale industry in an open economy, a comprehensive evaluation of the costs should include estimates of the burden of those costs on the rest of the world.

In this case, where the industry being analyzed implies illegal activities, developing estimates is even more difficult. The database of economic information on illegal activities is certainly smaller than for legal activities. The most significant difficulties are:

- The industry is poorly measured;
- The industry generates other transfers and transactions which are poorly measured;
- Where the industry interacts with the legal system, transaction fees could be poorly measured;
- The industry usually operates in underdeveloped economies with low *per capita income*, and, therefore, there is a limited database as well.

However, it is not only the lack of data for the general equilibrium model that limits the possibility to develop an estimate of the social costs. Large-scale drug production industries are almost certainly associated with penetrating and endemic levels of corruption which distort civil society and good governance. They have the following effects, among others:

- The public sector is corrupt and functions inefficiently;
- There is institutional instability which, in turn, generates commercial uncertainty, discourages legitimate investment and encourages flight capital;
- Measures to enforce the law, control and eliminate illegal drug production can have secondary effects, such as: environmental damage resulting from efforts to try to control the harvest which result in significant costs to the local economy;
- Market prices do not reflect the real social value;
- There are costs to the economy from the infighting between drug traffickers, and drugs

can sustain guerrilla activity on a significant scale.

The counterfactual scenario is that, without this industry, the country could have a stable society and good governance and, therefore, several of these collateral activities would not take place.

In theory, it is possible to quantify a society with and without the illegal industry. But, in practice, it does not seem possible to do that in a reasonably rigorous manner.

Probably, a general equilibrium analysis focused only on the movements of production –which is possible- could, as in the case of large-scale legal drug production, show a reduction in the material welfare if the large-scale, illegal drug production industry were to close or scale down substantially. However, the elimination of corruption in governance and in society would probably cause a net increase of the GDP. How much higher, we cannot say. It seems that the cost of closing large-scale, illegal drug production industries could be negative (the net impact on GDP would be positive) but it cannot be stated with any assurance until better data are available.

2.4- Who bears the burden of substance abuse costs?

The first International Symposium on Estimating the Social and Economic Costs of Substance Abuse (1994) concluded that it would be opportune to indicate which group or groups in the community bear the burden of the social costs of substance abuse. A major reason for this recommendation was the recognition of the fact that the incidence of these costs could change, even in situations in which total costs remain fixed. For instance, there is a strong international tendency with regard to financing medical assistance, to encourage a larger proportion of the funding to come from private individuals rather than from governments. The aggregate cost estimates do not reveal this type of effect, but incidence based estimates do.

Substance abuse costs can be treated as a type of tax and be analyzed in the same way. Initially, the burden of the costs may fall on one or more of the four broad groups of the domestic community (the abusers themselves, other individuals, the business community or the government) or, they can be exported. It may be possible for one of these groups to pass on the cost to another group. For instance, entrepreneurs may be able to pass on the costs of lost productivity to consumers in the form of higher prices for the products, or to workers in the form of lower wages. But this type of analysis is very difficult to carry out. Furthermore, all costs originally supported by entrepreneurs or the government should eventually be supported by individuals (consumers, workers, shareholders, taxpayers) whether in the country or abroad. For that reason, the incidence based analysis must be limited to analyzing the initial burden of the costs of drug abuse among the various groups in the community that were previously mentioned.

It is important to note that the social costs of drug abuse are not only borne by the public treasury. In the first place, some of the costs may be incurred outside of the national economy. For instance, there are significant numbers of drug control programs in South America and in other developing countries that are financed by the United States of America or by international organizations. Although the USA, for instance, includes the cost of programs implemented abroad in its cost estimates, it would be a dubious practice to include the costs paid by foreign governments in the cost estimates of the countries where these programs are being implemented. In some sense, these costs of enforcing the law are exported, but that is

no reason to not mention them and/or recognize their existence. Second, and perhaps even more important, although the economic costs are supported domestically, a significant proportion of these costs can be supported by individuals (for example, by relatives or victims of drug abusers, or by non-smokers exposed to environments where there is smoke). Again, in many instances, the burden of the costs may fall more on individuals than on governments or the abusers themselves.

Chapter 3: Other relevant topics to be considered.

3.1- Avoidable costs.

As it was mentioned in the beginning of this document, these methodological guidelines are based on the international guidelines on this subject matter. In the specific case of avoidable costs, the approach and recommendations established in the *“International Guidelines for Estimating the Avoidable Costs of Substance Abuse - First Edition 2006”* are followed.

3.1.1- Nature of avoidable costs.

As it has been previously pointed out, any estimate of total costs must be based on a comparison between the actual situation, where substance abuse exists, and a counterfactual scenario where there has never been any substance abuse at all. Thus, the counterfactual scenario implies that society has never had and never would have to assume any costs associated with substance abuse. Comparing the actual situation with the counterfactual scenario makes it possible to then estimate the additional costs substance abuse imposes on society.

The total cost of substance abuse encompasses both, avoidable and unavoidable costs. Unavoidable costs include costs due to past drug used as well as those caused by the portion of the population whose current level of drug use will continue to generate costs. Avoidable costs are those that can be modified by public policy measures or by changes in behavior. Therefore, estimates of avoidable costs show the potential benefits society as a whole can obtain from the investment of public funds targeted to substance abuse prevention or reduction. Thus, the estimates provide economic data that is useful in the decision making process and in the efficient allocation of resources.

It is important to note that avoidable cost estimates do not, per se, indicate what rate of return society can expect. It is necessary to develop cost-benefit or cost-effectiveness analyses to obtain that type of information.

The process of estimating social costs implies the precise calculation of the proportion of avoidable costs for each category of costs, and that those proportions are applied to the relevant total cost estimates. Since not all substance abuse costs are borne by the government, it may be that governments would be interested in obtaining the proportions of avoidable budgetary costs. In fact, the data gathered to estimate the avoidable proportion of total costs could be used to estimate the avoidable budgetary costs.

The reasons that justify estimating avoidable costs are the same ones that were previously described for estimating total costs (see section, “Importance and usefulness of cost estimates of PAS abuse and their economic impact”).

Before going any further with the analysis of avoidable costs, it is important to remember that, much the same as in the case of estimating the social costs of substance abuse, the term “substance abuse” is defined based on economic terms. Therefore, when the term “substance abuse” is used, it refers to use, illegal use and/or substance abuse.

3.1.2- The “avoidable” concept.

The social costs generated by substance abuse are, for the most part, associated with the provision of health care; crime prevention and law enforcement; and the loss of productivity, among others. It is not sufficient to simply know the total cost of substance abuse or the burden of the illness attributable to this abuse because they do not clearly tell us what proportion of the costs or the burden could, in principle, be modified. The proportion that can be modified is called *avoidable cost* or *avoidable burden*. Estimation of the avoidable burden is, therefore, an important element in developing the avoidable cost estimate.

The first phase in developing an avoidable burden estimate consists of conceptualizing the burden attributable to the illness, in other words, the burden of a specific illness, on a specific population, which is identified as being due to exposure to a specific risk factor or to multiple risk factors. Consequently, this portion of the burden of the illness could, in principle, be reduced or eliminated if exposure to the cause is also reduced or eliminated. Thus, the attributable burden is conceptualized independently of whether that reduction is achievable in practice or not.

Based on the conceptualization of attributable burden it is then possible to introduce the notion of avoidable burden of the illness. The term “avoidable” describes the proportion of the burden of the illness that can be reduced by modifying the distribution of actual exposure to a more favorable one. Of course, the size of the avoidable burden attributable to a given risk factor will always be smaller, or, at best, equal to the burden attributable to that risk factor.

3.1.3- “Avoidability,” “optimization” and “zero tolerance.”

The avoidable burden or avoidable costs must be compared to the economic concept of *optimum level* of substance abuse. Economists maintain that the optimum level of substance abuse is reached when the additional cost imposed on the whole of society, in order to achieve a certain reduction in drug use, corresponds exactly to the additional benefit this reduction implies for society. Thus, when the additional benefit is larger than the additional cost, it means that, in order to achieve optimization, drug use would have to be reduced even further. On the other hand, if the costs exceed the benefits it means that drug use has been reduced below optimum levels.

The concepts of “avoidability” and “optimization” can lead to very different results. Moreover, it may be that optimum levels of drug use are not attainable. For instance, optimum levels of tobacco use may be below the levels achievable in real life where there are significant restrictions on the availability of public resources to reduce the prevalence of tobacco use. On the other hand, it may be technically possible to reduce tobacco consumption below levels that economists judge optimum. Whichever the case, in practice, the gaps in available information would probably constitute a serious obstacle to determining optimum levels of consumption. If we follow the international guidelines, this means that the emphasis is placed on the issues associated with estimating the *avoidable costs* of substance abuse, and not on the *optimum levels* of substance abuse.

Some defenders of public health care consider that the objective of public health care interventions should be to reduce the level of substance abuse to zero. This approach could be called “zero tolerance.” Economists would argue that, in most instances, the optimum outcome

would not consist in reducing the level of substance abuse to zero, but to achieve a level where the additional costs generated by a reduction in substance abuse equal the additional social benefits obtained by that reduction. In most cases, however, even if a zero drug use level were attainable, the costs incurred in order to reach that level would probably exceed the benefits. In other words, it would be more productive to invest those resources somewhere else.

In practice, “zero tolerance” is probably not achievable. The concept of avoidable costs is tied to the notion of achievable objectives, not to what would be desirable in an ideal world with unlimited resources.

3.1.4- Methods to calculate the minimum achievable level.

Within the framework of an economic policy, it is necessary to determine the maximum quantifiable and measurable reduction of substance abuse costs that is expected to be achieved through the implementation of effective policies. The “minimum achievable level” can be defined as the lowest level of substance abuse that can be achieved. There are several methods to calculate the minimum achievable level and thus, to be able to define policy objectives. Of course, estimates of total costs are essential in developing estimates of these avoidable costs.

One of the approaches to this calculation of the minimum achievable level is to use the classic epidemiological method which consists of estimating the attributable burden based on estimates of relative risk and prevalence. Once the attributable burden has been estimated, it is then possible to estimate both past and future risk factors and, based on the data gathered, calculate the minimum achievable level. This method can be modeled to reveal the difference between the attributable burden and the avoidable burden. In theory, this is probably the most relevant of all methods because it is based on exposure, but it also constitutes a significant challenge with regard to data requirements (for more details, see Murray et al; 2003)³².

Another method, called the “Arcadian normal”, was developed by Armstrong (1990).³³ According to the method’s developer, the measure of the minimum achievable level would be the minimum attainable level of preventable mortality for a range of conditions. Instead of using epidemiological data to calculate the minimum achievable level, he uses as a comparator the lowest registered rate (for instance, for lung cancer) that has been achieved by a country which can be reasonably compared to the country being studied. Based on that comparator, the avoidable portion can be estimated, and, from that, the avoidable costs can be calculated. In other words, this approach uses the results and not the exposure.

This Armstrong concept does not in itself suggest nor mean that similar policies, regulations, or even health behaviors may be appropriate or transferable from the comparator country to the country being studied. It simply indicates what level of burden and cost reduction has been achieved. A disaggregation of the effective policies of a comparator country may be useful in developing economic evaluation studies and provide guidance in the allocation of resources that are susceptible to the implementation of various policies.

³² «Comparative quantification of health risks conceptual framework and methodological issues», Murray, C.J. et al; 2003.

³³ «Morbidity and mortality in Australia: How much is preventable?», Armstrong, B.K.; 1990.

However, it was agreed at the Ottawa workshop (2005) that a method based on exposure was superior to one based on results. In a context of insufficient availability of data, the desire for a method based on exposure led to a third method to estimate the minimum achievable level, one that uses comparators based on exposure, established according to international data on fractions, morbidity and mortality attributable to drug use, published by the World Health Organization (“Comparative Quantification of Health Risks”, Ezzati et al.; 2004 –previously cited). These data make it possible to identify which country has the best performance among countries in the sub-region that WHO has identified as having similar characteristics. This method could be adopted for countries that do not have the necessary domestic data available. Although it may be the only practical solution for many countries, it should be noted that this method can be highly imprecise given the great number of assumptions underlying the transfer of attributable fractions from one setting to another.

Last, under certain circumstances, there is another method to estimate avoidable proportions that uses data on the effectiveness of interventions aimed at reducing the levels or the effects of drug use. When solid data exists on the effectiveness of specific interventions, the comparisons between current policies and interventions, whose effectiveness has been recognized in other countries, may help indicate the magnitude of avoidable substance abuse costs.

Inevitably, there are difficulties and complexities in calculating both, the attributable fraction and then, the avoidable proportion which indicates the minimum achievable level. Once again, in the case of Caribbean and Latin American countries which usually face serious data and information gaps, estimating the avoidable costs is a very complex task. In that regard, the progress made by WHO on international epidemiological data has significantly helped fill those gaps in developing countries. Therefore, a great obstacle in developing estimates of the social costs of morbidity and mortality attributable to substance abuse has been overcome. However, there are still many difficulties to be solved in the area of social costs of criminality associated with drug use.

3.1.5- Reliability/credibility of avoidable cost estimates.

Developing estimates of avoidable costs of substance abuse entails two phases: the first phase consists of estimating total social costs associated with substance abuse; the second consists of estimating the proportion of each of the categories of the total cost that is potentially avoidable.

Errors can be made in both phases. With regard to total cost estimates, as Single et Easton (2001)³⁴ correctly point out, although the development of international guidelines has contributed significantly to making results comparable, there is no consensus on the preferred methodology to develop cost estimates (for instance, cost-of-illness studies or externalities; human capital or demographic or willingness to pay based approaches; etc.). Likewise, the unavailability of data causes problems in carrying out almost all cost studies (even in developed countries): data to calculate AF and A; to estimate costs relating to specific productivity problems; prevalence data, etc. In any event, even if relatively complete and reliable data were available, current estimates of economic costs generated by or associated with substance abuse rely on many base assumptions. At the same time, changes in the

³⁴ «*Estimating the economic costs of alcohol misuse: why we should do it even though we shouldn't pay too much attention to the bottom line results*», Single et Easton; 2001.

epidemiological database and new knowledge about the impact of drug abuse are more than enough reason to be prudent in interpreting the final results of cost estimates.

With regard to the second phase, since avoidable costs represent a portion of the total social costs of substance abuse, in order to estimate this cost it is necessary to estimate the avoidable proportion of each cost category, and all the problems and all sources of error previously mentioned also apply to avoidable cost estimates. Avoidable fraction estimates have their own specific problems; even with access to ideal data, in addition to solid estimates of all cost elements in a cost study, it is necessary to have the following information:

- Detailed data on risk factors (for instance, the relative measure of the impact of various levels of tobacco and illegal drug use on each one of the indicators of the problem);
- Detail data on the gaps between the time the risky behavior is adopted and the time when the attributable problem begins.

On another hand, there are also certain difficulties in estimating the minimum achievable level for each cost category. The selection of a minimum achievable level may imply selecting a country of reference. It could simply mean selecting a reference country for each of the big categories of costs (for example, provision of health care, productivity, criminality, pollution, etc.), but in practice, there is probably a whole range of cost sub-categories and each one will need a country of reference. Even in one country, practices that have achieved excellent results in one of the cost categories associated with the use of a specific drug, may show diminished results or not contribute any results in another cost category associated with the same drug. This is probably particularly true in the case of illegal drugs, because this term encompasses various drugs whose prevalence and impact on costs vary, and which respond differently to different political initiatives.

Last, the magnitude of avoidable costs will depend on the periods of time selected for analysis and will progressively diminish in time until a certain minimum level is reached. The determination of a minimum achievable level derived from international comparisons of results will indicate the feasible minimum level but not the amount of time it will take to achieve it. Taking into account the dearth of information regarding these time lapses, perhaps it is necessary to define a common time lapse for all the cost categories associated with a particular drug that is long enough to reasonably ensure that all potentially avoidable costs can actually be avoided.

3.1.6- Usefulness of avoidable cost estimates.

As it has been previously mentioned, despite improvements in methodology and data sources, even estimates of total economic costs attributable to drug abuse are imperfect. Despite the uncertainties, it is nevertheless useful to develop estimates of avoidable costs of substance abuse for the following reasons:

- The development of such estimates helps pinpoint information gaps, which in turn force the improvement of statistical bases and further the understanding of the process itself;
- With regard to quality control, given that those responsible for policies need and use (whether they are aware of it or not) cost estimates to determine priorities among competing social problems, society has the right to expect cost studies to be based on

a standard of quality. In the absence of such a standard, the various groups that advocate for those problems will tend to over-promote and add items for the sole purpose of gaining as much attention as possible (sometimes exaggerated) for their problem;

- Estimates of the total costs of substance abuse do not indicate the possibilities of return on strategies to combat substance abuse. These possibilities of return on strategy, measured by avoidable costs, represent one of the most solid estimates of the potential advantages government policies obtain in their interventions. Therefore, these estimates can be a very useful tool to reinforce the rationale for allocating public resources to drug related programs or to increase them;
- Cost estimates help to better manage specific problems and policies;
- Since estimates of avoidable costs require that data be compiled on the effectiveness of a wide range of drug control measures in various countries, a large portion of this data will probably contribute to the development of improved and more efficient drug control programs;
- Estimates of avoidable costs of substance abuse make it possible to obtain reference measures for more sophisticated economic analyses that will help determine which policies and programs are more useful in reducing the adverse consequences of substance abuse.

3.2- Budgetary impact of drug policies and programs.

In addition to social costs, it is useful and important, especially for governments, to analyze the impact of substance abuse on government budgets. This calculation implies estimating expenditures and revenue that are, either directly or indirectly, derived from substance abuse. On the side of expenditures from the drug control budget, there will be clearly more expenditures attributable to drug use, but there will also be some reductions attributable to drugs. Specifically, premature deaths caused by drug use will lead to some reduction in health care and welfare expenditures. Net expenditures on health care and welfare attributable to drug use will almost certainly be higher even taking these ‘savings’ into account. On the income or revenue side of the ledger, in addition to the obvious benefits, there will be loss of revenue. Premature deaths will lead to a reduction in productivity, revenue and consumption, with the resulting reduction in tax revenues.

Extreme care should be used when interpreting estimates of budgetary impact. The results of these calculations do not indicate whether drug users defray all the costs they impose on the rest of society or not. This is because some of these “external costs” do not show up as government expenditures (for instance, the loss of production caused by health effects on passive smokers). At the same time, budgetary estimates totally ignore, among other things, the costs of loss of life, harm and suffering caused by drug use.

Therefore, it cannot be argued, for instance, that “smokers pay their share” simply based on the fact that tax revenue from tobacco exceeds public expenditures related to tobacco. Consequently, tobacco use is public policy, even if smoking had a positive net impact on government budgets (in other words, smoking reduces the deficit or increases the budgetary

surplus).

Another type of calculation is the so called “*drug budget*”, which is a public policy indicator that measures the amount of government expenditures on the drug problem, adding up all budgetary expenses attributable to drug policies. Almost all those in a position to make decisions in the area of drug policy have limited resources. In this context, the “drug budget” represents one of the most important statistical indicators available to the individuals who make public policy.

It is important to make clear that the “drug budget” should not be confused with the “social cost of drug abuse” or with “budgetary impact” previously mentioned. The “drug budget” includes only direct government expenditures due to policy costs such as treatment, law enforcement, prevention and research. It does not include payments of social transfers.

Drug related government expenditures can be classified in two ways: on the one hand, there are expenses specified in government financial statistics, such as, for instance, expenditures on research on tobacco use and anti-smoking education campaigns, directly related to the drug problem. On the other hand, government authorities, such as: police, customs, and public health entities, allocate part of their resources to combat problems generated by drug use, usually, without specifically identifying the portion of their expenditures that is attributable to drugs.

Until the difficulties generated by the lack of statistical data are overcome, it will be impossible to make international comparisons of drug budgets. However, those budgets could be compared if they were expressed in terms of percentages of other standardized macroeconomic aggregates. For instance, the drug budget to GDP ratio, or the drug budget to total public expenditures ratio, could be used as an indicator of the government’s commitment to confront the substance abuse problem

Drug budget comparisons could be supplemented with an analysis of the budget’s components. Drug policies can be classified either as demand reduction or supply reduction policies. Demand reduction costs are essentially the amounts allocated to treating the consequences of drug use and to drug prevention. Supply reduction costs are, among others, the cost of security forces used to combat drug trafficking and the costs of the judicial and prison systems. Some countries may prefer or deem it more useful to classify expenditures based on different criteria. Whichever the case may be, it is useful to analyze the components of the expenses and not only the aggregate expenditure.

Analysis of the balance in public expenditures between supply reduction and demand reduction frequently shows that expenditures on supply reduction make up the largest component of the drug budget. This result is not only the outcome of political decisions but it is also due to statistical reasons. In the first place, law enforcement agencies (security forces, courts, prisons) are usually more centralized than health care providers which make it easier to identify expenditures on supply reduction. In second place, the judicial system generally entails considerable costs and imprisonment is expensive, especially when prison conditions adhere to international standards.

3.3- Comparing social cost and Gross Domestic Product.

Estimates of the social cost of substance abuse cannot be strictly compared to Gross

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Domestic Product (GDP) estimates because the former include both, tangible and intangible costs, while the latter, are usually limited to the tangible products of the economy. Nevertheless, it is possible to make significant comparisons of each tangible measure. Each comparison should be done in two parts:

- The tangible social costs of substance abuse, which value the resulting loss of material production, can be compared with \$GDP (including the \$ sign confirms that the variable is measured in monetary units). If the value of the tangible material cost is \$T, then the ratio $\$T/\GDP would measure the effective increase in material goods and available services if substance abuse were eliminated (or however the counterfactual scenario is defined). If the tangible material cost includes non-market production, the comparison would not be as consistent, therefore, those tangible non-market costs must be excluded or the GDP increased by the non-market production.
- The intangible social costs of substance abuse, which value the loss or deterioration of life over and above any material cost, should be compared using the same measurement applied to the population as a whole. To do that, it is necessary to resort to the healthy life years measurement (QALY).³⁵ Let's assume that the loss in QALY resulting from substance abuse is equal to IT healthy life years. If the value of one QALY is defined as \$V, then the estimated loss will be $\$V \times IT = \VIT . Now let's assume that the total QALY in the existing population is P. Its value, then, will be $\$V \times P = \VP . The ratio $\$VIT/\VP (or IT/P) measures the proportional increase in healthy life years if there had been no substance abuse (or whatever the counterfactual scenario stipulates). This easily understood proportion is an important measure of the impact of substance abuse on the quality of life. (If the estimates are based on deaths caused by substance abuse, then the denominator is the total population and the ratio is an indicator of how much larger the population could be in the absence of substance abuse).

For comparison purposes, international guidelines recommend that the social costs of substance abuse be expressed as representing one $\$T/\GDP reduction in material welfare, and one IT/P ($\$VIT/\VP) reduction in healthy years of life. If an aggregate is needed, the sum $\$T + \VIT could be used but it should never be confused with GDP.

This approach eliminates a problem for those who have ethical objections to placing value on human life. They may mention the two dimensions, but they do not have to mention the aggregate, pointing out that the proportion IT/P does not include a valuation of life, but it is simply a comparison of years of life or lives (adjusted).

Since there is not international consensus on the method to measure the intangible costs of life –as opposed to the well established, theoretically underpinned and internationally accepted

³⁵ There is no international agreement on the method to evaluate the value of human life. Some of the methodological differences are:

- Some are based on the loss of market productivity (which could increase due to the loss of non-market productivity).
- Some assign a separate value of life, in addition to loss of productivity, in order to reflect human loss of death, harm and suffering. A common method is to measure the number of deaths (which ignores harm and suffering during life), or the reduction in quality adjusted life years (also called healthy life years, QALY) or, disability adjusted life years (DALY) (which includes both), valued by some monetary unit that can be derived from willingness to pay studies. The use of QALY and DALY instead of deaths means that the evaluation includes a valuation for deterioration of quality of life.

GDP measure- international comparisons of substance abuse costs that imply a valuation of life (over and above its contribution to material production) are not clear. Although measuring methods vary, how to compare dollar values between countries is not obvious, even when the valuation method –the Willingness to pay or the Human Capital approach, for instance- is the same.

Since the IT/P ratio does not depend on the dollar value of human life, it helps resolve the problem of international comparisons. Please note that the ratio does not assume that a QALY in country A has the same value as in country B. Even so, the ratio will probably depend on whether the valuation is based on QALY, DALY, lives, or something else.

Tangible costs comparisons are relatively more transparent since the GDP proportion is a useful (albeit incomplete) measurement that is broadly comparable. Meanwhile, the IT/P ratio has some merit in intangible cost comparisons: it does not depend on the dollar value assigned to human life and some of its methodological differences (QALY, DALY) cancel each other out because the same method is applied to the numerator and to the denominator. Therefore, this ratio is recommended as the best method to make actual international comparisons of the intangible costs of substance abuse.

3.4- Using cost estimates in the economic evaluation of policies and programs.

The evaluation of programs and policies developed to reduce substance abuse is essential in the design of public policy. The economic evaluation is just as important in order to ensure that resources are properly allocated. Developing estimates of the economic and social costs of substance abuse provides tools for the evaluation of programs and policies.

As it has been previously mentioned, the interpretation of the results of cost estimates depends on whether losses in productivity have been estimated based on the human capital or the demographic approach. In both cases, aggregate estimates of the social costs of substance abuse are not designed to show the benefits that could be achieved by interventions to prevent drug use and to mitigate the negative effects of active drugs, given that: some of these costs are due to past substance abuse and are, therefore, unavoidable costs, and because it would be unrealistic to expect that the abuse of any given substance could be totally eliminated.

Consequently, it is necessary to estimate the avoidable costs of substance abuse in order to be able to show the magnitude of the potential returns of programs that seek to mitigate the undesirable effects of substance abuse. However, avoidable cost estimates fail to show how these reductions would be achieved, or if the social benefits generated by these programs could exceed their social cost. These problems can only be resolved through a project evaluation process.

Project evaluations measure the efficiency of alternative projects or policies. Their objective is to determine, by listing the costs and benefits of alternative interventions, the appropriate level of public resources that must be allocated to the problem and which specific solutions will be targeted with those resources. Their goal is to maximize the rate of social return from the use of public resources, or, in other words, achieve the efficient allocation of budgetary resources. Depending on the goal of the evaluation; what the policy objectives are; the circumstances, and the sector being analyzed, the project evaluation uses various evaluation techniques (each one

with its advantages and disadvantages) such as: budget per program (BPP); cost-benefit analysis (CBA); cost-effectiveness analysis (CEA); and cost-utility analysis (CUA).³⁶

Last, Table 2 shows a summary of the various types of costs that can be identified in a cost estimate study and the ways results may be interpreted and applied.

Table 2. Interpretation of cost estimates of PAS abuse.

Type of estimate.	Interpretation of the results.	Example of how policy is used.
Aggregate costs. .	Total external costs of substance abuse, compared to the alternative situation of no substance abuse.	Indication of the magnitude of the substance abuse problem.
Avoidable costs.	Potential economic benefits to be gained from strategies to mitigate the undesirable effects of substance abuse.	Determination of the appropriate level of resources to be allocated to strategies to mitigate the undesirable effects of substance abuse.
Incidence of costs.	Distribution of the external costs of substance abuse among the various groups in the community.	Mobilization of various groups (for instance, the business community) in support of programs to control substance abuse and interventions to mitigate the undesirable effects of substance abuse.
Disaggregated costs.	External costs of substance abuse segregated by category.	Economic evaluation (cost-benefit or cost-effectiveness analysis) of strategies to mitigate the undesirable effects of substance abuse.
Budgetary impact.	Impact of substance abuse on government expenditures and revenue.	Evaluate the case in which industries that produce products that generate addiction compensate the government for that production.

Source: International guidelines for estimating the costs of substance abuse (2001).

³⁶ For a discussion on the various techniques, see “International guidelines for estimating the costs of substance abuse”. References on CBA and CEA can be found in “*Economic benefits of drug treatment: A critical review of the evidence for policy makers*” (Belenko et al.; 2005), on CAU in “*Critical evaluation of economic article: Cost-utility analysis of secondary prophylaxis strategies in variceal bleeding*” (*Evaluación crítica de artículo económico: Análisis Costo-utilidad de estrategias de profilaxis secundaria en hemorragia variceal*) (Quinteros J. I. et al.; 2006) and on BPP in “*Planning and Budget Per Program*” (*Planificación y presupuesto por programas*) (Gonzalo Martner; 2004).

3.5 Need and usefulness of research studies in developing cost estimates.

By this point in the document it should have become obvious that in order to develop estimates of the social costs of drug abuse, it is essential and determinant to have access to an enormous amount of data and information. The robustness and reliability of the results and of the cost estimate will depend on the amount, scope, quality and reliability of the data available.

Throughout these *methodological guidelines*, all the data and information that would be necessary and, ideally, available, and the possible sources for that information have been carefully cited. The document has also addressed the complexity of certain necessary calculations and estimates, based on the difficulty of establishing causality and correlation between PAS use and facts (as is the case of attributable fractions and associations). In addition to this complexity, there is the limitation of available statistical data in various areas, especially in developing countries. Faced with this context, certain palliative measures were suggested in order to be able to move forward with the development of costs estimates, aiming for estimates that are as close to reality as possible, given the availability of data. In these palliative cases as well as in “ideal estimates” of costs, it is essential to have both, epidemiological and specific research studies.

Based on the preceding, and in the context of drug observatories or research areas on the drug problem, it is possible to say, and a duty to emphasize, that cost estimates of substance abuse are fed, to a large extent, by studies carried out by drug observatories and that, in turn, these estimates are very useful in detecting gaps in statistical information and research needs in areas relevant to developing a better understanding of the social problem. Therefore, cost estimates help strengthen the research and systematic gathering of drug data as well as the compilation of that information (the same applies to observatories on drugs). At the same time, since these cost estimates also resort to several other external sources of information, they promote and strengthen interinstitutional relations. Diagram 1 provides a clear visualization of the interrelations of cost estimates with studies of the Inter-American System of Uniform Drug-use Data (SIDUC), and with other sources of information outside SIDUC.

Consequently, one of the objectives of these *methodological guidelines* is to emphasize the importance of continuing to (and improve) or begin to, depending on each country’s situation, to periodically carry out epidemiological and specific research studies which are a primary source of data and information for cost estimates. Such is the case of prevalence studies in various populations, in emergency rooms and treatment centers, and institutional surveys, among others. In that regard, OEA/CICAD has developed a series of protocols to help countries implement these studies which are available on the OEA website:

”SIDUC_2010_Protocol for a survey on drug use in households.”

”SIDUC_2010_Protocol for a survey on drug use among students in secondary education.”

”SIDUC_2010_Protocol for a study on drug use among students in higher education.”

”SIDUC_2010_Protocol for a study on drug use among adult prisoners.”

”SIDUC_2010_Protocol for a study on drug use among adolescent offenders.”

”SIDUC_2010_Protocol for a study on drug use among recent detainees.”

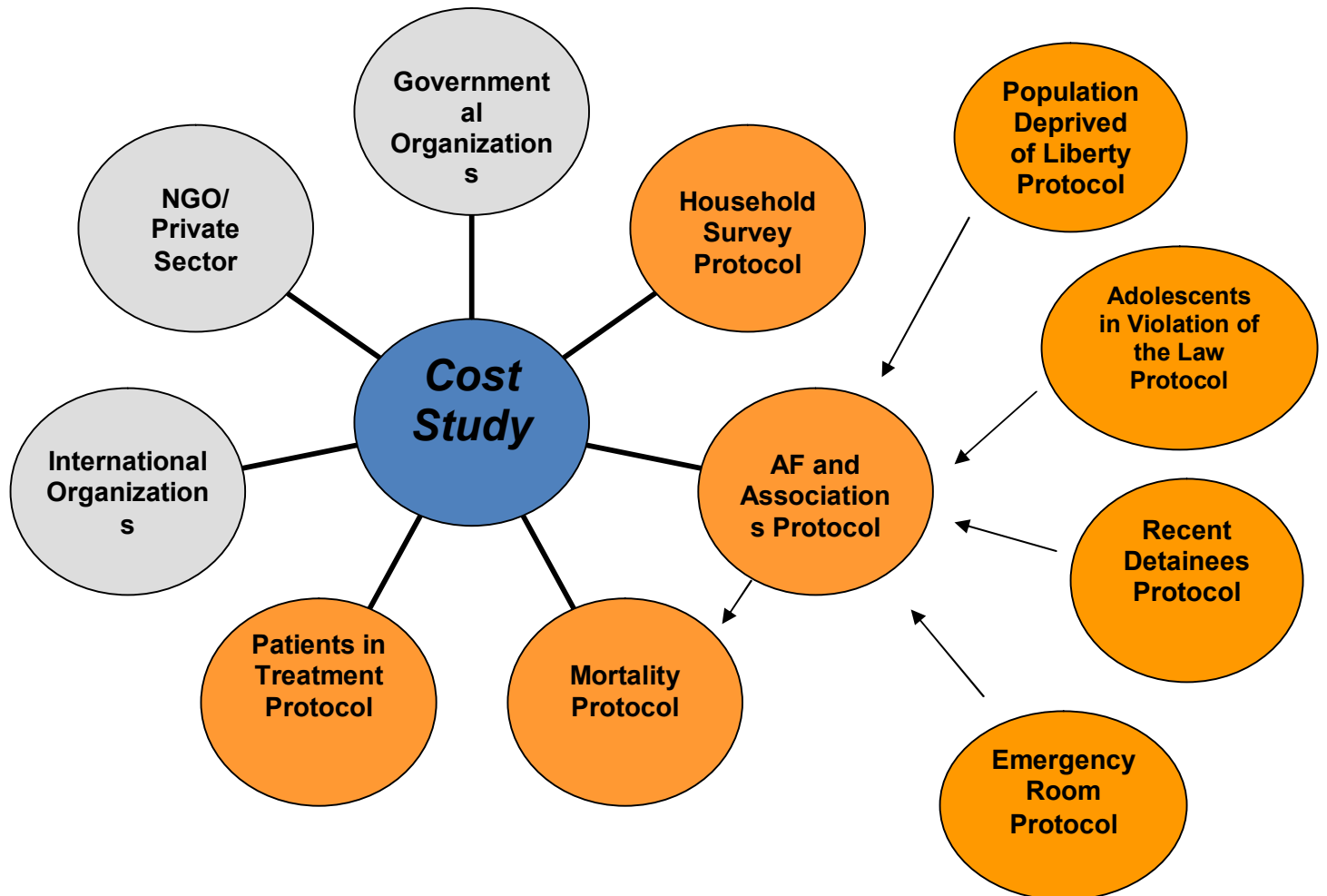
”SIDUC_2010_Protocol for a study on drug use in patients undergoing treatment.”

”SIDUC_2010_Protocol for a study on drug use in patients in emergency rooms.”

”SIDUC_2010_Protocol for a study on mortality related to drug abuse.”

”SIDUC_2010_Protocol for estimating attributable fractions and associations.”

Diagram 1 : Interrelations of Cost Studies with SIDUC studies and with other sources of information outside of SIDUC.



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