Measuring illegal economic activities and illicit financial flows: challenges and possible solutions

Irmgard Zeiler[1], Federico Sallusti[2], Alexander Kamprad[3], Enrico Bisogno[3]

Abstract

The illegal economy and its related illicit financial flows can be of substantive size and have the potential to deprive countries of resources for economic and social development. Illicit financial flows from illegal activities can undermine the rule of law, weaken state institutions, fuel corruption and finance conflict.

The 2030 Agenda for Sustainable Development identified the reduction of illicit financial flows (IFFs) as a priority area to build peaceful societies around the world in the Sustainable Development Goal 16.4. ("*By 2030, significantly reduce illicit financial flows and arms flow, strengthen the recovery and return of stolen assets and combat all forms of organised crime*"). UNODC together with UNCTAD, as co-custodians of SDG indicator 16.4.1, "*Total value of inward and outward illicit financial flows*", develop such a measurement framework that guides countries to measure SDG 16.4.1.

This work presents a statistical framework for measuring Illicit Financial Flows (IFFs) in the context of the SDG indicator 16.4.1 and presents an application to drug trafficking in Afghanistan.

Afghanistan's illegal opiate economy is of significant size when compared to its licit economy. The country is the world's leading producer of illicit opiates and supplies more than 80 per cent of the global illicit opium production. The illicit gross output of the Afghan opiate economy was estimated to be US$ 4.1-6.6 billion in 2017 and US$ 1.2-2.2 billion in 2018. This corresponded to 6 to 11 per cent of the country's GDP and exceeded the value of its officially recorded licit exports of goods and services in 2017 (estimated at 4.3 per cent of GDP).

The value of exported opiates was estimated to be between USD 1.1 – 2.1 billion, generating corresponding illicit inflows. The manufacture of heroin requires imported precursor substances, being worth some USD XXXX million, which constitute illicit financial outflows.

The paper details the estimation of the illegal opiate economy in Afghanistan in the context of the framework developed for measuring illicit financial flows, and discusses the data needs and sources.

Disclaimer

1. Introduction

Every year organized crime and the trade in illegal goods (e.g. drug trafficking or trafficking in firearms) generate billions of dollars of value added. Proceeds of crime are channeled abroad, often to safe havens, and are laundered to be used in the licit economy. Large-scale organized crime, and the

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[1] Irmgard.zeiler@un.org, United Nations Office on Drugs and Crime, corresponding author.
[2] Italian National Institute of Statistics
[3] United Nations Office on Drugs and Crime

related illegal economy, weakens state institutions by fueling corruption and violence, and undermines the rule of law. It discourages public and private investment and deprives the licit economy from resources that are needed for sustainable development along all its dimensions.

The 2030 Agenda for Sustainable Development[4] identified the reduction of illicit financial flows (IFFs) as a priority area to build peaceful societies around the world. Combatting IFFs is considered a crucial component of global efforts to promote peace, justice and strong institutions as reflected in the SDG target 16.4. ("*[b]y 2030, significantly reduce illicit financial flows and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organised crime*").

Progress towards SDG target 16.4 is measured by indicator 16.4.1. "*Total value of inward and outward IFFs in current United States dollars*". Upon definition of the indicator in the 2030 Agenda for Sustainable Development, no internationally established methodology or standards for measuring the indicator were available and there was no agreed upon concept of IFFs for the measurement of indicator 16.4.1.

The United Nations Conference on Trade and Development (UNCTAD) and the United Nations Office on Drugs and Crime (UNODC) are the custodian agencies of the indicator and have been working jointly on a definition and a statistical measurement framework for the indicator. The on-going work is an inclusive process that involves statisticians representing national statistical offices, central banks, customs and tax authorities, as well as international bodies and organisations engaged in measuring activities that can generate illicit financial flows.[5]

This paper outlines a framework that allows to classify IFFs by source, transfer and use of funds, and presents a detailed measurement framework for assessing IFF from crime with a focus on illegal markets. It presents a typology of illicit financial flows and discusses the various types that might emerge during the generation and the management of illicit income from a country level perspective.

The paper applies the framework to the illegal economy of Afghanistan. Afghanistan is the world largest producer of opium and heroin, and its illegal economy is of measurable size when compared to its GDP. The paper presents the methodology and estimates of the size of the illegal opiate market in Afghanistan, and discusses its related illicit financial flows.

<mark>The work is structured as follows. Section 2 provides a typology of activities generating IFFS. Section 3 presents the statistical framework. Section 4 presents the application of the framework to drug trafficking in Afghanistan. Section 5 takes stock and concludes.</mark>

2. Illicit financial flows: definition and typology

2.1. Definition

SDG indicator 16.4.1. measures the total value of inward and outward illicit financial flows (IFFs) in current United States dollars. IFFs are financial flows that are illicitly generated (e.g., originating in criminal activities or tax evasion), illicitly transferred (e.g., violating currency controls), or illicitly used (e.g., for financing terrorism) and are crossing a border.

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[4] https://sustainabledevelopment.un.org/
[5] For a summary of UNCTAD's and UNODC's activities around developing indicator 16.4.1 see https://www.unodc.org/unodc/en/data-and-analysis/statistics/expert-consultation-iff.html, https://unctad.org/en/Pages/MeetingDetails.aspx?meetingid=1864, https://unctad.org/en/pages/MeetingDetails.aspx?meetingid=2218.

IFF concern the exchange of value, rather than money or purely financial transfers. Exchanges of value include currency, but as well goods and services, and financial and non-financial assets. Cross-border bartering, the exchange of (here illicit) goods and services for other goods and services, is a common practice in illicit markets and is considered as IFF.

Illicit is broader in its meaning than illegal.[6] With national laws and country practices differing, and with IFF measurement being a statistical exercise and not a judicial or auditing one, it would not be possible to define statistical aggregates in terms of their illegality. The indicator is thus constructed based on a typology of behaviors, events and activities generating IFFs to be measured in the context of SDG 16.4.1. This approach is in line with the approach taken by the International Classification of Crime for Statistical Purposes (ICCS) and crime statistics in general.

In order to provide comparable estimates across countries, the statistical framework for measuring IFFs is based on a globally agreed classification of actions and behaviours rather than on legal definitions in each country.[7] Furthermore, in order to have reliable bottom-up estimate of IFFs, the activities that generate them need to be analysed carefully and placed in a framework that can identify the various steps in which IFFs are involved. Indeed, transactions of illicit nature can take place in several guises and at various stages of (illicit) economic activities.

2.1. Typology

SDG indicator 16.4.1 calls for the measurement of the *total value* of IFFs. While this is useful as an indication of the overall size of the problem and for advocacy purposes, it has limited applicability in policy. A more granular measurement of IFFs, in line with a finer typology, helps identifying the main sources and channels of IFFs, and guide national and international interventions targeting them.

There are four main types of activities that can generate IFFs:

- **IFFs from tax and commercial practices**: These include illegal practices such as tariff, duty and revenue offences, tax evasion, corporate offences and market manipulation, and other selected practices. Some activities that are non-observed, hidden or informal or part of the so-called shadow, underground or grey economy may generate IFFs. The practices are typically motivated by increasing profits and avoiding taxes.[8]

- **IFFs from corruption**: The United Nations Convention against Corruption (UNCAC) defines acts considered as corruption, and they are consistently defined in the ICCS, such as bribery, embezzlement, abuse of functions, trading in influence, illicit enrichment and other acts of corruption in the scope. When these acts – directly or indirectly - generate cross-border flows, they generate IFFs.

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[6] The terms illicit and illegal are used interchangeably in the context of this document.

[7] Indeed, legal frameworks are often reactive (caused by time lags in declaring new types of activities illegal) and may lead to different treatments of IFFs across countries and time, especially considering developing countries that may not have highly sophisticated laws. For a comprehensive discussion on the topic, see https://unctad.org/meetings/en/SessionalDocuments/stat2018_em_iff0620_report_en.pdf.

[8] Related activities included in the ICCS comprise tax evasion, tariff, duty and revenue offences, competition offences, import/export offences, acts against trade regulations, restrictions or embargoes and investment or stack/shares offences. In addition, tax avoidance includes transfer mispricing, debt shifting, relocation of intellectual property, tax treaty shopping, tax deferral and changing corporate structures and head quarter locations and other tax avoidance practices. When these activities directly or indirectly generate flows crossing country borders, they generate IFFs.

- **Theft-type activities and financing of crime and terrorism**: Theft-type activities are non-productive activities that entail a forced, involuntary and illicit transfer of economic resources between two actors. Terrorism financing and financing of crime are illicit, voluntary transfers of funds between two actors. Examples of theft-type activities are theft, extortion, illicit enrichment, and kidnapping. When the related financial flows cross country borders, they constitute IFFs.

- **IFFs from illegal markets**: Domestic and international trade in illicit goods and services. Such processes often involve a degree of criminal organization and are aimed at creating illicit profit. They include any type of trafficking in goods such as drugs, firearms, or services such as smuggling of migrants. IFFs are generated by the flows related to international trade of illicit goods and services, as well as by cross-border flows from managing the illicit income from such activities.

The typology of IFFs for statistical purposes respects the three main conceptual guidelines:[9] exclusivity, exhaustiveness and feasibility. In particular, the typology should guarantee the definition of each type of IFFs with respect to the event or behaviour that generate them, so as to avoid overlaps among categories. Furthermore, the typology should take into account the highest number of manifestations of IFFs.[10] Finally, the typology should consider the necessary information (in terms of availability and reliability) needed to populate the classification.

The typology of IFFs is aligned with existing statistical frameworks and principles (i.e. international standards for measuring economic activities, such as SNA and BOP). By definition, a statistical classification is *a set of discrete, exhaustive and mutually exclusive categories which can be assigned to one or more variables used in the collection and presentation of data, and which describe the characteristics of a particular population* (Hancock, 2013).

SDG indicator 16.4.1 calls for the measurement of the "total value" of inward and outward IFFs. While this is useful as an indication of the overall size of the problem and for measuring progress, a more granular measurement of IFFs helps to identify the main sources and channels of IFFs and can guide interventions targeting IFFs.

Figure 1. Examples of activities generating illicit financial flows from crime, by ICCS categories

	Examples
Tax and commercial practices	08041 Tariff, taxation, duty and revenue offences
	08042 Corporate offences including competition and
	import/export offences; acts against trade regulations
	08045 Market manipulation or insider trading, price fixing

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[9] C.f., Andrew Hancock, Best Practice Guidelines for Developing International Statistical Classifications. United Nations Department for Economic and Social Affairs. Statistical Division. ESA/STAT/AC.267/5 of 6 May 2013. Available at: http://unstats.un.org/unsd/class/intercop/expertgroup/2013/AC267-5.PDF

[10] Ideally, the aim is to include each manifestation of IFFs but given the huge number of acts and continuous legislative changes, not to mention innovation in creating illicit channels. However, a realistic goal is to capture IFFs generally known in a sufficient number of countries. The UNODC (2015) International Classification of Crime for Statistical Purposes (ICCS) can be taken as a starting point in defining the different crimes from which IFFs originate. It covers theft-type activities and terrorism, illegal markets and corruption, as well as many activities related to tax and commercial practices. See https://www.unodc.org/documents/data-and-analysis/statistics/crime/ICCS/ICCS_English_2016_web.pdf.

Theft-type activities and terrorism financing (parts of sections 02, 04, 09)	020221 Kidnapping 020222 Illegal restraint 020223 Hijacking 020229 Other deprivation of liberty 0204 Trafficking in persons 0205 Coercion 0401 Robbery 0501 Burglary 0502 Theft 09062 Financing of terrorism
Illegal markets	ICCS includes a long list of activities, including for example drug trafficking (060132), firearm trafficking (090121), illegal mining (10043), smuggling of migrants (08051), smuggling of goods (08044), wildlife trafficking (100312)
Corruption (section 0703)	07031 Bribery 07032 Embezzlement 07033 Abuse of functions 07034 Trading in influence 07035 Illicit enrichment 07039 Other acts of corruption

List is not exhaustive.

2.2. Productive and non-productive activities

To maintain coherence with international accounting standards, activities can be separated into productive and non-productive activities.

In the system of national accounts (i.e. SNA 2008), each transaction that satisfies the principle of "mutual agreement" between parties is to be included into the boundaries of production and, consequently, in the measurement of GDP, independently from being in the legal or illicit sphere. Activities are "productive" or "non-productive" according to the "mutual agreement" principle. The main difference between productive and non-productive activity is that only the former generate value added, while the latter are some transfer of value from one actor to the other (while both modify the amount of income held by them).[11]

Figure 1. Typology of activities generating IFFs

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[11] Taking this definition, many illegal actions are crimes against persons or property that in no sense can be considered as transactions. For example, theft can scarcely be described as an action into which two units enter by mutual agreement. These are generally not recorded in the SNA, unless thefts, or acts of violence (including war), involve significant redistributions, or destructions, of assets. These would then be treated as other flows or transfer (i.e. changes in the value of assets and liabilities), not as transactions.

Productive activities		Non-productive activities
Illegal markets	Corruption	Theft-type
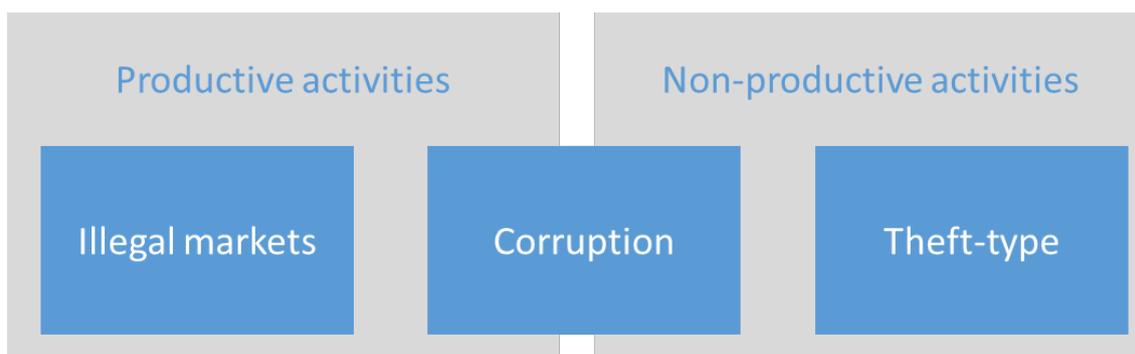
As Figure 1 shows, while illegal markets and theft-type clearly include, respectively, productive and non-productive activities, the situation is more complex for corruption. Corruption comprises different activities, which might or might not involve mutual agreement according to the given behaviour or practice. Some of them (i.e. bribery or trading in influence) are characterised by mutual agreement of parties and, [12] therefore, are considered as productive, while others (i.e. embezzlement, misappropriation or other diversion of economic resources) are not and are therefore seen as non-productive.

Illegal activities included in illegal markets can be interpreted as a sequence of transactions that form a supply chain aimed at producing and trading illicit goods and services. At each step along the supply chain, a given amount of value added is generated, which is represented by the mark-up that, in each transaction, represents the increase in price requested by the given actor to the other (gross output minus intermediate costs). In this context, when transactions in illegal supply chains cross a border (which is the case of trans-national trafficking in goods), IFFs emerge in the form of imports or exports of illegal goods and services. All illegal market activities operate with the motive of making profits. For each actor along the illegal supply chain, the value added generated by his activity also represents a net income. If such an income is transferred across a border (for example when a drug trafficker is moving money to an off-shore account), it constitutes an IFF.

Theft-type activities are non-productive. Non-productive illicit activities do not consist of operations that generate any new (illicit) goods or services, or create value added through the trade in goods and services. They consist of forced or voluntary transfers of funds or valuables from one owner to another. In this context, the income earned by actors is the value of the funds or valuables that change ownership. Unlike productive activities in illegal markets, theft-type activities and terrorism financing do not add towards the accumulated income of a country or region.

Corruption refers to a set of different activities.[13] As pointed out, some of them are being considered as productive and others as non-productive. Therefore, having so many different forms, corruption needs to be treated as a separate topic.[14] However, bribery can also enter in illegal markets and it can be a significant intermediate cost along illegal supply chains. In such cases, bribes can constitute IFFs (e.g. when bribes are paid to foreign customs officials to facilitate the trafficking of goods across a

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[12] REFERENCE EUROSTAT

[13] The United Nations Convention against Corruption does not provide a single definition of corruption but lists a number of acts that constitute corruptive behaviour (and requires signatories to the convention to implement relevant legislation). See https://www.unodc.org/unodc/en/treaties/CAC/.

[14] The development of a statistical framework to measure IFF related to corruption will be part of future activities and is not included in this paper.

border). Therefore, corruption and specifically bribery should also be considered in the analysis of illegal markets.

3. The statistical framework for measuring IFFS from illicit markets and theft-type activities

In the last years, a relevant stream of literature proposed methods to measure IFFs from illegal economic activities, and tax and trade related practices.

In general, methods can be grouped in two main approaches. Top-down methods try to measure IFFs by interpreting or modelling inconsistencies in different types of aggregated, official data (i.e. currency demand, international trade, capital account of balance of payments).[15] Bottom-up approaches try to measure IFFs starting from the information about the given illicit activity generating them in order to retrace the set of flows that can be identified as IFFs.[16] Furthermore, international organizations, such as UN (2011, 2017, 2019) and OECD (2015) largely approached the issue of estimating illicit economy and the relative flows, while, recently, Eurostat (2018) tried to define a framework to include illegal economy in the framework of National Accounts and Balance of Payments.

While bottom-up approaches are less used (principally because of the lack of reliable data), their main advantage is the possibility of splitting-up the different flows coming from illegal activities in order to being able to correctly identify them as IFFs and including them into international standards of accounting such as SNA and BOP.

To measure IFFs, a statistical framework is needed that provides a suitable scheme to measure the flows involved and a suitable conceptual set-up to determine to what extent those flows are IFFs.

The statistical framework for measuring IFFs presented in this section follows a modular design and corresponds to this aim. In line with the requirements of SDG indicator 16.4.1, and coherently with the bottom-up approach, each module reflects a specific step that is necessary to provide a comprehensive estimate of IFFs at country level. The framework is aligned and compatible with established concepts and standards from economics and accounting (SNA and BOP).

IFFs can emerge at various stages of productive and non-productive activities, relating to different actions and exchanges. A relevant step towards the building up of the statistical framework is a typology of the operations involved in both illegal markets (productive) and theft-type (non-productive) activities. Here, we define o*peration* as an exchange between parties, independent from a possible agreement among them.[17]

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[15] Top-down approaches can be clustered based on the type of the informative set where inconsistencies are investigated. Currency Demand Approach (Tanzi, 1996; Schneider, 2011; Schneider and Williams, 2013; Ardizzi et al., 2016) grounds on the comparison between the actual demand for currency and the amount of money that should be demanded based on observable economic indicators. Hot Money Method and Residual Approach use discrepancies in financial accounts to estimate the amount of flows connected with non-observed economy (Kar, Cartwright-Smith and Hollingshead, 2010; Kar and Freitas, 2011). Finally, discrepancies in mirror trade statistics may provide a measure of illicit flows connected with international trade (Gara et al., 2016). Gravity Model (Walker, 1995; Unger et al., 2006) focuses on attractiveness to determine the extent to which financial flows between countries can be supposed to be illicit.

[16] Transcrime (2016) analyses the amount and destination of illegal proceeds invested by criminal organisations in Italy, while Sallusti (2014) proposes a top-down estimate of illicit drugs market in Italy based on a meso-economic model of the value-chain.

[17] In this context, the term "operation" is used instead of "transaction" because also exchanges that are not characterised by the mutual agreement principle (i.e. theft, extortion) has to be included.

A basic distinction of operations can be made based on their finality.[18] Operations can be aimed at either generating or managing (illicit) income. We define:

- **Income generation**, as the set of operations that either directly generate illicit income for an actor during a productive or non-productive illicit activity, or that are performed in the context of the production of illicit goods and services.[19]

- **Income management**, as the set of operations finalised to use the illicit income for investment in (legal or illegal) financial and non-financial assets or for consuming (legal or illegal) goods and services.

Following this, IFFs can occur when criminal acts generate illicit income. When illicit goods and services are sold, an inflow of value comes from the buyer to the seller. Likewise, successful extortion generates income for the extorter. Inward or outward IFFs occur during income generation when the operation in question is performed across a border: for example, when a shipment of illicit drugs is sold from an actor in one country to another actor in a different country or when a person is extorted by an actor abroad. This includes operations within the same territory but when the actors are resident in different countries (e.g. if a suitcase of cash is handed over to a foreign resident).

IFFs can also take place at the phase of Illicit income management, which refers to the use of illicit income for investment or consumption either domestically or abroad. These are operations are outside of the value chain (they do not contribute to the creation of illicit goods and services). If spent abroad, the operation is an outward IFF. If the income of non-resident criminals is spent in the domestic territory, then an inward IFFs is generated.

In sum, there are four basic IFFs: inflows and outflows from illicit income generation and inflows and outflows from illicit income management.

Figure 2. Illicit income generation and management

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[18] This basic typology is also coherent with the main concept of National Accounts. Indeed, income generation refers to the set of operations that in National Accounts relate to production account, and generation and distribution of income account, while income management refers to the set of operations that in National Accounts refer to capital and use of income account.

[19] An example is purchasing precursor substances needed to produce illicit drugs.

Illicit Income generation

Illegal market

A drug trafficker makes a profit from trafficking cocaine between countries

Theft-type

A thief steals a car

Illicit income management

An organised criminal group based in country A deposits illicit cash proceeds in a bank account in tax haven B.

3.1. Income generation in productive activities

Income generation in illegal markets refers to transactions that are aimed at carrying out productive processes for making profits. As every productive process, it can be represented by three main aggregates: gross output, intermediate expenditure (or intermediate costs), and value added (which also represents the net income for criminals).

In particular:

- **(Illicit) gross income/illicit gross output** refers to the value of the illicit goods or services produced in a given period (e.g. year). The value is determined as quantity-times-price (where the price is, for example, the retail price in the domestic market, or the export price if goods are exported).

- **(Illicit) intermediate expenditure** refers to the value of (licit and illicit) inputs acquired for the production of illicit goods and services over a given period. Also in this case, the value of inputs is determined as quantity-per-price (where the price is, for example, the domestic price if the good is bought from a resident, or the import price if the good is bought from a non-resident).

- **(Illicit) value added/Illicit net income** is the economic result of the productive process. In particular, it is determined as gross output minus intermediate expenditure. It also represents the net income earned by all actors carrying out the illicit activity (after accounting for costs).

Figure 3. IFFs in income generation (productive activities)
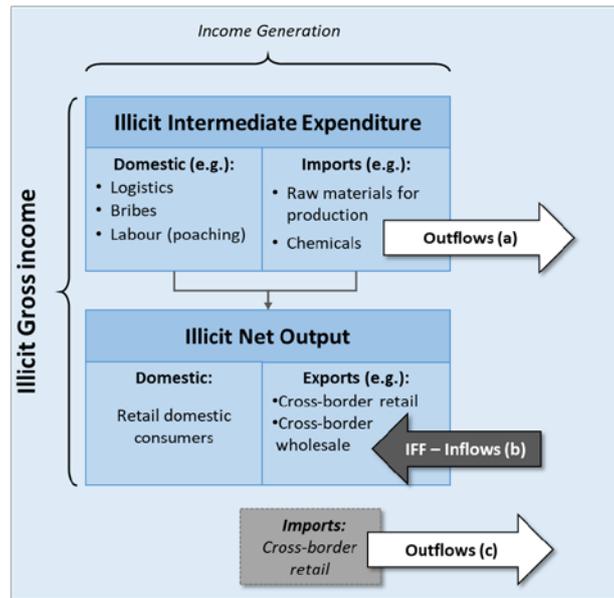
Note: IF Outflows (a) originate in the import of illicit goods and services that are used for generating illicit final products. IF inflows (b) originate in the export of final goods and services. IF outflows (c) originate in the import of illicit final goods and services that have been produced in a different country (e.g., self-imported ivory or illicit drugs ordered on-line).

Inward IFFs occur when illicit goods and services are exported abroad. These products can be either final – meaning that they directly enter foreign consumer markets (e.g. an on-line dealer sells synthetic drugs directly to a consumer in another country) – or they are (licit or illicit) intermediate goods that are input to final illicit goods and services in a foreign country (e.g. morphine is exported to another country to produce heroin, transportation services bought by a non-resident trafficker to ship cocaine). At the same time, outward IFFs occur when intermediate inputs are imported against payments from abroad (e.g. drugs imported for further domestic sale).

To sum-up, for illicit markets, income generation creates inward IFFs whenever illicit (also licit for productive input in illegal production) goods and services are exported, and outward IFFs whenever illicit (also licit for productive input in illegal production) goods and services are imported. These IFFs always met with corresponding flows of goods and services, which can be both final and intermediate.

3.2. Income generation in non-productive activities

From a conceptual perspective, income generation in non-productive (theft-type) activities are less challenging than in illegal markets. As Figure 4 shows, illicit income generated by non-productive activities is equal to the aggregated value of all funds and goods that are misappropriated, stolen, or otherwise illicitly transferred outside, within and into a given territory over a given period.

Intermediate costs for non-productive are accounted for as final consumption in the NA. However, certain non-productive activities do incur costs to the actor (e.g., provision of housing the case of trafficking in persons) and need to be considered for differentiating income generation and income management. These costs are referred to as operational costs.

The direction of the flow depends on the residence the actors (criminal and victim): if the victim is resident (and the criminal is non-resident), then non-productive activities generate outward IFFs, while if the victim is non-resident (and the criminal is resident), then inward IFFs emerge.

3.3. IFFs from income management

IFFs can result from the use (management) of the illicitly generated income. Illicit income can be spent for investments (savings) or consumption, either domestically or abroad. As Figure 5 shows, outward IFFs emerge when (resident) illicit funds are used to buy goods and services from abroad (other than those that have been accounted for as intermediate costs) or to acquire foreign financial or non-financial assets. Symmetrically, inward IFFs are generated if (non-resident) illicit funds (e.g. generated by drug trafficking in another country) are used in the country of interest. These flows are certainly the most difficult to measure and can hardly be linked to a specific illicit activity.

Figure 5. IFFs in income management
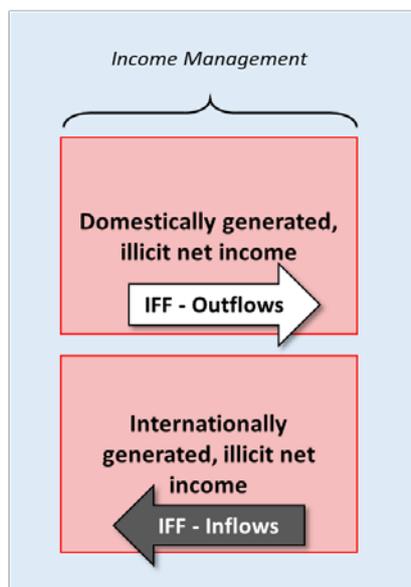
To sum-up, illicit income management creates outward IFFs whenever domestically generated illicit income is moved abroad for investment or consumption purposes. Illicit income management generate inwards IFFs if foreign illicitly generated income is used to invest or consume within the domestic territory. In this context, the size of income management-related outward IFFs is directly related to the domestically generated illicit net income. On the other hand, the size of income management-related inward IFFs depends on other factors such as the attractiveness of the country for money laundering and the likelihood of nationals living abroad to send home illicitly generated income.

4. Country case: Measuring illicit income and IFFs from drug production in Afghanistan

Afghanistan is the world's leading producer of illicit opium. Opium is the gum of the poppy plant (*Papaver somniferum*) and contains morphine, which can be converted into heroin, one of the most widely consumed illegal substances worldwide. Poppy plants in Afghanistan produce more than 80 per cent of illicit opium globally, and a notable share of the global heroin supply originates in the country.

In 2018, MCN/UNODC (2018) estimated 263,000 (242,000 – 283,000) hectares cultivated with opium poppy and an opium production of 6,400 (5,600 – 7,200) tons. It was the second highest area measurement since the beginning of systematic opium poppy monitoring and recording in 1994.

The production of opiates (opium, morphine and heroin) is arguably Afghanistan's largest illegal economic activity. The gross illicit output of the Afghan opiate economy was estimated to be US$ 4.1-6.6 billion in 2017 and US$ 1.2-2.2 billion in 2018. Being worth between 6 to 11 per cent of GDP, the value of opiates, including revenues from heroin production and trafficking to the border, was of considerable size when compared to Afghanistan's licit economy, and exceeded the value of its officially recorded licit exports of goods and services in 2017 (estimated at 4.3 per cent of GDP).[20] It was also worth between 29 and 53 per cent of the licit agricultural sector of the country, which constituted 18.8 per cent of GDP in 2017/2018.[21]

Opium poppy is an important product that secures the livelihoods of many Afghans. In 2018, it was estimated that opium poppy was cultivated in about a third of rural villages in Afghanistan[22] and that it created the equivalent of roughly 190,700 full-time jobs for workers helping to weed and harvest opium poppy.

The following details the methodology behind these estimates and puts them into the context of the measurement framework for illicit financial flows.

The measurement approach is a direct, bottom-up measurement approach. Illicit gross income (or illicit gross output) is generated by the domestic (final) consumption of opium and heroin (domestic use market) and from the export of opiates. The illicit gross output is the sum of the value of domestic consumption of opiates and the value of export of opiates.

4.1. Income generated from the domestic use of opiates

The amount of substances consumed domestically depends on two main factors: the number of persons who have used the drug in a given period of time (usually calculated by using estimates of annual prevalence of drug consumption together with population numbers) and the average annual amounts of (pure) substance consumed per user.

ADD MORE INFORMATION ON CONSUMPTION ESTIMATES.

For Afghanistan, only a single data source is available. In 2009, the Ministries of Health and Counter Narcotics, in collaboration with UNODC, implemented an extensive national drug use survey in Afghanistan,[23] in which the number of opium and heroin users in the country was estimated to be 230,000 (210,000-260,000) and 120,000 (110,000-140,000), respectively. These numbers account for poly-drug use, i.e. one person is counted in both groups if using both opium and heroin.

The report provided information on the average numbers of days that both groups consume the drugs (256 days per year for opium users and 285 days per year for heroin users) and on the average amount spent on each drug per day it was consumed. This information was used to calculate the total amount spent on opium and heroin in Afghanistan in the reference year. This total amount divided by the average, relevant end-consumer price gave the total quantity consumed.

As there were no end-consumer prices available for 2009, the earliest data available was used, which was October 2010.[24] The price of 1 kilogram of heroin was reported to be US$ 6,300 and of 1 kilogram

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[20] National Statistics and Information Authority (NSIA) of the Government of the Islamic Republic of Afghanistan.
[21] NSIA, Afghanistan. These estimates of the agricultural sector do not include the farm-gate value of opium poppy.
[22] SOURCE
[23] Ministry of Counter Narcotics/Ministry of Health/UNODC: Drug Use in Afghanistan 2009 Survey.
[24] Source Ministry of Counter Narcotics/UNODC Monthly price monitoring system

of opium to be US$ 530. Combining the price data with the other estimates yielded the results shown in the following table.

Table 1 Afghan opiate market, 2009

Substance	Days consumed, 2009*	Total expenditure (US$), 2009	Total consumption (tons)	Average daily consumption (grams)	Average annual consumption (grams)
Opium	58,045,000	92,872,000	175	3	770
Heroin/ Morphine	34,142,000	75,113,000	12	0.4	100

Source: Ministry of Counter Narcotics/Ministry of Health/UNODC: Drug Use in Afghanistan: 2009 Survey. It needs to be noted that the quality of heroin/morphine at street level is not known.

The gross income from domestic opiate consumption is is calculated by multiplying the amounts consumed by the street-level price for heroin and opium, respectively. When approximating amounts consumed with the 2009 data, and using most recent price data available (USD 4,100/kg heroin, USD 230/kg opium), the illicit gross income generated by domestic consumption of opiates amounted to USD 90 million in 2018 or 0.4 per cent of Afghanistan's GDP (estimated at USD 20.2 billion)[25].

Some caveats are in order:

- More recent research indicated a strong increase in opiate consumption in Afghanistan when compared to the 2009 levels. A 2015 Afghanistan National Drug Use Survey[26] found opioids[27] to be the most prevalent class of drugs used in Afghanistan. Opioid use was also significantly higher in rural villages than in the urban centres. Opioids were used in nearly one out of five Afghan households overall (19 per cent); in 25 per cent of rural households and 6 per cent of urban households. The percentage of rural children who tested positive for opioids was also far higher than that of urban children: 7.5 per cent compared to 1.3 per cent, respectively.

- Heroin at street level can vary strongly in purity and purity may have changed over time. Neither consumption estimates nor the prices collected through the price monitoring system are adjusted for purity. It is assumed that the street level purity underlying the consumption estimates is comparable to purity the price data refers to.

4.1. Income generated from the export of opiates

The gross income generated from the export of opiates is calculated by the amounts exported in various forms (notably opium, heroin and morphine) and respective export prices from countries where the opiates are exported to.

All the opium produced in a year is either exported as raw opium or heroin/morphine, consumed domestically in various forms, seized, stored for later use or lost (for example, due to mold, disposal to avoid seizures, etc.). Afghanistan, being a major producer of opiates, meets its domestic demand for opiates with domestic production, imports are therefore not required.

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[25] NSIA

[26] The Colombo Plan (2015), "Afghanistan National Drug Use Survey 2015." The study measured exposure to drugs, not consumption and can therefore not be used to extrapolate to overall amounts consumed per year.

[27] In addition to opiates, opioids include synthetic opioids such as fentanyls and other pain relievers. The methodology applied in that report did not allow for a distinction between opioids and opiates.

With that, the important components for estimating the illicit gross income from opium and heroin production in Afghanistan are:

- The amount of opium produced in a year (P_t)
- The amount of opium seized by law enforcement (S_t) in any form or lost (L_t)
- Changes in inventories (I_t) from opiates produced in earlier years but exported in the current period, or opiates from the current production not exported the same period
- The amounts of opiates consumed in opium equivalents (C_t)
- Relevant price data

Using the notation from above, the following equation holds

$$E_t = P_t - C_t + S_t + \Delta I + L_t.$$

Opium production is estimated by UNODC/GoIRA on an annual basis (see data section for more details)[28] and there is data available to estimate the amounts consumed each year. There is a clear understanding of the approximate amount of opium produced and seized by law enforcement (estimated conversion ratios from opium to heroin/morphine apply). Losses and changes in inventories are not considered in the estimation due to lack of data. With that, the amounts of opium available for export as heroin or opium can be estimated as the difference between the estimated opium production of a year and seized and consumed amounts.

Omitting changes in inventories and losses yields

$$E_t = P_t - S_t - C_t.$$

Once approximate amounts of seized opiates are subtracted from the opium production estimates, the amounts of opium converted to heroin within Afghanistan has to be estimated. Not all of the opium available for export is converted into heroin within Afghanistan. Significant amounts of opium and morphine are seized in the countries neighbouring Afghanistan, which indicates that more opium and morphine is trafficked than is demanded for use in these countries.[29]

All seizure data from Afghanistan and neighbouring countries is used for the estimation, which assumes that the shares converted opium converted into heroin in Afghanistan are reflected in the ratio of opium to heroin/morphine seizures in Afghanistan and its neighbouring countries.

With that, the following breakdown can be calculated.

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[28] Source.
[29] Of the countries neighbouring Afghanistan, Iran and Pakistan report significant consumption of unprocessed opium. The combined demand was estimated at $1,100 - 1,400$ tons per annum (MCN/UNODC Afghanistan opium survey report, 2018)

Figure 1: **Opiates in Afghanistan (rounded), by destination, 2018**
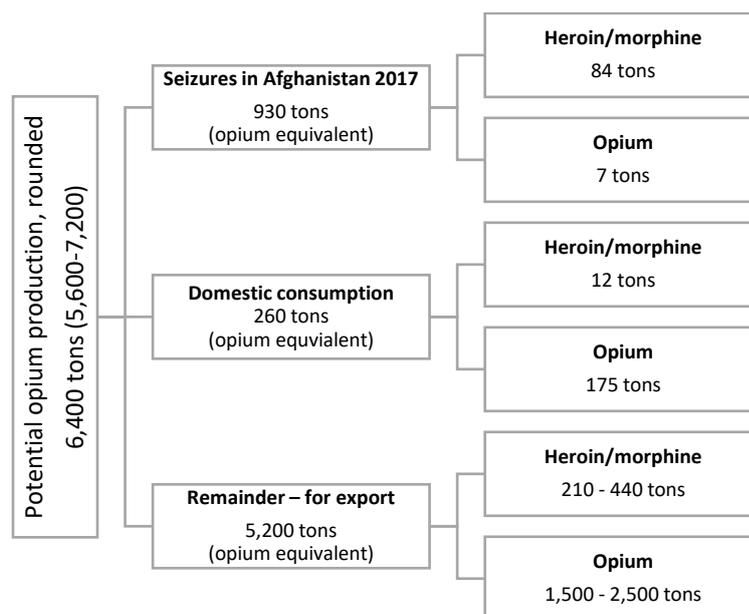
Seizures in 2017 are taken as a proxy for 2018 since the total amount of drugs seized in 2018 was not known at the time of calculation. Opium equivalent is the amount of opium needed for producing respective amounts of heroin/morphine calculated by a conversion factor. Consumption estimates are based on 2009 drug use data and are converted to opium equivalent with the conversion ratio used in that year. With the exception of potential opium production and potential exports, ranges have been omitted for brevity.

Destination countries are determined by qualitative and quantitative information collected by law enforcement and the criminal justice system. The export value is then given as the product of amounts of opium and heroin exported and the respective wholesale prices in destination countries.

In the case of Afghanistan, Iran, Pakistan and Tajikistan have been identified as first point of sale for Afghan residents.[30] The cross-border price was used to calculate the value of the potential exports of opium and opiate products.

The calculation of a possible range in the potential value of the Afghan opiate economy is based on different assumptions on purity that affect the conversion ratio from opium to heroin, on different price ranges and on the confidence intervals around the estimated opium production of the current year. The resulting ranges are not meant to provide a confidence interval or any other statistical measure, but rather they constitute a what-if analysis that offers results on the basis of different assumptions about the further processing of opium in Afghanistan.

Table 2 Estimated gross income from opiates, Afghanistan, 2018

	Gross value US$ (rounded)	Value in relation to GDP
Gross income from opiates (domestic consumption and exports)	1.2 – 2.2 billion	6 – 11%
Value of opiates potentially available for export	1.1 – 2.1 billion	5 – 10%
Value of domestic use market	90 million	0.45%

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[30] Northern route reference.

4.2. Underlying data

Opium poppy cultivation in Afghanistan is systematically monitored by UNODC and their national counterpart in Afghanistan[31] since 1994. The United States of America conducts a parallel survey on area under opium poppy cultivation.[32] UNODC has a permanent presence in the country, and the interest of the international community in the country for its relevance in global heroin production, allowed a large and consistent collection of data over almost 25 years.

UNODC databases contain annual information on area under cultivation with opium poppy, amounts of opium gum produced, amounts seized by law enforcement, and information on heroin production both in terms of the chemical processes and estimates on the shares of opium converted to heroin within the country.

The country collects monthly price data on the most important opium poppy products at different trade levels and conducts annual, questionnaire surveys in more than 1,500 villages to collect information on the socio-economic situation of farmers, their income and their expenditures on opium poppy cultivation.

4.2.1. Annual supply with opium

Annual opium production is estimated by UNODC and the Government of Afghanistan by using satellite imagery to estimate area under cultivation and by conducting measurements in the field to estimate average yield per hectare. UNODC/MCN reports detail the methodology to estimate opium cultivation.[33]

Figure 2 Estimated opium production in Afghanistan, 1994-2018, metric tons
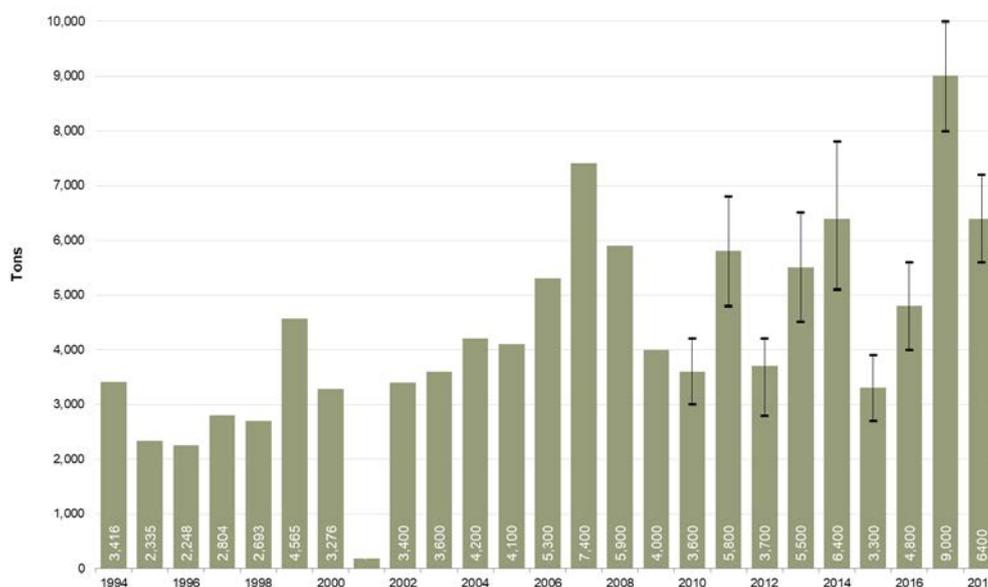
Source: MCN/UNODC Survey 2018

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[31] MCN, now NSIA
[32] SOURCE
[33] https://www.unodc.org/unodc/en/crop-monitoring/index.html?tag=Afghanistan

4.2.2. Converting opium to heroin

The amount of raw opium needed for producing pure heroin base depends on two main factors:[34]

- the average morphine content of opium, which is the base for heroin,
- the efficiency of the heroin laboratory in extracting morphine from opium and in converting the yielded morphine to pure heroin base (laboratory efficiency).

The conversion factor is needed to convert heroin and morphine seizures into opium equivalents, and to estimate how much heroin/morphine is yielded from the opium available for export.

Raw opium is converted into heroin base in two main steps: In the first step, morphine (and other alkaloids) are extracted from raw opium by adding hot water and chemicals such as calcium oxide and ammonium chloride.

In the second step, morphine base is converted to heroin base by adding precursor substances such as acetic anhydride. During this step, when it becomes pure heroin base, the morphine molecule gains two additional "acetyl groups" from the acetic anhydride. These additional molecules add weight to the morphine base: in an optimal scenario, when morphine is completely converted into pure heroin base, the heroin output is 1.29[35] times heavier than the morphine used as input.

Morphine content of opium is very well researched. Annual investigations undertaken from 2010 to 2015[36] resulted in an average morphine content of 12.35 per cent (95 per cent confidence interval ±0.71 per cent). However, only little is known about the laboratory efficiency of heroin laboratories in Afghanistan.

The laboratory efficiency depends on how well (or efficient) raw opium is converted into heroin base.[37] Given that heroin manufacturers are not well-trained chemists and do not work under optimal conditions, it is unlikely that the full potential of raw opium is used, and a certain percentage of potential morphine and heroin production is lost. The combined losses in both steps of the conversion process are reflected in "laboratory efficiency",[38] which is a measure of the ability of manufacturers to extract morphine from opium and to convert it into heroin. Laboratory efficiency can vary substantially, depending on factors such as the skills and efforts of the chemists producing the heroin, the availability and quality of precursor substances, and the equipment used.

The number of kilograms of raw opium needed to produce a kilogram of pure heroin base is thus given by the inverse of the product of

average morphine content (%) x chemical conversion ratio (1.29) x laboratory efficiency (%).

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[34] For more details on the heroin production process in Afghanistan, please see *Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005, pp. 11-31.*

[35] The factor of 1.29 is the ratio of the molecular weight of heroin to that of morphine (molecular weight of heroin and morphine are 369.42 and 285.34, respectively).

[36] In 2013 and 2014, UNODC/MCN also collected samples. These samples have been dried and stored and their analysis is in progress.

[37] Chemically it is Diacetylmorphine.

[38] Laboratory efficiency is expressed as the percentage of actual amount of pure heroin base produced over the theoretically possible, maximum output (potential amount).

To date, only one study[39] is available that has investigated laboratory efficiency in Afghanistan under local conditions. In this experiment, a laboratory efficiency[40] of 34 per cent was achieved in the conversion of raw opium of low quality (8.5 per cent morphine content) to pure heroin base. The study has some limitations, including a limited number of experiments performed by only two "heroin cooks". The main uncertainty surrounding the conversion ratio of opium to pure heroin base is thus due to a lack of information on the average efficiency of heroin laboratories in Afghanistan.

Using a 12.35 per cent morphine content[41] together with 34 per cent of laboratory efficiency results in a conversion ratio of 18.5:1 for opium to pure heroin base, meaning that 18.5 kilogrammes of opium are needed to produce one kilogramme of pure heroin base.

Table 3 Opium conversion to pure heroin base, assumptions and ratio[42]

	Value
Average morphine content of opium	12.35 per cent (±0.71 per cent)
Laboratory efficiency	34 per cent
Chemical constant	1.29
Conversion ratio to pure heroin base	18.5:1 (17.5:1 – 19.6:1)

Note: range of the conversion ratio reflects the 95% confidence interval of the average morphine content. The chemical constant reflects the weight morphine gains when being converted to heroin base.

4.2.3. *Purity of heroin of export quality*

Heroin base is hardly ever pure. At all stages of the conversion process impurities remain in the product and increase its volume. Heroin of higher purity is easier to traffic, which is one of the reasons why traffickers undertake the effort to purify the product. High quality heroin is predominantly found close to the source and at wholesale trade level. At later stages of the supply chain, at retail level, heroin is adulterated to increase its volume and thus its sales value.

Purity of heroin of export quality can vary greatly. Reported purities of heroin seized at the whole sale level of 2015 ranged between 20 per cent (15-25 per cent) in Kazakhstan, 25 to 60 per cent in Tajikistan (no point estimate provided), 70 per cent (60-80 per cent) in Italy and 70 per cent (65-85 per cent) in Lebanon. Turkey, an important transit country at the route between Afghanistan and Europe, reported 52 (24-84 per cent) in 2015.[43]

The data closest to the source are from the United States Drug Enforcement Agency, which conducted purity analyses of major seizures in Afghanistan.[44] The DEA reported an average purity of bulk seizures (reflecting export quality) of the highly-refined Afghan heroin of 76 per cent (based on 25 samples collected over four years). The average purity of the crude heroin base seized in Afghanistan was about 60 per cent (based on 21 samples over four years). DEA also received over 230 other samples of heroin

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[39] Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005, pp. 11-31.
[40] In the study, 70 kilograms of raw opium with 8.5% morphine content were converted to 2.9 kilograms of pure heroin hydrochloride, which is equivalent to 2.64 kilograms of pure heroin base – assuming no further losses.
[41] SOURCE
[42] Estimates have been updated with the latest available data and thus differ from the figures published in *"Afghanistan opium survey-cultivation and production report 2017"*.
[43] Source of all purities UNODC statistics - https://data.unodc.org/.
[44] US Drug Enforcement Administration Special Testing and Research Laboratory analysis – October 2017

from Afghanistan that were deemed to be "sham" or "junk" samples. These samples were not included in the averages presented.

Based on the available data, MCN/UNODC used a range of 50 -70 per cent purity for estimating the amount of heroin produced from the opium harvest and a laboratory efficiency of 34 per cent.

Table 4 Opium conversion to heroin of export quality, assumptions and ratio[45]

	100 per cent pure heroin	70 per cent purity	50 per cent purity
Conversion ratio to heroin of a certain quality	18.5:1 (17.5:1 – 19.6:1)	12.9:1 (12.2:1-13.7:1)	9.2:1 (8.7:1-9.8:1)

*The above is calculated by using the values in **Error! Reference source not found.**: 12.35% (±0.71%) morphine content; 34% laboratory efficiency.*

4.2.4. Seizures

Law enforcement reports annually to UNODC the amounts of heroin, opium and morphine seized. The purity of morphine and heroin is unknown, the 50-70 per cent purity assumption is thus applied. Seizures need to be converted into opium equivalents to make them comparable to opium production. UNODC releases annual seizure data of all reporting countries on its data portal.[46]

Seizures are often driven by chance and can vary strongly from year to year. To smooth these variations, a three-year moving average of seized amounts is used for establishing the shares. Heroin and morphine seizures are converted into opium equivalents by using the latest available conversion ratio estimate and purity assumptions.

Data presented is 3-year moving average of the percentage of heroin/morphine seizures (converted to opium equivalent) of total opiate seizures in Afghanistan and neighbouring countries with two different purity assumptions for the conversion of heroin/morphine to opium equivalents.

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[45] Estimates have been updated with the latest available data and thus differ from the figures published in *"Afghanistan opium survey-cultivation and production report 2017"*.
[46] https://dataunodc.un.org/drugs

Figure 3 Percentage of heroin/morphine seizures (in opium equivalents) of total opiate seizures, 2008 - 2017
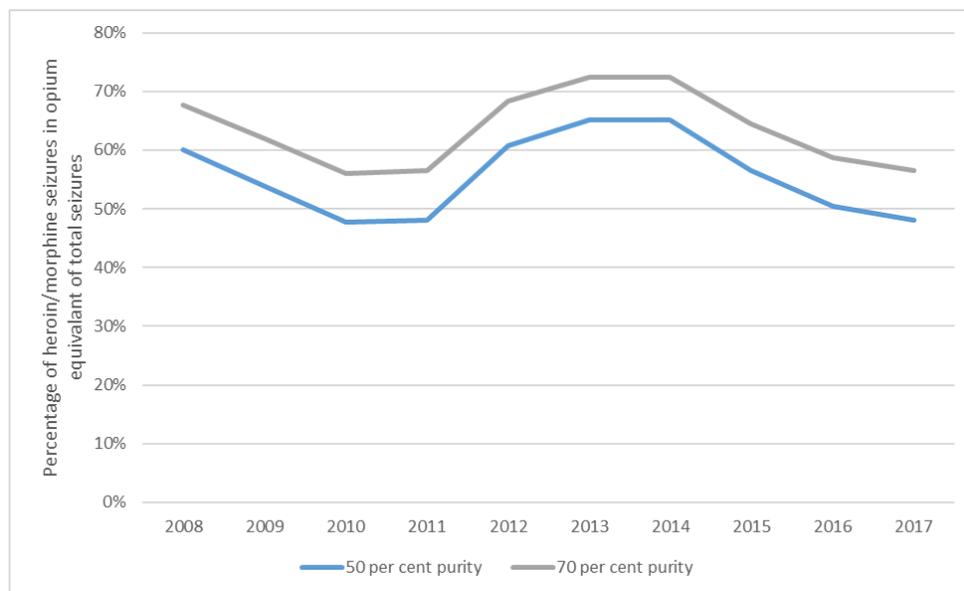
4.2.5. Prices

There are two main sources for prices. For domestic prices, the Afghanistan Ministry of Counternarcotics (MCN) and then the Afghanistan Ministry of Interior collect prices of opium, heroin and precursor substances on a monthly basis from key informants across the country. Prices are collected for different trade levels (farmer, wholesale trade and street level prices) and different qualities of product (as reported by key informants, in absence of chemical testing the actual purity or quality of the products is not known).

Figure 1: National average price of dry opium at farm-gate level from (June 2004 to June 2019)
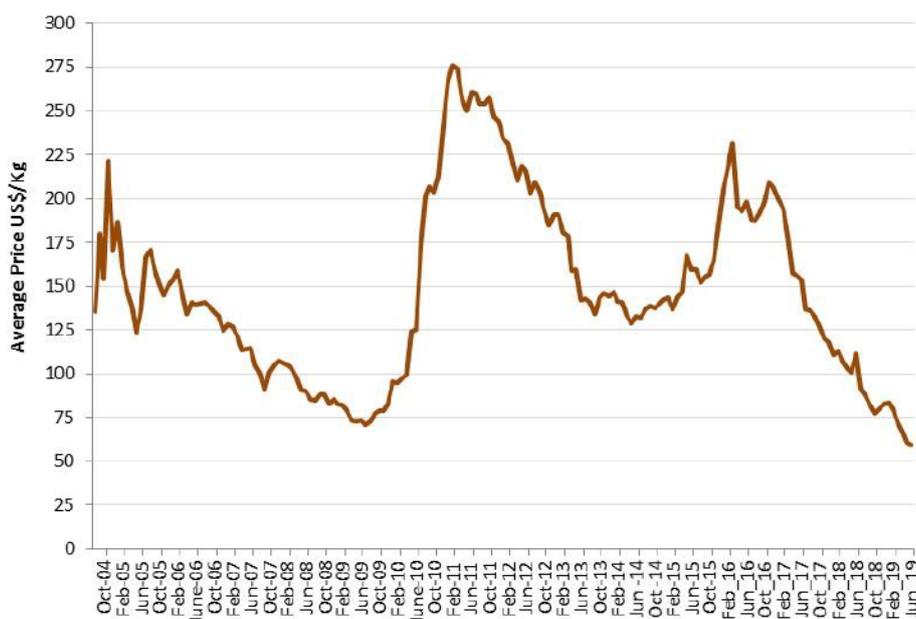
For international prices, annual data submitted by member states to UNODC is used, which is disseminated through UNODC's data portal.[47]

4.3. *Illicit net income*

To discuss illicit net income, two different production processes are considered: the cultivation and production of opium gum by opium poppy farmers (being a product of the agricultural sector) and the trafficking and further processing of opiates after the opium left the farm.

The illicit net income is gross income minus intermediate costs. Intermediate costs at the farmers' level are *inter alia* fertilisers and herbicides, irrigation costs (fuel or electricity for pumps), labour (ploughing, weeding and opium harvest), and seeds, 'opium taxes' paid to insurgent groups and others.

For trafficking and manufacturing, relevant costs components are transportation, labour (chemists, etc), bribes, security payments and taxes to insurgents, and chemicals to produce heroin.

The latest estimates on costs for opium cultivation and production (farmers' level) amounted to USD 630/hectare or USD 23/kg opium in 2017.[48] The cost estimate is based on interviews with 600 farmers in Afghanistan. The cost estimate is not exhaustive, it covered expenditures for the cost components mentioned above, but did for example not necessarily include 'free' labour of family members.

In the same year, the average price per kilogram of opium at the farm-gate amounted to USD 155/kg, leaving a net income of some USD 132kg/kilogram opium produced. In 2018, the farm-gate price dropped to USD 94/kg (due to over-supply in 2017), leaving a net income of USD 71/KG. With an estimated production of 6,400 tons of opium the overall, gross income of opium farmers ('farm-gate value' of opium) was US\$ 604 million (530 – 680 million), the net income, after subtracting the cost estimate of USD 23/kg opium, was USD 455 million.

Intermediate costs at the trafficking and manufacturing stage are less well researched as prices for final products, except for costs for precursor substances needed for producing heroin.

Acetic anhydride (AA) is an internationally controlled chemical that has many applications in the chemical industry. Since 2009, the Government of Afghanistan has prohibited the imports of acetic anhydride and has not granted any exceptional import or transit licenses for this chemical. Thus, the acetic anhydride found in Afghanistan is from illegal sources and all acetic anhydride needed for the production of heroin is imported.

Being such a crucial component of the heroin manufacturing process, acetic anhydride prices are closely monitored.[49] Acetic anhydride prices are variable and react to annual fluctuations of opium production: in 2017, an unprecedented amount of opium was produced, explaining the price hike that started earlier in that year (harvest time of opium starts in April and lasts until June).

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[47] https://dataunodc.un.org/
[48] MCN/UNODC Afghanistan opium survey 2017
[49] : UNODC and Afghanistan Ministry of Counter Narcotics, Afghanistan Opium Price Monitoring - Monthly report.

Figure 4 Acetic anhydride prices for different qualities, Afghanistan, 2016-2018
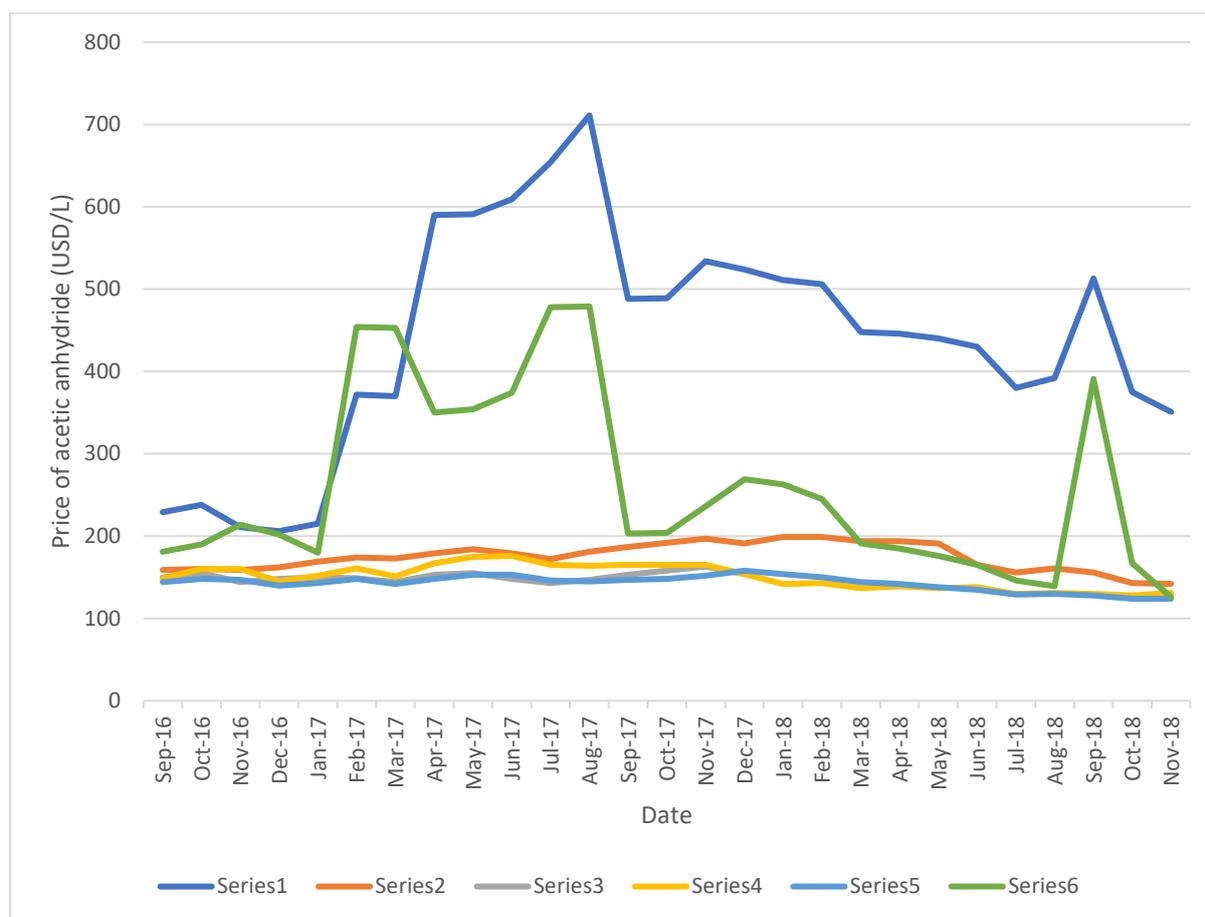
To produce 1 kilogram of pure heroin base, 1 litre of acetic anhydride is needed. [50] The price monitoring system collects prices for various qualities of AA, however, the qualities are an assessment of the traffickers and key informants reporting the prices, not based on a chemical analysis. The amount of 'street level' quality AA needed for producing heroin of export quality (heroin base of 50 – 70 per cent purity), is unknown.

As approximation, and to stay on the conservative side for the estimate of the net income from heroin production, 1 litre per kilogram of heroin/morphine is used and the prices for the best quality of AA are used as basis in the calculations.

For the 2018 harvest, the AA price used was USD 419/litre (based on a moving average of price data). With an estimated production of 222 – 450 tons of heroin for that year,[51] the value of imported AA amounted to USD 88 - 184 million.

The illicit net output of opiates production (accounting for imported AA) amounted to 1.1 – 2.0 billion in 2018. The value added generated after the farm-gate (further processing and trafficking of opiates), amounted to USD 0.5 – 1.3 billion.

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[50] US Drug Enforcement Administration Special Testing and Research Laboratory analysis – October 2017
[51] Some of the estimated heroin production is exported as morphine, but the ratio is not estimated due to the volatility of the morphine seizures.

4.4. Illicit financial flows

The above estimated the illicit gross and net output from opiate production in Afghanistan and discussed the intermediate costs to the extent they are known.

In this scheme, the illicit financial flows from the income generation stage are the value of the exported opiates (generating a corresponding illicit financial inflow) and the value of the imported precursor substances (generating an illicit outflow).

These financial flows represent values, not necessarily bank transactions. Precursor substances are traded in exchange for drugs, and informal payment systems, such as the hawala system, are heavily used for facilitating the transactions.

Once illicit income is generated it is used. If spent abroad, the corresponding operation constitutes an illicit financial flow. Only little is known about the amounts of net income staying within Afghanistan and the amounts moved abroad. The income of farmers and small-scale traffickers is believed to stay within the country: these are mostly members of impoverished populations, cultivating and trafficking opium poppy for subsistence.

However, cases of significant seizures (e.g., more than 500 kilogramme of product seized in a single case) point towards large scale operations where single individuals gain substantive net income that might be invested outside the country.[52] Likewise, findings of the Financial Transactions and Reports Analysis Center of Afghanistan (FinTRACA),[53] point towards large scale cross-border transactions.

More research is needed to identify how much of the illicit income is re-invested in the country (e.g., in real estate) or moved abroad. Key factors that might influence this ratio are the distribution of income of all actors within an illegal sectors, the financial stability and opacity of a country and risk attached to moving funds abroad.[54]

4.5. Results

The farm-gate value of opium production is the product of potential opium production at the national level multiplied by the weighted average farm-gate price of dry opium at harvest time. The upper and lower limits of the range of the farm-gate value were determined by using the upper and lower opium production estimate.

Table 5 Estimated gross and net output of the opiate economy, 2018

	Gross value US$ (rounded)	Value in relation to GDP
Illicit output (gross)	1.2 – 2.2 billion	6 – 11%
Illicit output (net)	1.1 – 2.0 billion	5 – 10%
Value of opiates potentially available for export	1.1 – 2.1 billion	5 – 10%
Value of domestic use market	90 million	0.45%

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[52] IDS UNDOC
[53] http://www.fintraca.gov.af/assets/Annual%20Report/FinTRACA_Annual%20Report_2018.pdf
[54] TRANSCRIME references.

Value of imported precursor substances	90 – 190 million	0.46 – 0.94%
Farm-gate value of opium	604 million (530 – 680 million)	3%
Value of production and trafficking after farm-gate to the border (net)	0.5 – 1.3 billion	2 – 7%

Note: Ranges are calculated based on different assumptions on the conversion of opium to morphine/heroin within Afghanistan and on the purity of the exported products.

Figure 5 GDP, by value added of the agricultural sector and other sectors, and estimated gross value of opiate exports, Afghanistan, (US$ billion) 2000-2018
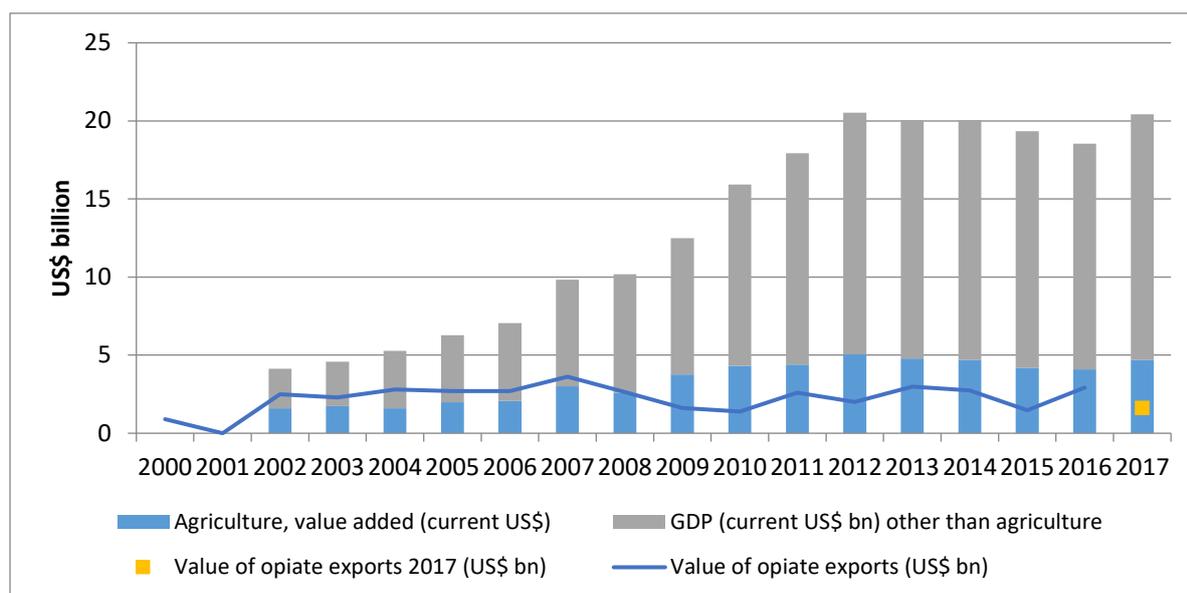
Figure 6 Farm-gate value of opium production in Afghanistan, 2008-2018 (Million US dollars)
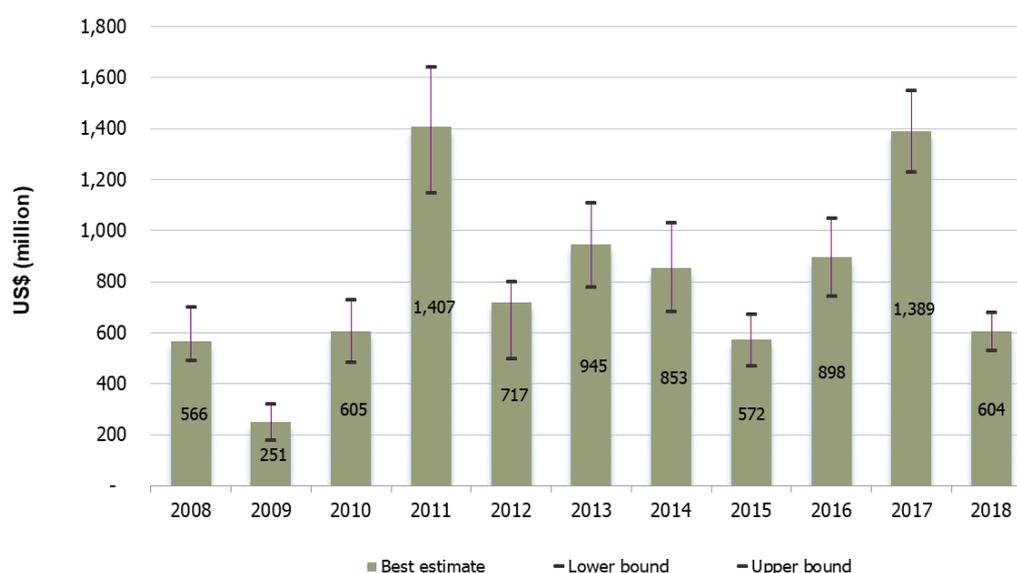
5. Discussion

This paper presented a framework for measuring illicit financial flows and results on the economy around the illicit opiate production in Afghanistan.

The framework has proven to be useful for assessing illicit financial flows. In its set-up it is compatible with existing statistical frameworks such as the National Accounts and Balance of Payments statistics. The distinction between income generation and income management allows for using statistics and estimates on illicit markets, such as supply, demand, price and seizure data, to approximate illicit financial flows that are originating directly in the trade with illegal goods and services.

After deducting costs, the illicit net income is an important measure for the profitability of illegal activities, and builds the basis for assessing the potential of illicit financial flows originating in the management of illicit net income.

However, challenges remain in data availability to measure net income in a comprehensive way and even more so in estimating the shares that remain within an economy and those that are invested abroad. More research is needed to develop a suitable data base and suitable methodologies that can assess these illicit financial flows.