OECD/EUROSTAT TASK FORCE

ON THE

TREATMENT OF EMISSION ALLOWANCES AND EMISSION PERMITS IN THE NATIONAL ACCOUNTS

FINAL REPORT

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Preamble

Tradable instruments that provide allowances or permissions to engage in an activity are a rapidly growing phenomenon around the world. Permits or allowances issued under an emissions trading scheme (ETS) are intended to limit emissions and be typically tradable either domestically or both domestically and internationally. Emissions trading schemes are market-based mechanisms which share characteristics with environmental taxes.

It's important to note before continuing that the two terms ' permits' and 'allowances' are often, and confusingly, used interchangeably in practice. The 2008 SNA (paragraph 17.363), for example, refers to permits that are used as a means of controlling total emissions but the statement could equally hold for allowances. To avoid confusion therefore, this report refers explicitly to "allowances" as instruments that do not need to be acquired before emissions occur and are designed to restrict quantities of emissions, whereas "permits" refer to instruments that must be acquired before emissions occur and do not necessarily directly restrict the quantity of emissions but rather they restrict the quantity of operators engaged in emission activities. In this context, notwithstanding the SNA reference to permits, the main focus of this report is on what is defined above as emission allowances.

Cap and trade schemes are the most common manifestation of emission allowance schemes, and form the main focus of discussion in this report. They are designed to regulate (fix) the quantity of emissions (total cap), and the price of the allowances fluctuate over their life in line with changes in demand and availability. Thus, the price signals are expected to encourage polluters to find the most cost effective way to reduce, or, even, using complementary mechanisms, such as Certified Emissions Reductions, offset their emissions. In theory, an efficient market is expected to develop; allowing companies to decide whether to invest in environment-friendly production technologies or to buy extra allowances.

The international business accounting community has already attempted to address the recording of emission allowances and permits under International Financing Reporting Standards, however the issued interpretation standard was quickly withdrawn and work continues with (as yet) no clear result in view. The appearance of these schemes has also created challenges for the national accounts. As described above the schemes share characteristics with environmental taxes, and the allowances and permits themselves can share characteristics with assets – they can be, for example, bought and sold by resident producers, non-resident producers, investment funds, households, NPISHs and other units[1]. The immediate questions that come to mind therefore are (i) should payments for permits and allowances be treated as taxes? And (ii) if the permits and allowances are assets, what type of assets are they?

But the issues to consider in a national accounting sense go further still. Permits and allowances can be provided for free, auctioned, or provided below a market price. Moreover, a variety of mechanisms exist by which allowances are made available. Cap and Trade mechanisms are perhaps the most common but mechanisms, such as the Clean Development Mechanism (CDM),

[1] Indeed, examples exist of environmental groups purchasing allowances with the specific intention of removing them from the market, so having a direct impact on the level of overall emissions.

also require consideration. Especially because many of these mechanisms result in allowances that are interchangeable, economically, with those made available via cap and trade schemes. How should these flows be considered? And what equivalence should there be, if any, between interchangeable allowances acquired via CDM schemes and those through conventional cap and trade schemes say? Furthermore governments are able to trade allocations of their Assigned Amount Units (AAUs) – the national ceilings for emissions established under the Kyoto protocol – amongst themselves; flows which need to be recorded in the national accounts.

Some of these issues were considered as part of the 2008 SNA process and the sixth meeting of the Advisory Expert Group (AEG) on National Accounts (November 2008) concluded the following (*but where references to permits in the bullet points below should be interpreted as allowances and permits, as described above):*

- ETS permits issued under cap-and-trade schemes should be recorded as taxes.
- The group favoured treating payments for permits as pre-paid taxes, paid as emissions took place but noted the implications for the measurement of government debt.
- There has been no recommendation on whether taxes and subsidies should be imputed when permits are issued without charge or at cost lower than the market price.
- Discussions did not reach a recommendation about how to record changes in the value of payments during their lives.
- No recommendations were reached for the treatment of other forms of emissions permits.

The key recommendation of the AEG however was to form a Task Force to further consider the treatment of emission allowances and permits in the national accounts. This report reflects the recommendations and deliberations of the Task Force, which met twice (in July and November 2009). Unfortunately, it was not possible for the Task Force to arrive at a consensus solution. The Task Force was split between two options; the first, which we will refer to as the 'split asset' approach and the second, referred to as the 'financial asset' approach. This, as the report demonstrates, reflects the fact that it is not possible to reconcile what are in essence two alternative and ultimately irreconcilable (but at the same time legitimate) views.

However, the Task Force was able to find common ground on some substantive issues. One important area where there was near unanimous support concerned the timing of the tax event where the majority of the TF came to the view that the tax event was when the emissions occurred, and, in consequence, this was the point at which taxes should be recorded; a position embodied in both of the two approaches referred to above. The difference in the two approaches concerns the values attributed to the taxes recorded. The financial asset approach sets the values as being consistent with the price of allowances (or emissions) when emissions occur and the other (the split-asset approach) sets the values as being consistent with the price of allowances when they were issued.

All Task Force Members recognised the importance of resolving the issue. As such the issue has been deferred to the ISWGNA who have been asked to recommend one of the options described in the report.

1. Executive Summary

The starting point of the Task Force was the 2008 SNA, which takes the view that the atmosphere is not considered as an asset. The SNA argues that this is because it is not possible to place a value on the atmosphere nor is it possible to enforce ownership rights in a way that can meaningfully allocate benefits from its use to owners. Whilst recognising and accepting these parameters some Task Force Members questioned the 2008 SNA position citing the fact that the existence of taxes and other measures designed to limit its use (and degradation) were sufficient evidence that the atmosphere had value, and argued that the question of whether the atmosphere is an asset should be the subject of future research.

Notwithstanding these qualifications and pointers to future research, the Task Force considered a number of recording options **for allowances** that are consistent with the 2008 SNA position on the atmosphere and that can be broadly categorised as follows: as non-produced non-financial assets; financial assets, and as two (split) assets, part non-produced and part financial. A fourth option, that has merit, but was not fully pursued by the Task Force itself is a variant of the financial asset approach that considers the assets as being issued by a supranational body – for international cap and trade schemes – and this is developed in more detail in this report.

The TF was split in its views, with some (6) preferring the financial asset approach and others (10) preferring the split asset approach (the Secretariat did not vote). In stating their preference many TF members recognized that their preferred solution was not ideal but was on balance pragmatic.

It's important to note that the TF focused almost exclusively on emission allowances, i.e. instruments that are required to be surrendered after emissions occur. The final part of this report considers the consequences of the TF deliberations on permits, i.e. instruments that are required by emitters before they are allowed to engage in activities that result in emissions. If schemes such as these exist or arise the SNA already provides some guidance for taxi and casino licenses. However the TF deliberations point to a potential need for some modification to the current SNA (paragraph 17.351); namely, to provide scope for accruing taxes over the entire period of activity even if governments do not recognise a liability to repay licensees in the case of a cancellation.

For convenience the two preferred options for the recording of emission allowances are presented in summary form below, together with summary observations:

Allowances as Financial assets

Allowances are financial assets[2] sold by governments (which therefore incur matching liabilities). At surrender the financial assets are returned to government in lieu of tax. Capital transfers[3], from

[2] The precise category of financial instrument was not settled – the task force discussion included the possibility of securities other than shares, other accounts receivable and payable, and a possible new category of instrument specifically for this case – but this could be straightforwardly resolved in follow-up.

government to acquiring units, equivalent to the market value of allowances, are imputed when government provides allowances for free. The tax recorded in respect of a single surrendered allowance is equivalent to the price of the allowance when the emissions occured. For multinational schemes an allowance originally issued in one country but surrendered in another will lead to either (a) a tax on production by a resident polluter to the R.O.W. or (b) a debt cancellation between the two governments. The Task Force did not form an opinion on which of the two approaches was preferable. The debt cancellation approach is arguably preferable, however, on the grounds that taxes recorded in the economy where the allowances are surrendered can be related to emissions occurring in the economy, and because the flows of recorded taxes are not affected by the problems caused by the 'indifference' of polluters to the allowances they surrender (described in more detail below).

The underlying principle for the financial asset approach is that the tax event occurs when emissions occur and that, until that point, transactions in the allowances are little different to those in other financial assets. The analogy with other financial assets is a strength of the financial asset approach in that it provides an intuitively simple approach to recording the flows. There are however some peculiarities of emission allowances that merit specific mention in this regard.

- At present, unlike conventional financial instruments, most allowances, for example most issued within the European ETS scheme, are provided for free. Whilst emission allowances that are sold at market prices will increase both financial liabilities and financial assets of government, meaning that the impact on net-debt is zero at the time of issue (just like conventional financial assets), allowances provided for free will increase both a government's net and gross debt. In this respect it's important to note that the financial asset approach is not dependent on any link between the instrument and the tax payment; in effect it treats the events as separate – the acquisition of the emission allowance as a financial asset by an emitter is merely a means like any other to pay a tax. However unlike conventional financial instruments, the value of the tax is directly linked to the value of the allowance. This creates a paradox of sorts: the value of the financial instrument is equal to the net present value of expected taxes, so, if the expected value of these taxes rises (in other words government expects to generate higher revenues) liabilities of government also rise. However whereas the allowances are included as liabilities of government in measures of gross and net debt, the expected tax revenues are not booked as assets. It highlights the different nature of contingences for taxes and liabilities in the financial asset approach, despite the strong links between the two.
- Moreover, with conventional financial instruments provided by government, any eventual difference between the issue price and the surrender price is realized at least in part as an interest payment by government, meaning an increase in general government expenditure. However, the financial asset approach treats the entire change in value of the allowance as a holding gain or loss. The consequence of this is that over a period of time (and where prices at issue and prices at emission vary) cumulative net-lending figures may not be reconcilable with changes in net debt, even after accounting for revaluations. In this regard it's instructive to consider an analogy. In a high-inflation country the government announces that its taxes will rise every year in line with inflation. To mitigate uncertainty

[3] The imputation of a subsidy was also considered but the TF expressed a preference for a capital transfer because not all recipients of allowances are necessarily producers or polluters.

to tax payers it creates a special bond that also rises in line with inflation and that can be surrendered to government at a time of the bondholder's choosing to settle taxes. In essence the scheme replicates that used for emissions allowances. The difference however is that the nominal interest payments made to reflect the index-linked nature of the bond would be reflected as general government expenditure but no equivalent payments are made with the financial asset approach. Doing so would help to reconcile any 'real' structural differences that may arise between cumulative net-lending and net-debt measures.

- An additional paradox is that if government provided as many allowances as the market needed for free, whenever the market needed them, government liabilities would eventually fall to zero. In other words, after a certain point, the more allowances government creates the lower its liabilities. This is a rather strange feature of emissions allowances. If government restricts the supply of allowances, so, creating a market for them and allocates them freely, government liabilities increase. If however government creates too much supply, driving market prices to zero, government liabilities are also zero. A similar scenario could be envisaged with conventional financial instruments, including cash, but the impact on the real economy would be very different. To some extent this paradox can be resolved by recognising that emission allowances are new and different types of financial instruments; which should not be interpreted in the same way as more conventional financial instruments.
- As financial instruments it's possible to argue that the allowances are only contingent liabilities of government as they only become payable if and when emissions occur, which is a contingent event.
- With a conventional government security government typically promises to pay a certain amount on or before a certain date. This remains the case even if government bars speculative trading and on-selling in the instrument; in other words government maintains a liability. It's interesting to note in this context therefore that if government provided allowances for free and barred on-selling, they would begin to look like permits, as opposed to allowances, with an effective 'market price' of zero. The fact that government bars on-selling would result in no monetary flows being recorded when the allowances were surrendered. In other words, it is probable that government's accounts would differ if it chose to allocate 100 allowances for free and barred on-selling, compared to allocations of the same 100 allowances to the same units but where on-selling was allowed. From the government's perspective both scenarios result in government allocating 100 allowances and promising to accept 100 allowances in respect of emissions.
- The idea that a capital transfer should be imputed for allowances provided for free is intuitively appealing, as in an open market, the beneficiaries have clearly received an asset of value. However the case for recording a capital transfer is not always clear cut and there are some special features of allowances that require careful consideration in this context. Assume for example that allowances were only needed by polluters in a specific sector of the economy, where government restricted the numbers of operators. If government then allocated free allowances, via common agreement, to the polluters, that they could use to trade amongst themselves and with speculators before surrendering them to government in respect of emissions undertaken, one could rationally argue that no capital transfers should be made to the recipients and indeed no taxes recorded at surrender, irrespective of what the market value of emissions was. In effect, government has imposed a ceiling for emissions and left it to the market to identify the most cost effective way of achieving a

reduction in emissions in line with this ceiling. In many respects this is how many of the ETSs in operation, at least partially, currently work

Important though the points are, it's equally important to note that the financial asset approach is fully compatible with national accounts rules and all of the scenarios and flows can be recorded coherently in the SNA framework. The key issue is how the flows can be interpreted in an economic sense, or rather, whether the interpretation is more robust than interpretations needed for the other approaches, in particular the split-asset approach.

In this context additional issues related to interpreting the flows that arise with the financial asset approach are described below. Chief amongst these, as will also be seen to be the case for the split-asset approach, relates to the variability of government accounts depending on the specific allowance surrendered by an emitter; referred to in this report as the problem of 'indifference'. In other words, what do the accounts show if an emitter that has two allowances, one issued by government A and one issued by government B, decides to surrender the allowance issued by A rather than B, bearing in mind that the emitter is indifferent to which of the two allowances it surrenders.

- For international schemes, liabilities on government balance sheets will be extinguished whenever an emitter surrenders an allowance issued by that government, even if the emitter is resident in a different territory. Emitters are generally indifferent to where the allowance was originally issued (and recorded as a liability) but this indifference can cause difficulties for international comparisons of debt. For example if an emitter resident in country A with two allowances - one issued by country A and one by country B - is required to surrender one allowance to the government of A, A's debt will fall if the company surrenders the allowance issued by A but B's will fall if it surrenders the allowance issued by B. Whilst this presents no inconsistencies for the fabric of the accounts, as a tax can be recorded in the country where the allowance was issued, it does present a presentational difficulty in the context of debt comparisons – although it is possible to conceive a new type of financial asset that is excluded from debt measures.
- It is possible to record CER and ERU allowances as financial assets but, for international schemes, this implies that governments where the effective emissions reductions occurred and who may not be party to the emissions trading scheme, may incur liabilities in association with the allowances; even if they do not recognise them as such. Again the accounts are able to reconcile this but the possibility does present presentational difficulties. Alternatives would be: to record the allowances as non-produced non-financial assets, but this would create an asset inconsistency between allowances gained via cap and trade schemes say and those via emission reduction mechanisms such as CERs; or, to record them as the liabilities of a government participating in the scheme even if the emissions do not occur in their territory and they are not the country where the allowance is surrendered.
- The consequences of indifference for the financial asset approach can however be mitigated (indeed overcome) if one considers and builds in attributes of the multinational nature of international trading schemes from the start, as shown below; although it is important to note that this 'modelled' approach was not discussed at

length at the Task Force meetings, and has only been developed in the process of drafting the final report as a way of assisting the ISWGNA in its deliberations.

An additional interpretability point is worth making. The cash received by government does not necessarily equal taxes recorded in respect of the allowance; which could present difficulties for tax policy analysts and indeed users of economic statistics that have an interest in the share of national income that is appropriated by government, or put more crudely, the cash taken by government out of the economy via taxation. Because the financial asset approach is not constrained by any specific relationship between the cash received and taxes recorded for allowances, significant movements in the prices of allowances, would require a different emphasis to be placed on traditional notions of taxes as a share of GDP.

It is also worth making the point that because polluters typically surrender allowances some time after emissions occurred (but taxes are recorded when emissions occur) the financial asset approach requires further imputations to reflect any changes in the value of the allowance between these two dates.

A model approach to deal with 'indifference' in the Financial Asset approach

One of the characteristics of international emissions cap and trade schemes (which results in the 'indifference' problem in the financial asset approach) is their collective nature; specifically, the fact that all governments operating in the scheme agree to accept allowances irrespective of where they were issued.

Multinational schemes work on the basis that a total level of allowances is set that are then allocated to countries on the basis of national quotas agreed within the scheme.

The pure financial asset approach, described above, works on the principal that the allowances issued by a particular government become solely the liabilities of that government. But, although cross country flows can be dealt with via debt cancellations or taxes to the R.O.W., this approach, to some extent, does not fully embody the collective nature of multinational schemes; in particular the fact that all governments agree to accept the allowances as settlement for emissions that occurred in their territory, and the fact that the scheme is designed to cap emissions at the multinational and not the national level.

If instead of focusing on emissions that occur within national boundaries the focus is on emissions at the multinational level it becomes possible to develop an accounting mechanism that can overcome problems caused by indifference. In other words, whenever a polluter emits they 'use' up a proportion of the internationally agreed total limit of emissions and not a proportion of the national levels.

Although on the surface this appears to be little different to the flows recorded with the conventional financial asset approach, the underlying principle, embodied in the fact that the cap is international, is that all governments own part of each individual allowance, in proportion to the shares they were allocated at the start of the scheme. As such, irrespective of which country issues

an allowance, liabilities of all participating countries rise (in line with their respective share of the allowance); which reflects the collective nature of the scheme.

In some respects an analogy can be made with a common currency such as the Euro. With the Euro, all Euro area countries have a collective liability for any Euro in circulation, irrespective of where it was originally issued.

The approach does have some additional consequences however. When an allowance is sold, the government that sells the allowance receives all of the cash but all governments share the liability; meaning that when a single allowance is sold net debt measures will be affected. In theory a capital transfer should be recorded from other governments to the government selling the allowance but the approach used here recommends that such a flow is not recorded for practical purposes. This reflects the fact that over the lifetime of an emissions trading scheme the capital transfer flows between governments will tend to net out, (and will exactly net out if prices in the allowances remain stable or if, in any accounting period, all governments issue allowances, as a percent of total allowances issued in that accounting period, in line with their allocated quota ratios). In any case the fact that net debt rises in other countries when one government issues an allowance arguably correctly reflects the collective nature of such international schemes, since, in practice, when any government issues an allowance it creates a liability of sorts for all other governments, who have agreed to accept the allowance as a means of settling the emissions of their resident polluters.

There are a number of benefits from looking at allowances in this way.

The first is that the indifference of polluters to the allowance they surrender no longer causes variability in the flows recorded in government accounts. In other words, whether a polluter surrenders an allowance issued in country A or country B to government B, the same flows are recorded in the accounts; which also means that comparisons of government liabilities better reflect their collective obligations in respect of their allowances.

The second concerns CER type mechanisms, where the recognition that all governments have liabilities in respect of the allowances, means that any new allowances created through CER type schemes can be allocated as liabilities (proportionally) to all governments participating in the scheme.

An additional benefit is more practical in nature. Such an approach simplifies the way in which flows can be estimated. Whatever approach is used, national accountants will typically know what allowances were surrendered for emissions in a particular accounting period some time after the accounts for that period were published. For the 'pure' financial asset approach, this means that at the time the accounts are prepared assumptions for the following two variables are needed: (i) the proportion of all allowances surrendered in the relevant economy as settlement for emissions in that accounting period that were originally issued in that economy; and (ii) the total number of allowances issued by the relevant economy but surrendered abroad. The assumptions themselves are not onerous but the point is that estimates based on these assumptions will be subject to revision, even if estimates for actual emissions (and so the number of allowances actually surrendered) are not. Taking a collective view of allowances (in other words the view that all

governments collectively share liabilities for all allowances) means that such revisions need not occur.

Allowances as Split assets

The logic of this approach is as follows. At issue, a financial asset is created, valued and fixed at the price of purchase from government, and, at any point in time, the difference between the market-price and the original purchase price is treated as a non-produced non-financial asset[4]. The non-produced non-financial asset is created through an other change in volume (OCV) in the accounts of the acquiring unit. A liability corresponding to the financial asset element is recorded in government's account and retains the same value (initial purchase price) throughout the life of the allowance. At surrender the non-financial part of the asset disappears as an OCV "other economic disappearance of non-produced assets" and the financial part of the asset is surrendered to government in lieu of a tax payment, which is recorded at the time emissions occur and at the value of the financial (part of the) asset.

Like the financial asset approach the split asset approach also provides challenges in interpreting the accounts; this is particularly so when considering the indifference of polluters to allowances they surrender.

- For the financial asset approach, variability in government's accounts caused by the indifference of a polluter in surrendering an allowance only becomes an issue when the polluter is able to surrender allowances issued in different countries. The split-asset approach is similarly affected by this indifference but, in addition, problems are also caused by the indifference of polluters to the original issue price of allowances. Consider an enterprise that acquires two allowances on the market, one of which was originally issued for free and the other for 100 units, with the intention of surrendering one of them at time t. If the enterprise surrendered the allowance that was initially issued for free recorded taxes would be zero. If however it surrendered the allowance that was initially issued for 100, recorded taxes would be 100 (net-lending and debt figures are also not indifferent to the indifference of polluters). This is clearly problematic for users, since, in both cases, whether from the perspective of government or the polluter, to all extents and purposes, the transactions are identical. Where there is only a single allowance, or a single class of allowances (i.e., all allowances are issued at the same price), this type of indifference is not an issue but in practice different cohorts of allowances exist.

The indifference of enterprises to the allowances they surrender has the potential to cause significantly more variability in government's accounts than the financial asset approach. As such, a variant of the split-asset approach 'the modelled split-asset approach' is developed that overcomes many of these difficulties by recognising the collective (multinational) nature of emissions schemes. Although developed with multinational schemes in mind it works equally well for pure national schemes. Like the modelled approach for financial assets the modelled

[4] As with the financial asset option, the precise classification of the non-produced non-financial asset was not determined, a proposal was made to classify them as transferable contracts but this could be subject to a follow-up.

approach for split-assets did not form part of the Task Force's deliberations but has been developed and included in this report to assist the ISWGNA.

The Task Force did not specify the exact nature of the financial part of the split asset. Two options exist. The first is a pre-payment of tax. There are however interpretative difficulties in this regard. First, the original purchaser of the allowance may not (and may never be) a polluter. In other words, the purchaser may never have a tax liability in relation to emissions. Secondly, the pre-payment of tax presupposes some certainty about the tax event (emissions) in the future, which may never occur. The alternative is to record the financial part of the asset as a conventional government security but with the added proviso that the value of the security never changes. Like the financial asset approach however, one can argue that the associated liability should be a contingent liability; again on the grounds that the liability is only realised when emissions occur.

Importantly, whether the financial part of the asset is a pre-payment of tax or a form of security, both offer some advantages when compared to the pure financial asset approach in the following regards: because the liability to government is exactly offset by the cash it received for the allowance, unlike the pure financial asset approach, total government net-debt is unaffected by changes in the value of the allowance (the whole split-asset, whose value changes through changes in the value of the non-produced non-financial asset). Equally, if government were to over supply the market with free allowances, the total liabilities of government would not be driven down towards zero, as, in the split asset approach, the financial parts of the allowances would retain their original value until surrender. In addition, unlike the financial asset approach, government's accounts are indifferent to whether the allowances can be sold on or not in a secondary market. In other words, the fact that a market price may or may not be determinable for the allowances does not change the level of taxes recorded.

Ultimately, whether the financial part of the split asset is defined as a pre-payment of tax or a conventional security makes little material difference to the flows recorded in the accounts, notwithstanding the respective caveats (i.e. a tax pre-payment for an uncertain tax event or a potentially contingent liability). The advantages and disadvantages in both cases are the same. However, as shown and explained below, in considering model based approaches that deal with 'indifference', the arguments shift in favour of recording the financial part of the asset as a conventional security (whose price is determined by formula).

Looking in isolation at the financial part of the split-asset approach therefore, there are both positives and negatives when compared to the pure financial asset approach. It is arguably preferable where some aspects of interpretation are concerned, such as those described immediately above, but it is unambiguously worse when considering the indifference of enterprises to the allowances they surrender; particularly in multinational schemes (although as described below the 'modelled split-asset approach' can overcome these).

An additional complication with the split-asset approach concerns the non-produced non-financial part of the allowance. The biggest difficulty here is the possibility that the allowance may have a negative value, which contradicts the definition of an asset representing a store of value to its owner (although the SNA does provide some potential precedents with transferable contracts). The idea that all free allowances can lead to non-produced non-financial assets is also challenging

in terms of interpretation. The split-asset approach, in effect, ignores transactions between government and holders of allowances provided for free. But there are strong arguments to suggest that capital transfers from government should be imputed to reflect the allocation of free allowances by government; although, as described above, in the discussion on financial assets there are also arguments which point against doing so.

Because the split-asset approach requires data on the original issue price and issuing country of each individual allowance it requires more detailed information than the financial asset approach. Unlike the financial asset approach however no additional calculations are needed to reflect changes in the value of allowances between the actual emission date and the surrender date.

With the split-asset approach the tax payment does not necessarily align with the emitter's (opportunity cost) view of what they have paid in tax, (based on the market price at the time of emissions) but taxes recorded are equal to cash receipts (which is an important consideration for some users of the accounts) and, like the financial asset approach, the tax is recorded at the time emissions occurred; meaning that the ultimate tax-payer is always the emitter.

A model approach to deal with 'indifference' in the Split-Asset approach

Although the split-asset approach has strong appeal to some users, particularly those interested in the share of national income appropriated by government in taxes, the problems presented by the indifference of polluters to the allowances they surrender creates considerable challenges for users, including those whose main interest is in tax statistics; an important constituency who are partly the reason why the split-asset was first developed. As described above, and shown in more detail in Section 5, the split-asset approach in its pure form has the potential to create tax time series that bear little relation to the quantity of emissions to which they supposedly relate for a given accounting period.

Dealing with this problem, and that caused by the indifference of polluters to the allowances they surrender more generally, can be tackled using the collective model approach described above for financial assets but, in doing so, it is necessary to relax the requirement that tax payments recorded for a ***single*** allowance are equal to the cash payments initially made for that same allowance when it was originally issued – although, importantly, for supporters of the split-asset approach, the modelled approach maintains a consistency between overall cash received and taxes recorded for ***all*** allowances.

In summary the modelled approach is designed on the basis that, in a given accounting period and given country, the same tax figures are recorded irrespective of where an allowance was originally issued and at what price, with the constraint that overall taxes recorded in a single country are equal to cash received over the period of the trading scheme.

In order to meet the first requirement, the approach needs to recognise the collective nature of allowances operating in multinational schemes – in other words the approach needs to embody, from the outset, the collective responsibility of all participating governments for all allowances.

With the modelled financial asset approach, when a single allowance is surrendered, all participating governments receive a tax payment (or a debt cancellation) in proportion to their share of the allowance. With the modelled split-asset approach however, the tax payments made to each participating government[5] are based on the cash individual governments received for the allowances they issued to the market. For example if half of the governments in the scheme allocated all of their allowances for free and the other half allocated all of their allowances at a market price, any surrender of a single allowance would need to ensure that taxes received (whether directly or from the R.O.W) by governments who issued their allowances for free were always recorded as zero. In other words the collective approach for split-asset allowances necessitates more than a simple calculation, based on a single country's share of overall allowances, to calculate tax flows.

There is more however. In order for recorded taxes in respect of a surrendered allowance to be the same in a given country irrespective of whether an allowance was originally issued for price X or price Y, it is clear that, for any single allowance, the link that explicitly ties the financial part of the split asset to its original issue price cannot be sustained. This means that, for a single allowance, the value of the financial part of the split-asset must be able to change and, in consequence, that the financial part of the asset cannot be classified as a pre-payment of tax. But with the constraint that, in any single country, over the lifetime an emissions trading scheme, total taxes recorded are equal to total cash received for total allowances issued.

As for the modelled financial asset approach the principle that underlies the modelled split-asset approach is that each government within the international scheme owns a part of each allowance. However the share owned by a single government is dependent on the cash received (and so liabilities owed) by each respective government and, so, information on the actual share of allowances a government is allocated in respect of an emissions trading scheme is ultimately not a necessary variable. A detailed description of the modelled split asset approach is provided in Section 5.

The strength of the modelled approach is that it removes interpretability difficulties caused by 'indifference' whilst maintaining a consistency between taxes recorded and emissions, and constraining total taxes to total cash received. It also does not require any further information than that required for the simple split-asset approach. In fact, because information on any single allowance is not required, the data demands are lower. The data set required is as follows:

- The total number of allowances that remain on the market at the start of an accounting period.
- The total number of allowances surrendered in each accounting period.
- The cash received for sales of allowances by A in each accounting period.
- The cash received for sales of all allowances by all countries in each accounting period.

[5] And debt-cancellation complicates the split-asset approach as it means that total taxes recorded may not equal total cash received.

- The number of allowances surrendered in A in each accounting period

- The stock of allowances includes any allowances gained via equivalent mechanisms such as CDMs (which are treated in the same way as allowances provided for free).

A further issue arose during the follow-up to the Task Force meetings – the statistical recording of Assigned Amount Units (AAUs), the ceilings established for countries under Kyoto. There have recently been major sales of these instruments between governments, as the deadline approaches for meeting Kyoto commitments, In many senses the recording of AAUs can be assimilated with those of emission allowances (since in some jurisdictions there is a conversion from one to the other), and the debate between a financial and non-financial asset approach is applicable. AAUs are treated most logically within a framework of recording an international system, since they arise from an international treaty. It is suggested that the recording of AAUs follow consequently from the recording of allowances, to ensure consistency.

Recommendations to the ISWGNA

The Task Force met on two occasions and so it is important to note that not all the information contained in this report was developed at the two meetings of the Task Force, but rather it was developed during drafting of this report. This is particularly relevant for the issue described throughout the report, for want of a better euphemism, as 'indifference' or, rather, the interpretative problems caused to the accounts by the indifference of polluters to the emission allowances they surrender.

Although the issue was raised in the second meeting of the Task Force it is fair to say that the Task Force was not able to fully consider the ramifications of 'indifference'; which affects both the financial asset approach and the split-asset approach to varying degrees.

For purely national schemes the financial approach is unaffected by indifference. For multinational schemes however, the financial asset approach is affected from a debt perspective and also in the treatment of allowances that are equivalent to cap and trade allowances but that are acquired via other mechanisms such as the CDM.

The split-asset approach is however affected, whether the scheme is purely national or multinational, and, moreover, the impact of indifference extends beyond just debt; with taxes and net-lending also being affected.

In an attempt to deal with the interpretative challenges presented by indifference, and to better assist the ISWGNA in its deliberations, the Task Force Secretariat has formulated two 'model' based approaches that attempt to embody, in their construction, the multinational nature of emission trading schemes and the collective commitments governments make in this regard to tackle emissions.

The ISWGNA should note however that the Task Force only had a limited opportunity to discuss these approaches and, so, they should view the categorisation and exposition of the problem as

reflecting primarily the position of the Secretariat. In this sense it's important to note that, despite the limited time available for comment, some Task Force members expressed an opinion that indifference presented no presentational difficulties for the accounts.

In formulating a recommendation therefore the ISWGNA is encouraged to consider the following criteria in arriving at its decision:

- Data requirements;
- International comparability;
- Economic interpretability;
- Consistency with other parts of the SNA; and
- The creation of a new sub-category of financial/non-financial asset, tax and transfers related to emission trading schemes.

2. Emission Trading Schemes

Many emission trading schemes are in their infancy and it is likely that they will evolve in the coming years; a point that was starkly illustrated at the 2009 Copenhagen Climate Summit[6]. This section provides some background to known existing schemes. It is not intended to be exhaustive but the array of schemes is thought to be sufficiently diverse to allow a thorough assessment of emission trading schemes more generally. Importantly, despite their diversity (vis-à-vis the types of emissions, the extent to which they are international, and the institutional set-up of the schemes) there is, encouragingly, a considerable degree of commonality between them. This suggests that it should be possible to develop an accounting treatment that works for all schemes that share the common characteristics of those currently in operation, including any evolutions that may occur.

It's important to note that the chief characteristic in relation to the emission schemes considered by the Task Force is that the allowances do not need to be purchased in advance of engaging in activities that lead to emissions. The TF recommendations apply to allowances that have to be provided retrospectively, typically, shortly after emissions have occurred. The final part of this report considers the consequences of the TF deliberations on permits required before engaging in the related activity; including taxi and casino licenses.

2.1 The EU Emission Trading Scheme

The EU Emission Trading Scheme (EU ETS) is a cap and trade scheme for carbon dioxide emissions that has been operational since 2005, and reflects the result of extensive consultations in the context of the European Climate Change Programme as well as within the Council of Ministers and the European Parliament.[7]

Phase 1 of the scheme started on 1st January 2005 and ended in December 2007. The phase covered carbon dioxide emissions from 11.400 major sources owned by 5.000 companies in six key industry sectors across Europe including energy, glass, paper, metal and cement. The sources of emissions covered accounted for about half of EU carbon dioxide emissions.

Under the EU emission trading programme 30 participating countries handle the allocation process of allowances. A key characteristic of the scheme thus far, and of particular relevance for the Task Force, has been the free allocation of allowances: at least 95% in Phase 1 and at least

[6] It has become clear since the last Task Force meeting that the timetable for agreement on an internationally binding climate change package is likely to take some time. At the same time, there have been some delays and set-backs to implementation of emission trading schemes in some countries.

[7] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for green house gas emissions allowance trading within the Community and amending Council Directive 96/61/EC.. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:275:0032:0046:EN:PDF, as amended.

90% in Phase 2 (2008-2012, see below); which coincides with the Kyoto Protocol first commitment period.[8] It is expected that around 4% of allowances will be auctioned in the second trading period.

The distribution of allowances in each Member State is based on guidance provided in Annex III of the ETS Directive. Member States communicate all the information related to the allocation of allowances through National Allocation Plans (NAP) for each trading period to the Commission for assessment.[9]

Phase 2, whose scope includes other greenhouse gases and not just carbon dioxide, started in 2008 and is scheduled to end in 2012. NAPs for all 27 EU Member States were assessed in October 2007, which were based on a targeted reduction of 6.5% of emissions compared to 2005 verified levels.

In Phase 2 emission "credits" can be used from two other mechanisms provided for by the Kyoto protocol: the Clean Development Mechanism (CDM) and the Joint Implementation (see below): Certified Emission Reductions (CERs) resulting from the former and Emission Reduction Units (ERUs) from the latter.

In Phase 3 (starting in 2013) a series of changes are foreseen following the revision of the EU ETS.[10] These changes include the centralization of the allocation process, increased auctioning of permits and the inclusion of other greenhouse gases. The revised ETS Directive[11] entered into force in June 2009.

The changes are designed to simplify and increase the harmonisation of the current EU ETS. An important change is the increased use of auctioning, which is to become the general principle for allocation. About 50% of allowances will be auctioned in 2013, with a view to full auctioning of allowances by 2027. Moreover, free allocations will be made according to harmonised Community rules. Member States will no longer produce NAPs and allowances will remain valid indefinitely (being replaced at 8-year intervals). There will also be a single Community registry for trading (which exists now, but EU Member State registries are being used until 2011).

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[8] Kyoto Protocol is an international agreement under the United Nations Framework Convention on Climate Change (UNFCCC), setting binding targets for 37 industrialised countries and the EU for greenhouse gas emissions (GHG). The targets aim at reducing total emissions by 5% over the period 2008-2012, compared to the base year 1990 level of emissions. The Kyoto Protocol was adopted in Kyoto, Japan in December 1997 and entered into force in February 2005.

[9] NAPs for the first trading period were prepared and submitted in 2004. An account of the results of the implementation of the EU ETS in the first trading period (sometimes referred to as a learning or trial period) can be found in: National Allocation Plans 2005-7: Do they Deliver?, Key Lessons for Phase II of the EU ETS. Climate Action Network (CAN) Europe.

[10] The Commission in 2000 launched the European Climate Change Programme (ECCP) responding to a request of the EU Council of Environment Ministers for putting forward a list of priority actions and policies for addressing the problem of climate change. The objective of the ECCP is to identify all the elements of an EU strategy for the implementation of the Kyoto protocol. The second ECCP was launched in 2005.

[11] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0063:0087:EN:PDF

In addition agreement was reached in 2008 to include aviation in the ETS from 2012 onwards[12].

2.2 The Kyoto protocol emission trading mechanisms

The Kyoto protocol (KP) established ceilings ("assigned amounts") for CO2 emissions of certain signatory countries for the period 2008-2012. The ceilings are then translated into tradable "Assigned Amount Units" (AAUs), following Article 17 of the protocol. It is possible for governments to sell AAUs to other governments (of certain signatory countries), and this has been observed in practice. Within the EU, there is an agreement that one AAU is equivalent to one EU allowance under the EU's Emission Trading System.

In addition to tradable emission permits operated under a cap and trade scheme, the KP provides for two other (so-called "flexible") mechanisms:

(a) The **Clean Development Mechanism** (CDM), defined in Article 2 of the KP, allows a country with an emission reduction or emission limitation commitment under the Protocol (Annex B Party) to implement an emission reduction project in developing countries. Countries involved in such projects acquire tradable certified emission reduction (CER) credits (equivalent to one tone of carbon dioxide) which are counted for meeting their Kyoto targets. The mechanism has started operating from the beginning of 2006 and has already registered more than 1650 projects. It is projected that it will produce CERs amounting to more than 2.9 billion tonnes of CO2 equivalent in the first commitment period (2008-2012).[13]

(b) The **Joint Implementation Mechanism** (JI), defined in Article 6 of KP, allows a country (of Annex B Party) with an emission reduction or emission limitation commitment under the Protocol to earn emission reduction units (ERU) from an emission reduction or emission removal project in another Annex B country. Each EUR is equivalent to one tonne of CO2 and can be counted for meeting the country's Kyoto target.[14]

2.3 National practices[15]

The US Acid Rain Program

The Acid Rain Program (ARP) is a cap and trade scheme for sulphur dioxide (SO2) emissions. The program started in early 1990s with a goal to reduce annual SO2 emissions by 10 million tons below their level in 1980. Phase I of the program (1995-2000) encompassed 110 coal-burning electric utility plants. Phase II, which started in 2000, reduced further the limit of emissions of these large emitting plants and also imposed restrictions on smaller, cleaner plants fired by coal, oil and gas.[16]

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[12] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:008:0003:0021:EN:PDF

[13] For more information see on: http://cdm.unfccc.int/index.html

[14] For more details see on: http://ji.unfccc.int/index.html

[15] This section draws on information contained in: J. Reinaud and Cedric Philibert, IEA, Emission Trading: Trends and Projections, OECD, December 2007.

[16] For details see on: http://www.epa.gov/airmarkets/progsregs/arp/basic.html#trading

Under the program, participating units are allocated allowances based on their historic fuel consumption and a specific emission rate. Each allowance is for a unit to emit 1 ton of SO2 during or after a specified year. For every ton of SO2 emitted in a year one allowance is withdrawn. Allowances may be bought, sold or banked and can be acquired by anyone participating in the program. Allowances are auctioned annually by the Environmental Protection Agency (EPA) which runs electronic allowance and emission registries and is responsible for verification of emission data.

The US Nitrogen oxide (NOx) program

This is a cap and trade scheme run by a partnership between federal and state governments. It first included nine northeast states in the late 1990s. The program was expanded in 2004 to include 19 states and the District of Columbia. The NOx program covers large industrial boilers (like petroleum refineries, pulp and paper plants and steel plants) and electric generating companies. Under the program states have fixed NOx budgets and each state may define the process of the allocation of allowances. EPA runs the allowance and emissions registries, verifies emissions data, and reconciles emissions and allowances at the end of each year.

The US Regional Greenhouse Gas Initiative (RGGI)

In 2005, seven Northeast States of the US agreed to implement the RGGI for the reduction of CO2 emissions. The program covers electricity generators, and coal, oil and gas fired power generation with a capacity of over 25MW. The program was planned to start in 2009 to 2018 with 3 year trading periods. The program is mandatory and the allocation method was to be determined by each participating State. Some of the participating States (like Massachusetts and New York) have committees to auction 100% of allowances and use the funds from trading allowances to finance energy efficiency, demand reduction and renewable energy programs.

The voluntary emission trading scheme of Japan

The voluntary emission trading scheme was first implemented in 2005 for CO2 emissions from companies in the food, breweries, pulp, and chemical industries. The participating companies set voluntarily emission reduction targets. In 2007, the Scheme covered 61 units. Allowances are allocated by the Japanese Ministry of Environment. The allocation process is based on average emissions in the reference period excluding the expected emission reductions defined by the participating company. It should be noted that voluntary and compulsory schemes are different with regard to the SNA where, by definition, taxes are not recorded in voluntary schemes.

The New South Wales Greenhouse Gas Abatement Scheme (NSW GGAS)

The annual trading periods of this regional scheme started in 2003. The scheme is mandatory for electricity generators and sellers as well as electricity retail license holders (benchmark participants) while large consumers may voluntarily manage their own GHG benchmarks. An annual State-wide benchmark is set for the electricity sector. The mandatory GHG benchmark is allocated to benchmark participants according to their share in the NSW demand for electricity. Compliance requires that emission abatement certificates be surrendered by benchmark participants.

The emission trading scheme of Norway

The scheme was implemented in 2005. It is similar to the EU ETS; however it is not mandatory for plants which are already taxed for CO2 emissions. Furthermore, in the Norwegian scheme the reserve allocation of allowances are fewer than in the EU ETS. The scheme covers several industries (energy production, mineral oil refining, coke production, production and process of iron and steel, cement, lime, glass and ceramics). The allocation of allowances is free for the period 2005-2007 and based on average emissions during the period 1998-2001. Norway implemented the EU Directive in 2008.

In addition to the national and regional initiatives described briefly above, *Australia* and *Canada* have announced the implementation of emission trading schemes. The Australian government has committed to implement an ETS scheme in 2010. The basic features of the scheme are outlined in the Green Paper of the Department of Climate Change, Carbon Pollution Reduction Scheme.[17]

Under the *Australian* scheme, the government would set a cap on the allowed total amount of carbon pollution and each year would issues permits up to the annual cap. Emitters should acquire a permit for every ton of greenhouse gas they emit. The pollution produced by each instalment will be monitored and verified. The permits will be surrendered by firms at the end of each year. Permits will generally be auctioned but certain categories of firms might receive some emissions permits for free.

In the Clean Air Regulatory Agenda, the *Canadian* government proposed a comprehensive framework for implement a mandatory program to reduce emissions of greenhouse gases and air pollutants. The industrial sectors covered by this program include, electricity generation produced by combustion, oil and gas, forest products, smelting and refining, iron and steel cement, lime and chemicals. The target for the reduction of emissions is based on an improvement of 6% each year for the period 2007-2010. The participating firms will be given several options to meet their legal obligations. Emission trading is one of these options including inter-firm trading, emission reduction credits from non-regulated activities, and certain credits from the Kyoto Protocol's CDM.[18]

2.4 Business accounting for emission permits and allowances

There has been ongoing work on international financial reporting standards for emission permits but this remains unresolved at present.

In December 2004, the IFRIC issued IFRIC 3 Emission Rights. IFRIC 3 specified that:

[17] See. http://www.climatechange.gov.au/greenpaper/factsheets/pubs/fs1.pdf. Also in: Peter Harper, The treatment of Emissions Trading Scheme (ETS) permits in the Australian System of National Accounts. Background document to AEG paper SNA/M1.08/06: Emission permits

[18] For details see on: http://www.ec.gc.ca/doc/media/m_124/toc_eng.htm

- emission rights (allowances) are intangible assets that should be recognised in the financial statements in accordance with IAS 38 Intangible Assets.

- when allowances are issued to a participant by government (or government agency) for less than their fair value, the difference between the amount paid (if any) and their fair value is a government grant that is accounted for in accordance IAS 20 Accounting for Government Grants and Disclosure of Government Assistance.

- as a participant produces emissions, it recognises a provision for its obligation to deliver allowances in accordance with IAS 37 Provisions, Contingent Liabilities and Contingent Assets. This provision is normally measured at the market value of the allowances needed to settle it.

At the June 2005 International Accounting Standards Board (IASB) meeting, the IASB voted to withdraw IFRIC 3. Consequently, the Board decided to take the time to conduct a broader assessment of the nature of the various volatilities resulting from the application of IFRIC 3 to a 'cap and trade' scheme and to consider whether and how it might be appropriate to amend existing standards to reduce or eliminate some of those volatilities.

The project to develop a revised approach to reporting of emission permits continues, with the current project timetable[19] indicating that an Exposure draft will be available by the end of 2010, with an interpretation published in 2011.

Whilst the recording of emission permits in business accounts may not be the same as that in national accounts, and so some care is needed in reading across – due to diverging principles on which the systems are based, in particular the amortisation of intangibles – it is important to take into account the use of business accounts as important sources for national accounts.

[19] See summaries of the project at http://www.iasplus.com/agenda/emissiontrading.htm.

3. The Task Force

3.1 Background

The 2008 SNA and the AEG refer to tradable instruments for emissions as permits. As described in Chapter 1, the Task Force felt it was important and instructive for the purposes of this report to differentiate between tradable instruments that provided permissions to engage in activities that resulted in emissions before engaging in those activities (referred to as permits by the Task Force) and instruments that could be surrendered to governments to satisfy legal requirements after emissions had occurred (referred to as allowances). The same distinction is not explicitly made in the 2008 SNA and, so, in what follows, citations of the mandate provided by the AEG and those parts of the 2008 SNA that refer to emission permits, shown below, should be interpreted as reflecting both allowances and permits. All following chapters refer to allowances and permits as set out in Chapter 1.

Permits (or allowances) issued under an emission trading scheme (ETS) (or cap and trade scheme) are addressed in paragraphs 17.363 to 366 of the 2008 SNA (shown below with relevant text underlined)[20]. In summary it recommends that payments for emission permits (and allowances) should be recorded as taxes, and once acquired, as assets of the permit holder, valued at their market price; consistent with the SNA principle that the atmosphere is not an economic asset.

> *17.363 Governments are increasingly turning to the issuing of emission permits as a means of controlling total emissions. <u>These permits do not involve the use of a natural asset</u> (there is no value placed on the atmosphere so it cannot be considered to be an economic asset) and are therefore classified as taxes even though the permitted "activity" is one of creating an externality. It is inherent in the concept that the permits will be tradable and that there will be an active market in them. <u>The permits therefore constitute assets</u> and should be valued at the market price for which they can be sold.*
>
> *17.364 The case of payments for discharging water may be considered as an example of the different possible ways of treating the payments.*
>
> *17.365 If a payment to discharge water is a fine intended to inhibit discharge, it should be treated as a fine.*
>
> *17.366 If a limited number of permits is issued with the intent to restrict discharges, <u>the payment should be treated as a tax if the medium into which the water is discharged is not regarded as an asset in the SNA</u>.*

This view was confirmed at the November 2008 AEG meeting, which concluded:

- ETS permits issued under cap-and-trade schemes should be recorded as taxes was confirmed.

[20] There is no specific reference to the treatment of emission trading schemes in the 2008 SNA , though some countries have established recording practices for active schemes

- The group favoured treating payments for permits as pre-paid taxes, paid as emissions took place but noted the implications for the measurement of government debt.

- There has been no recommendation on whether taxes and subsidies should be imputed when permits are issued without charge or at cost lower than the market price.

- Discussions did not reach a recommendation about how to record changes in the value of payments during their lives.

- No recommendations were reached for the treatment of other forms of emissions permits.

The recommendations and discussions left open a number of issues, therefore, namely:

a. What type of asset is the ETS permit or allowance?

b. What transactions should be recorded when a permit/allowance is issued?

c. What transactions should be recorded when a permit/allowance is surrendered?

d. In which period(s) should transactions be recorded?

e. How should changes in the value of permits/allowances be treated?

f. How should permits/allowances that are issued free or at a cost lower than market price be treated?

g. How should international trade in permits/allowances be recorded?

h. Should all emission permit/allowance schemes be recorded in the same way?

Emission permits/allowances are already sold in a number of countries and regions, and many other countries have already begun to formulate recommendations. But although there appears to be broad convergence on the main issues, some differences are already beginning to appear in the preferred statistical recording. Moreover other bodies such as the London Group are also investigating the issue. The pressing need for international guidance was recognized by the AEG who subsequently recommended the establishment of a Task Force of experts.

3.2 Mandate of the Task Force

The ISWGNA is the umbrella body for the OECD-Eurostat Task Force, whose remit will be to develop comprehensive guidelines for the treatment of ETS and similar types of emission permits related to the use of the environment as a sink function (air, water, etc).

The Task Force did not cover the general treatment of government permits, however the mandate was to (and this report attempts to also do that) provide clear explanations on the consistency of recording, and links drawn to other forms of licenses and permits issued by government, such as those related to the use of natural resources (water, timber, fish etc).

Specifically the aim of the Task Force was to:

1. Investigate the nature of all relevant aspects of emission permits granted under an ETS and any similar types of emission permits.

2. Develop comprehensive guidelines for recording the associated flows and stocks of emission permits (cap and trade schemes and related mechanisms, such as Joint Implementation and Clean Development Mechanisms) in the national accounts, consistent with the principles embodied in the SNA, the Balance of Payments manual and Government Finance Statistics and in the System of Environmental and Economic Accounting (SEEA).

3. Consider existing recommendations on the treatment of other licences and permits and justify any apparent divergence from them.

4. Collaborate with any other task force or working group addressing these issues, including the UN Committee of Experts on Environmental Economic Accounting (UNCEEA

3.3. Task Force Members

The OECD and Eurostat provided the Secretariat for the Task Force with members drawn from the following countries and institutions : Michael Davies, Australia; Karl Schwarz, Austria; Terry Moore, Canada; Zuzana Ptackova, Czech Republic; Thomas Olsen, Denmark; Mika Sainio, Finland; Jacques Magniez, France; Albert Braakmann, Germany; Kwang-Han Lee, Korea; Håvard Sjølie, Norway; Sasa Finc, Slovenia; Mehmet Kula, Turkey; Martin Kellaway, UK; Ryan Greenaway-McGrevy, US; Marc De Haan, London Group; Marta Rodriguez Vives, ECB; Madeleine Infeldt, EC-DG Environment; Manik Lal Shrestha,IMF; Maurice Nettley, OECD Tax Directorate.

4. Constraints and Considerations

A number of the options considered by the TF have been formulated with a strong focus on user needs. As stated above however, these needs can be competing, which complicates their evaluation. Before considering each of the options, therefore, it is instructive to articulate these needs and their drivers. In addition, it is also useful to consider four other issues that have a bearing on the evaluation of the options and indeed measurement more generally. These include: timing of taxes; equivalent schemes that work in tandem with cap and trade schemes such as the Clean Development Mechanism; the different implications of national and multinational schemes; and data availability.

As noted earlier, two issues were already agreed before the creation of the TF, and which are embodied in the 2008 SNA- that a tax should be recorded in relation to allowances; and that allowances should be treated as assets – and it is useful to provide some further commentary explaining the rationale and consequence of these decisions.

To illustrate the nature of the problem it is useful to first consider voluntary schemes as a way of fleshing out issues relevant in compulsory schemes. Consider a scheme developed by a country's electricity generators to reduce emissions in response to growing national concern and negative publicity on emissions. The generators agree collectively that national emissions need to fall by 5% in the following year. They agree via arbitration to set equitable quotas per generator, based in part on past emissions. They further create instruments (allowances) based on the national target for emissions, and these instruments can be traded between the operators in cases where one operator has exceeded its quota and another has not. They also agree on a set price for the allowances, and penalties (paid to agencies or initiatives that offset emissions when there are no surplus allowances). Clearly in such a scenario, as government is not involved, the payments for allowances are not taxes and the allowances themselves can have value. Assume now that the generators ask government to act as an independent intermediary in determining the quotas for each generator and as the body that handles the acquisitions of allowances between the generators. Again, there seems little to suggest that any transactions in relation to the allowances should be treated as a tax.

To be clear therefore, the scheme involves the allocation of transferable allowances which have potential realizable economic value but without any taxes being recorded in the system. At the same time the scheme implies no capital transfers or subsidies from government.

As a further development, the generators encourage other companies to join the scheme and again ask Government as an independent adjudicator to determine the quotas that should be allocated to individual companies and further decide to allow an open market where the allowances can be traded. Again, the role of Government is only as a facilitator and, so, there is little to suggest that any transactions in allowances should be considered as a tax, whether this is when they are purchased or when they are used to certify that a company has sufficient allowances for its emissions.

In many respects there is little to distinguish the situation above from one where government sets the national and company quotas, as part of a voluntary scheme, and provides tradable allowances

to each company for free in line with their allocated quota. But, in this case, even though the scheme is purely voluntary, the role of Government in allocating quotas to individual companies begins to raise questions about whether the allocation of the allowances is implicitly a capital transfer by government especially if the allocation of quotas is not considered equitable by all parties or if new producers receive no quotas at all (but where units dissatisfied with the allocations are pressurised to remain in the voluntary scheme for marketing and public relations reasons). The question of whether the allocation of free allowances should be treated as capital transfers raises the consequential question of whether taxes should be recorded as being paid to government when the allowances are surrendered. Although the fact that the schemes are in principal voluntary rules out recording taxes, for compulsory schemes the issue is at the fore.

For example, consider the case where government imposes an emissions target on a monopoly operator, and formalizes this process by providing allowances in line with the target and additional allowances that the operator will have to purchase, at a price set by government, if the company exceeds its permitted target. As before, (with voluntary schemes) there seems little to suggest that the allowances provided for free should be viewed as capital transfers from government (and in any case they have zero effective value) but enough to suggest that the taxes should be recorded when emissions above the target occur.

Consider now the case where government states that additional allowances can be purchased for X before emissions occur or after for 2X. Let's assume that the company anticipates emitting at least the equivalent of 5 allowances above its set target and, so, chooses to buy 5 allowances before emissions occur and 5 after, when it subsequently emits the equivalent of 10 allowances over its target; with all allowances surrendered to government at the time emissions occur.

The question here is what should be the value of taxes recorded? Should it be 15X (5X+2*5X), the actual amount paid by the operator for the additional allowances, or 20X the amount it would have had to pay if it purchased all the allowances at the time of surrender? Equally for the 5 allowances that government sold for X, should the allowances count as liabilities of government and if so what should their value be just before surrender 5X or 10X?

A further question arises if a new operator arrives on the market and government allows the (former monopoly) operator to sell its previously allocated free allowances to the new operator. Clearly these now have value. But whether a capital transfer should retrospectively be recorded in association with their transfer to the former monopoly is not clear, as, at the time of the transfer the allowances had zero market value. Further, should these free allowances also now be recorded as liabilities of government?

In closing this introduction it's perhaps instructive to return again to the example of voluntary schemes above and to draw a comparison with a compulsory scheme but where all allowances are allocated for free at the outset with the intention that they will always be allocated for free. In practice the two schemes may include exactly the same companies and exactly the same quotas and targets. Moreover, like the voluntary scheme, government receives no cash from operating the compulsory scheme. To all extent and purposes therefore, there is little to differentiate between the compulsory and voluntary scheme, particularly if all participating parties consider the allocation of allowances to be equitable.

With the voluntary scheme there exists little or no contention with the view that taxes should not be recorded when emissions occur nor with the view that there should not be a capital transfer from government to units in respect of the allocation of allowances. But with compulsory schemes both of these issues dominate. In considering the special case where governments provide all allowances for free therefore one can categorise the two preferences of the TF in the following way: The split-asset approach in effect records the flows between government and units as if they were voluntary – i.e. no capital transfers are imputed from government and no taxes are paid by emitters. The financial asset approach differs and imputes capital transfers as well as taxes.

Another interesting digression concerning voluntary schemes concerns the nature of the allowances, which can be traded between participating units. Clearly these cannot be financial assets as there is no counterpart liability. By extension therefore they must be non-produced non-financial assets. Although it's important not to create too strong an analogy between voluntary and compulsory schemes it is interesting to note that both the non-produced non-financial asset and split-asset approaches (where for the split-asset approach the entire value is a non-produced non-financial asset) treat the allowances in the same way for both voluntary and compulsory schemes.

4.1Allowances, Permits and taxes

The idea that payments for tradable permits or allowances issued by government should be treated as a tax is not altogether surprising. They raise the costs of production. More specifically the improvement of the environment is the policy objective that government seeks to achieve by implementing measures intended to alter the behaviour of economic agents. Thus, emission permits and allowances are the means to align social and private costs or to internalize the social costs created by the polluting activities. In this sense, it is a way for correcting market signals so that the polluter who is faced with a higher price per unit of production can either change the production method (by adopting environmentally friendly technologies) or reduce the amount of the activity that causes the pollution.[21] On the other hand, governments may use the revenues raised by the sale of emission permits and allowances to finance investment in renewable energy sources or reduce other distorting taxes.

Moreover, one only need consider the analogy with taxes on emissions or other environmental taxes, such as a petrol tax, to see that the payments themselves share close parallels with taxes

Albeit, at the risk of creating too strong an analogy between policy instruments available to governments it is instructive to explore how the accounts would look if more conventional approaches were used to tackle emissions. The most obvious being a straightforward tax levied by government on emissions at the time the emissions occurred.

Such an approach would result in government net-lending and tax revenues increasing at the time emissions took place, in line with the cash paid by polluters, with no change in either financial liabilities or net wealth of government before the emissions occurred. Although some care is needed in how far the analogy can be pursued for the following reasons:

[21] In fact a polluter will buy permits as long as the marginal cost of permits is lower than the marginal cost of removing emissions (by adopting clean technologies).

- the allowance approach is designed to limit emissions below a pre-defined level, unlike a straightforward tax; (although some straightforward taxes are designed to achieve the same ends of limiting activity rather than just raising revenue);
- for straightforward taxes, the market has little role in determining the tax rate, unlike emissions schemes, where the market has at least some impact on the price of allowances both at issue and surrender; and, finally;
- for emission schemes, governments typically receive cash in advance of the emissions.

One of the difficulties concerning emission allowances issued under cap and trade schemes relates to the fact that (certainly for the currently known schemes) the initial payment made by purchasers is *voluntary* – especially when the allowances are purchased by units that only purchase the allowances for speculative trading purposes or Green groups. As such one could argue that the *initial* payments for allowances by purchasers to governments should not be regarded as taxes on the grounds that (a) they are requited, as the purchasers acquire a tradable asset (allowances) and (b) because the purchase of the asset at any time before the surrender date can generally be considered to be *voluntary* on the part of the purchaser. However it is clear that a *compulsory* transfer of an object of value[22] (the allowance) to government is required at the surrender date – which falls within the scope of a tax.

This suggests that the tax event is in relation to the emissions of an emitter whose liability is settled at the surrender date, and not when the allowance was acquired[23];

4.2 Timing of the tax event

Taxi and casino licenses generally reflect tax payments that occur at the beginning of the accounting period[24] (i.e. pre-payments) and provide permission for licensees to engage in production for the duration of the licence period but are *compulsory* in that they must be held before activity begins. Emission allowances however are generally not needed during the period of production; they only need to be acquired at the end of any particular accounting period and producers can emit in the interim without actually holding a allowance – they only need to acquire allowances for the surrender date. Recording a tax as having been paid *voluntarily* by the original purchaser of the allowance, at the time of purchase, could mean taxes on emissions being recorded for an institution with no emissions.

Although the case for recording allowances as taxes at the time of auction appears stronger when the allowances are purchased entirely by the eventual final emitters it remains the case that the; acquisition at that point in time is *voluntary* and moreover that the tax event has not yet (and may

[22] Determining the value of this tax is one of the key differences between the split asset and financial asset approach. The financial asset approach considers the market value of the allowance at the point of surrender as being the value that should be recorded as a tax. The split-asset approach however takes the value of the allowances at issue, implicitly treating them as if they were standard government bonds whose redemption value is equal to their issue price.

[23] It might be noted that business accountants are pursuing an alternative possibility, that voluntary participation in an emissions trading scheme by itself would give rise to an obligation on an enterprise at the time the participation was confirmed.

[24] Though some may subsequently be tradable, even if under heavy restrictions.

never have) occurred. The compulsory element is in relation to emissions (and the underlying production) that occurred at a specific point in time. Moreover, allowances in practice can last many years or indeed indefinitely. These points suggests that, unlike taxi licenses, the point in time at which a tax should be recorded (the tax event) is the time when the underlying production giving rise to emissions occurred (see also paragraph 7.84). As this report shows, this is the view that the majority of Task Force members came to.

It's interesting to note the retrospective nature of emission trading schemes, vis-à-vis the requirement that allowances only need to be acquired and surrendered after emissions occur and to consider what would happen if governments required emitters to purchase allowances or permits before they began emitting. Under this scenario the analogy with taxi and casino licenses is stronger, albeit still not equivalent as taxi/casino licenses relates to activities over a particular time period, whereas emissions schemes relate to production (emission) at particular times. For consistency purposes therefore, it could be argued that, for permits or allowances where government has no obligation to repay the licensee in the event of a cancellation, and where the permits/allowances are tradable, a tax should be recorded at the point of purchase, with the permits and allowances recorded as non-produced non-financial assets. This however would imply a recommendation that all but one of the TF members advocated. Another important difference between taxi and casino licenses and emission allowances is the sheer scale of emission allowances and the fact that they are very tradable. This raises some questions about whether the 2008 SNA treatment for taxi and casino licenses should be reviewed concerning the timing of the recording of taxes; an issue which is returned to later in the report (see the Annex).

4.3 Emission allowances as assets

The treatment of taxi and casino licences provides some guidance on the possible options for recording emission allowances. Licenses with a validity of several years are recorded as non-produced non-financial assets of the licensee if government does not recognize a liability to repay the licensee in the case of a cancellation and as financial assets (other accounts receivable/payable) otherwise.

However, again, some care is needed in how far one takes the analogy. Taxi and casino permits etc are tradable permits to restrict activity and a tax on production (payments to operate). They can be pre-paid. In this sense they differ from taxes on pollution related to allowances as, in principle, taxes on pollution can't be pre-paid as the tax event (the emission) is not guaranteed to occur.

Further none of the emission schemes identified by the TF provide an obligation for government to repay the "licensee" in the case of cancellation suggesting that the allowances cannot be treated as financial assets. On the other hand, it is clear that governments have an obligation to accept the allowances at surrender, suggesting that they may be treated as financial assets.

4.4 Price of the tax event

The size of trade in emission permits is already significant, and is likely to grow in the future if more countries adopt similar mechanisms. This implies significant transfers, implicit or otherwise,

from the market to government. Not surprisingly this has raised concern amongst fiscal analysts about the potential impact any recommendation has on the government accounts, in particular net lending/net borrowing, government debt and the tax burden. These measures will be affected in various ways by the different proposals examined by the Task Force. In this respect, the issues of importance to users and analysts of government statistics concern the potential that any solution has to cause (although, at the same time, it's important to note that scope exists for definitions of debt, and arguably even taxes, that exclude flows related to emission allowances):

- differences in cash received by governments and recorded taxes
- impact on government debt, and
- volatility in tax and debt statistics

Many of the options have been specifically designed with these needs in mind, for example the split-asset approach has been formulated to provide equality between cash received by government and taxes recorded over the lifetime of allowances. But, important as the government accounts are, it is also important that one keeps in mind the perspective of the emitter, and the tradable nature of the allowances and indeed the non-emitters who may hold and trade allowances. From an emitter's perspective, the acquisition of allowances from another non-government unit, on the day that they are required to *compulsorily* surrender allowances may, at least from an *opportunity cost* perspective, be considered by them as a tax on production, valued at the market price of the allowances at that time. Indeed many allowances are purchased *voluntarily* by financial enterprises for speculation, meaning that the cash paid by emitters for allowances will not necessarily (probably rarely) be equivalent to the cash received by governments, nor will the timing of these transactions coincide (sale of an allowances by government and purchase of an allowance by a final emitter). This is a natural consequence of the fact that, unlike other taxes, it is the market that ultimately determines the price of allowances at the time of emission and surrender.

In essence, even if there is agreement that taxes should be recorded at the time emissions occur, two choices exist for as the basis for recording the values of taxes paid at that time: the values at acquisition and the values at emission. Deciding between the two was one of the fundamental issues faced by the Task Force.

Opportunity Costs at Surrender

Whilst the 'opportunity cost' perspective at the time of surrender is valid, and it is referred to throughout the document, it is important, all the same, not to oversell the argument. The nature of emission schemes via auctions for example is that all enterprises have an opportunity to purchase emissions allowances at that point in time. The fact that some emitters may choose not to do so may reflect their view that the net present value of emissions allowances when they may require them is the same or less than the issue price. Other enterprises may take a different view of course. Certainly the SNA already offers an example in this context with taxi and casino licenses where government accepts a contingent liability to reimburse the licenses in the event of cancellation. For these licenses the tax payable recorded in a given year is set (calculated) when the permit is issued by government. The fact that an enterprise that subsequently purchases the asset from the original license holder for a higher or lower price than issue price of the allowance makes no difference to the value of taxes recorded.

But it's important to note that even though government sells permits via an auction, at that point in time, the payments themselves are not compulsory – purchasers, including emitters, have a choice based on their assessment of risks.

One final point is required here. In practice the surrender date and the emissions date are rarely the same. As such in practice the real opportunity cost to the polluter will be the value of the allowance at the surrender and not the emissions date. This means that, like the split-asset approach, the financial asset approach will also not reflect the opportunity cost of polluters in valuations of taxes.

4.5 Surrender date or date of pollution?

The Task Force expressed a general preference for recording a tax at the point emissions occur. This links the tax firmly to the period over which the related production was undertaken.

However the TF recognized that in practice there is often a delay between the period of emission and the point at which emission allowances must be surrendered. This delay may overlap two accounting periods, and thereby raises practical recording issues but no different to those that occurs for many other taxes.

4.6 Equivalent non cap and trade scheme allowances

Allowances gained via CDMs (CERs) or JIs (ERUs) result from actions undertaken that result in emission reductions in another country. In principle there is no effective limit on these (other than the de facto limit of zero global emissions), although, in practice, there are some constraints on the numbers that can be surrendered Moreover the allowances themselves, certainly for the two mechanisms in question, are not issued by one single government.

Like standard emission allowances issued via cap and trade schemes, CERs and ERUs are tradable and, so, following the same logic, are economic assets.

The important issue however is that, from an emitter's perspective, there is an indifference as to whether CERs/ERUs or standard emission allowances are purchased, as both can be used to

extinguish obligations arising from emissions. This suggests that it would be desirable, although not essential, that the classification of assets for CERs or ERUs is the same as that for standard emission allowances.

It's useful to elaborate a little on the possible treatments for CER/ERUs. In principle the mechanisms result in the creation of an allowance(s) (once certified) when a company engages in a project in country that results in a certified reduction in emissions. The first point to note is that, in general, the activity involved in generating the allowance is, in normal circumstances, not compulsory or requited. Companies are not forced to engage in these projects.

The second point to note is that there is generally no restriction on the type of company that may be involved in such schemes. In other words, companies in sectors with negligible emissions, such as financial services, may participate, organize, or fund such initiatives with the specific objective of acquiring an asset that may be sold to polluters.

The third point to note reflects the international dimension of the allowances. For multinational schemes, such as the Kyoto mechanism, the certification of the reductions does not appear to rest with a specific government. The allowances however can be surrendered to any government participating in the scheme, despite the fact that the government in question would have received no cash in connection with the issuance of the allowance. In this sense it's important to note that the treatment of allowances as financial assets, combined with the difficulty in identifying a specific issuing government, impacts on determining which government holds liabilities in relation to the allowances.

For example a multinational enterprise headquartered in country A may engage in an emissions reductions project in country B that is not a signatory to the emissions reductions scheme, to acquire allowances it plans to surrender for emissions of affiliates in country C or country D. If the allowance is recorded as a financial asset issued by a particular government, which of A, B, C or D should it be? There appears to be little reason to record it as an eventual liability of government A; especially as A may not necessarily be a country operating within the international scheme. The same is true of B; recalling that government B is not a signatory to the scheme. Because C and D are both countries that operate within the scheme these are clearly better candidates to consider as countries where the allowance was issued. But the problem here is that, at the time the allowance was acquired by the multinational headquartered in A, it may not have known in which of the two countries it would eventually surrender the allowance; making it difficult to record the allowance as a financial liability of either C or D.

Whilst it is technically possible within the accounting framework to record the assets as being issued by B, on the grounds that they received the 'benefits' of reduced emissions, to do so would create purely artificial accounting instruments. The argument suggests therefore that if CDM type allowances, operated within multinational schemes, are to be recorded as financial assets they must be considered as being financial assets of some international body and not as the liability of a single government.

Note that this does not imply that the same holds if the scheme is purely national. In the above example the multinational would only be able to surrender the allowance in C say, which would also be the country that certifies the scheme, and, under this circumstance (a

purely national scheme), one can envisage the allowance as being recorded as the financial asset/liability of a single government, (C).

4.7 National versus multinational schemes

The discussion above concerning equivalent schemes that work in tandem with cap and trade schemes highlights an important factor – namely a consideration of the preferred option for a purely national scheme may not result in the same conclusions that one might draw in the context of multinational schemes. For example, in a purely national scheme, there would be little difficulty in recording CERs as financial assets or non-produced financial assets. However for a multinational scheme it is difficult to adopt the former approach unless the allowances are issued by a multinational agency.

Ideally, the preferred solution should treat all allowances in the same way irrespective of whether the scheme is national or international, and, in particular, it should work in such a way that little impact was felt on the accounts if a country operating its own national scheme subsequently decided to join a multinational scheme.

4.8 Data Availability

The TF was not able to obtain significant information on data outside of the EU emissions trading scheme. However, given the extent of the EU scheme, this could be seen as a good "test case" for the likelihood of sufficient data becoming available in other schemes.

The EU registry system (CITL)

The Community Independent Transaction Log (CITL) is the central EU registry, which along with Member States' registries as required by EU ETS Directive 2003/87/EC, entered into force on 25 October 2003. The aim of the EU Registry system is to insure 'the accurate accounting, issue, holding, transfer and surrender of EU allowances'. The CITL connects the Member State registries and maintains records of all transactions in allowances within the scheme.

All participants (operators) as well as those involved in the trading of allowances (including those outside the scheme), are required to have accounts in the Member State registries. All traded allowances are numbered and thus all transactions in allowances are traced from issue to surrender. Allowances are surrendered only by the operators participating in the scheme.

When allowances are allocated to participating operators (through National Allocation Plans, NAPs), the CITL checks if the amount transferred is equal to the amount allocated for that year by the national allocation plan as approved by the EU: (quantity of EUAs provided to operators)

When an operator decides to buy EUAs from another operator, the CITL checks if the originating and destination accounts are really holding accounts and that the allowances belong to the current period.

In January all operators prepare their reports on the basis of emissions in the previous year. The quantity of emissions is verified and enters the registry (before 31 March). The operator is required to surrender a number of allowances equal to the verified tons of emissions. The required amount of allowances is transferred to the government account.

The European Climate exchange (ECX)

The European Climate Exchange (ECX) is the marketplace for trading carbon dioxide emissions in Europe and internationally. ECX currently trades two types of credit: EU allowances (EUAs) and Certified Emissions reductions (CERs).

Trading on ECX began in April 2005, when futures contracts launched on European carbon dioxide emissions, known as EU Allowances, with options on EUAs following in October 2006. Futures and Options on CERs were introduced in 2008. In 2009, two new spot-like contracts were added, the EUA and CER Daily Futures contracts.

ECX carbon contracts are listed for trading on ICE Futures Europe (the former International Petroleum Exchange). ECX and ICE Futures Europe have a partnership whereby ECX manages the product development and marketing of its emissions contracts and ICE lists those contracts on its electronic trading platform. All contracts are cleared by ICE Clear Europe, enjoy standardised terms and are regulated by the UK's Financial Services Authority (FSA).

Over 100 leading global businesses have signed up for membership to trade ECX emissions products. In addition, several thousand traders around the world have access to the ECX emissions market on ICE Futures Europe via banks and brokers.

ECX is a member of the Climate Exchange Plc group of companies. Other member companies include the Chicago Climate Exchange (CCX) and the Chicago Climate Futures Exchange (CCFE). Climate Exchange Plc (CLE) is listed on the AIM market of the London Stock Exchange. ECX offices are located in London.

The Bluenext and Nord Pool exchanges are both a source of information on the spot prices for trading EUAs.

5. Task Force Options for Emission Allowances

This section describes in turn each of the options formulated and considered by the Task Force. It considers each in relation to two scenarios.

- Purely domestic mechanisms – where the allowances issued by a government are only surrendered to and accepted by the same government.
- Multinational mechanisms – where the allowances issued by more than one government can be surrendered to and accepted by any issuing government.

In both cases the main focus is on allowances issued via cap and trade schemes but their consistency with equivalent allowances, such as those issued by CDMs, is also an important issue.

The key issue that ultimately determines the treatment of transactions related to allowances is the nature of the emission allowance asset. The SNA provides for 3 possibilities: (a) a non-produced non-financial asset, (b) a financial asset, and (c) split (or two) assets (part financial asset, part non-produced non-financial asset). The following considers each possibility in turn, before summarising and comparing the merits and disadvantages of each in a concluding section. In order to provide an exhaustive and balanced assessment of each option there will be some repetition in the assessments. Although slightly cumbersome, this is deliberate as it allows each option to be assessed in isolation.

An important common point to consider for all of the options presented below concerns the treatment of allowances issued for free, or below market price, (which is currently largely the case), in particular whether and how any implicit transactions between government(s) and allowance acquirers should be recorded.

Examples

For each of the options presented below some simple worked examples are included that attempt to illustrate how the flows are recorded in the accounts using that scheme. For clarity the examples are described below only with the worked tables shown in each of the sections that discuss the various options. In all examples, again for simplicity, it is assumed that the surrender date is equivalent to the time at which emissions occurred.

Worked Example 1:

Government X sells 100 allowances of value 50 to corporation Y in Year 1. The allowances are valid for 50 years and the sale by government in year 1 reflects targeted emissions over that 50 year period. In year 2 the value of allowances falls to 40 and corporation Z buys one allowance from corporation Y. Corporation Y surrenders 1 allowance in years 1 and 2 and Corporation Z surrenders 1 allowance in year 2.

Worked Example 2:

The flows reflect the following transactions: Government X provides 50 allowances with a market price of 10 for free in Year 1 to corporation Y. In year 2 it provides 25 for free and sells 25 for a market price of 10 to corporation Y In year 3 it sells 50 allowances for a market price of 10 to corporation Y. In each year Y surrenders 10 allowances to X.

Two scenarios are developed: In the first (2a) no imputations are made for the free allowances (note that this is not an option for the financial asset approach). In the second, (2b), a subsidy is imputed together with a corresponding tax payment.

Worked Example 3: (Financial asset, split asset, and multinational scheme approaches only)

An international agreement deems that allowances are allocated to countries on an 'equitable' per capita basis. The agreement sets a global threshold of emissions in a given 5 year period of 1000 units (allowances) and allocates these to countries on a per capita basis. The global population is 1000,000. Country A, which has emissions of 50 units in the year preceding the agreement and a population of 100,000, receives 10% of the allowances. Country B with emissions of 10 units and a population of 200,000 receives 20% of the allowances. Clearly the nature of the scheme means that flows will move from (richer) higher emitting countries (A) to (poorer) lower emitting countries (B). Each allowance is worth 1 unit of common currency. Assuming the following:

- Neither country A nor B change their annual emissions over the next 5 years;
- Allowances (worth 1 per unit) are surrendered in the year in which they occur
- All allowances are sold by governments in the first year
- All 100 allowances issued by government A are surrendered to government A in the first two years. That only allowances issued by B are surrendered to government B.
- Allowances issued by other governments excluding B are surrendered by domestic enterprises in A to government A in years 3,4 and 5;
- And that all remaining allowances of B are surrendered in year 5.

Option (a): The Non-Produced Non-Financial Asset approach

This is arguably one of the simplest statistical approaches. When a non-produced non-financial asset is created in the balance sheets of the initial unit acquiring the allowance, via OCV, the transactions closely follow those recorded in the case of taxi licenses, and any cash payment from the unit to government reflects a tax payment at the time the payment is made. In between the issue and surrender date the allowance can be bought and sold by units with the flows recorded at their transaction prices, with changes in the value of the non-produced non-financial asset being recorded as holding gains or losses (revaluation account). At the surrender date, whichever unit owns the allowance surrenders it to government, and the value of the asset is fully removed by another OCV.

Although appealing, particularly because of its simplicity, it is important not to stretch the analogy with taxi or casino licenses too far. For these latter forms of license a producer is obliged to purchase them before engaging in production, so fulfilling the compulsory and unrequited criteria that they be recorded as taxes. However for all of the cap and trade schemes currently in operation, producers are not required to hold them before or at the time of activity (pollution). They are merely required to hold a sufficient quantity of allowances, to meet their obligations on emissions made, at the time of surrender.

Pure National Scheme

Recording the receipt by government of a cash payment clearly increases government tax revenues and net lending in the year that the allowance is issued.

The table shows that in year 1 government receives 5000 in taxes. In year 2 it receives zero, which, assuming the government sells no further allowances over the next 48 years, will also be the case for all subsequent years. Net-lending of government will be unaffected by any transactions between enterprises whose net-lending figures will change in relation to these transactions.

Worked-Example 1: Non-produced non-financial asset

	Year 1		Year 2		
	Gov A	**Corp Y**	**Gov A**	**Corp Y**	**Corp Z**
Taxes received	5000				
Net-lending	5000	-5000		40	-40
Balance sheets					
NPNF		4950		3880	
Cash	5000	-5000	5000	-4960	-40

This is administratively very easy to record in the accounts but of considerable concern to users of economic statistics are the following:

- Governments may issue allowances in tranches with significant intervening periods. This would mean that both net lending and tax revenues will be volatile and have significant

peaks, at the time allowances are sold. Moreover, because (tradable) allowances have potentially very long lives, the ability of governments to manage the timing of sales and, so, net-lending and tax revenues could be problematic.

- The unit that is recorded as paying the tax may not be the emitter. Indeed the approach could result in tax payments being made by non-polluting speculators (who purchase the allowance voluntarily) whilst at the same time seeing no tax payments made by polluters who purchase their allowances after they have already been issued by government (despite the fact that their purchases are requited and compulsory)

In addition to these two concerns some users and Task Force members voiced concern that this approach led to the creation of net national wealth, which they considered not to have occurred. Others however argued any increase in net wealth related to the allowances per se was a natural consequence of externalities created by governments, adding that the creation of allowances to emit was also likely to have a negative impact on the value of emitting companies, or final consumers of goods and services, having a downward effect on their net wealth. Moreover the impact on net wealth is to some extent a one-off event as the value of the non-produced non-financial assets returns to zero when surrendered.

Free allowances

When allowances are provided for free, two approaches present themselves. The first is to merely ignore the flows between governments and acquiring units. The value of allowances in the balance sheet of the acquiring units would appear as an OCV; with surrenders of allowances to government recorded as an OCV as before.

The second approach, which arguably better reflects the fact that government is providing something of value, is to record a subsidy or a capital transfer from government to the acquiring unit, and a corresponding, and equivalent, tax payment from the acquiring unit to government, with both flows equal to the market value of the allowance.

As a solution the only statistical benefit of this (second) approach, compared to not imputing any flows between governments and the enterprise, is that it provides a less volatile series of taxes if the mix of auctioned and free assets is itself volatile. In any case when allowances are issued on an irregular basis even this benefit is marginal. From an economic perspective however and indeed the perspective of the SNA, it is arguably more appropriate to record some form of transfer from government to the acquiring unit.

The following two tables illustrate the differences in these two approaches in a simplistic manner. They show that the only difference between the two approaches is the imputed capital transfers/subisdy and taxes received/paid for the free allowances.

As will be seen in considering other TF options, flows in the accounts, such as tax data, can vary depending on which allowances are surrendered and to whom. In other words the indifference of emitters to the allowances they surrender at a point in time makes a difference to the accounts. Because, in this option, taxes and other transactions with government are recorded as soon as the allowance is issued, indifference does not play a role here.

Worked Example 2a: Non-produced non-financial asset – taxes recorded at issue.

Free allowances ignored

	Year 1		Year 2		Year 3	
	Gov X	**Corp Y**	**Gov X**	**Corp Y**	**Gov X**	**Corp Y**
Taxes received			250		500	
Net-lending			250	-250	500	-500
Balance sheets						
NPNF		400		800		1200
Cash			250	-250	750	-750

Worked Example 2b: Non-produced non-financial asset – taxes recorded at issue.

Free allowances imputed

	Year 1		Year 2		Year 3	
	Gov X	**Corp Y**	**Gov X**	**Corp Y**	**Gov X**	**Corp Y**
Taxes received	500		500		500	
Net-lending			250	-250	500	-500
Capital Transfer/Subsidy	500	-500	250	-250		
Balance sheets						
NPNF		400		800		1200
Cash			250	-250	750	-750

Consistency with other schemes

The acquisition of allowances, such as CDM allowances, by an enterprise can be treated very simply with option (a). Indeed, like free allowances, they can either be ignored or a tax and subsidy/capital transfer can be recorded.

Multinational Schemes

Because taxes are recorded as soon as the allowances are issued, the treatment of allowances as NPNF assets, with taxes recorded at the time of issue, is unaffected by whether the allowances are issued and surrendered by one government or many. And the treatment and pros and cons in a multinational context largely follow those that arise with national schemes.

However there is an interpretative complication. In a multinational scheme a government in country A might receive the cash payments and record them as a tax but government B might accept them in settling emissions payments. This could lead perversely to a situation where high taxes related to emission allowances (and so perceived as emission taxes) are recorded in one country with relatively little recorded in another country with higher overall emissions. In effect, from a user perspective, government A will be seen as receiving a tax-on-production for activities that eventually occur in another country. This interpretative difficulty is an extension of that which exists for purely national schemes, namely, the fact that taxes may be recorded at a different time to the underlying event, the emissions.

Consistency with other schemes

Within a multinational system it is not clear who the issuing country is for allowances such as CDMs. The simplest option would be to ignore transactions between government and enterprises in connection with these allowances.

Summary Assessment of (a)

For some users of the economic accounts, the key advantage of the proposal is that the cash receipts, both in terms of size and timing, align with recorded taxes. However, at the same time, a number of disadvantages are evident and the proposal could lead to: volatile tax and net-lending statistics; taxes-on-production implicitly being recorded for activities that occurred in another country (in a multinational scheme); and payments of taxes being recorded by non-emitters (e.g. speculators, financial enterprises).

More generally, again from a user perspective, especially because allowances are sold in tranches covering a number of years, there may be little correlation (whether in a pure national or multinational scheme) between emissions and taxes (ostensibly related to these emissions).

For users of industry statistics the accounts would also be problematic in that what might be legitimately perceived as an additional cost on production would only be recorded in the production account of the first enterprise, including, potentially, households that acquired the allowance; which would be hard to rationalize if the enterprise subsequently sold the allowance to another enterprise (potentially for a profit). Certainly for the enterprise that surrenders the allowance, their view will be closer to an opportunity-cost perspective. In other words, their costs of production are better reflected by including the value of the allowance, as a tax on production, in the period when emissions occurred.

Option (b): The Financial Asset approach

Under this option the allowance is recorded as a financial asset with a corresponding liability of government.[25]

The price paid for the allowances at auction is considered as similar to a payment for a financial asset. This has no impact on government net lending or tax revenues at that point; as the exchange is merely a financial transaction similar to transactions in government securities but there will be an impact on government total financial liabilities (although this would be indirectly offset if government uses the cash received to redeem other government debt instruments) i.e., the increase in financial liabilities is consistent with an increase in government financial assets.

In between the issue and surrender date, the value of the allowance (financial) asset can vary. This will have an on-going impact on government gross and net debt as the value of government liabilities will fall and rise in line with the market value of the allowance; in the same way that changes in the market price of government securities impact on gross and net debt.

Assuming for simplicity that the surrender date is the same as the date when the emissions occurred, at the time of emissions, government accepts the surrender of the allowance as settlement of the tax revenue from the polluter. This will impact on government net-lending. (In practice the emissions and surrender dates will not be the same and so there may be a need to record additional flows from government to units holding the allowances to account for any change in the value of allowances that may have occurred between surrender and emission dates. But the examples that follow, for simplicity, assume the dates are the same.)

Pure National Scheme

The key benefit of treating allowances as financial assets, from a practical perspective, is that the tax receivable recorded in the accounts aligns with the economic activity to which it relates.

Indeed, and only for some users of the accounts, the only negative aspect with regards to purely national schemes is that the cash receipts received by government when the allowance is issued may not align with the accrued tax flows, as the value of taxes received by government will reflect the market price of the allowances at the time the emissions occurred. However, if one accepts the idea that the allowances are financial assets, this is perfectly consistent with the SNA as the value of the allowances can go up or down in exactly the same way that conventional instruments such as bonds do.

A second perceived negative aspect is that government gross debt is increased by the allowances and varies in market value as the value of allowances fluctuates but governments, at least with the emission schemes currently in operation, have no explicit commitment to reimburse holders of allowances. However, the counter argument is that the commitment by governments to accept

[25] Some TF members have precisely specified the asset within 'securities other than shares', although recording as other accounts payable (the counter-part of a prepayment of tax) was also considered. There was strong support however for a new sub-category of asset in the SNA.

allowances at surrender is a manifestation of a liability on their part: Government has received cash in return for the sale of an asset that it will accept in due course at its later face value.

Worked Example 1 shows that in year 1 general government liabilities fall from 4950 to 3880, with taxes received and net-lending exactly equal in years 1 and 2.

Worked Example 1: Financial asset

		Year 1		Year 2		
		Gov A	**Corp Y**	**Gov A**	**Corp Y**	**Corp Z**
Taxes received		50		80		
Net-lending		50	-50	80	-40	-40
Balance sheets						
Financial	**Assets**		4950		3880	
	Liabilities	4950		3880		
	Cash	5000	-5000	5000	-4960	-40

When allowances are provided for free

When allowances are provided for free, the acquiring unit gains an asset and government a liability. The accounts could record a subsidy or a capital transfer to the receiving unit. This would affect government net-lending. Subsequent flows related to transactions after the issue date follow those for auctioned allowances. Ignoring these flows at issue with the financial asset approach is not impossible but does not reflect the underlying economic reality (implicit in the financial asset approach) that a gift has been made by government.

The following example illustrates the accounts in a simplistic manner.

Worked Example 2b: Financial asset approach

Free allowances imputed at issue

		Year 1		Year 2		Year 3	
		Gov X	**Corp Y**	**Gov X**	**Corp Y**	**Gov X**	**Corp Y**
Taxes received		100		100		100	
Capital Transfer/Subsidy		500	-500	250	-250		
Net-lending		-400	400	-150	150	100	-100
Balance sheets							
Financial	**Assets**		400		800		1200
	Liabilities	400		800		1200	
	Cash			250	-250	750	-750

Consistency with other schemes

Within a national scheme the generation of allowances, recorded as financial assets, via CDM type mechanisms presents no consistency or methodological difficulties, and they can be treated in the same way as free allowances.

Multinational Schemes

Difficulties with the financial asset approach do arise however when multinational schemes are involved. These are both practical and interpretative in nature.

When government A accepts an allowance issued by government B the accounts would need to reflect either:

i. The debt cancellation or other form of debt-related transaction by Government A of B's liability;

ii. The collection of taxes on production by country A; acting as a clearing or collecting agent for country B: in other words the accounts would need to show a tax on production paid by domestic emitters in country A to the R.O.W.

Both options present practical, though resolvable, measurement difficulties as they imply the existence of an international register that allowed national accountants to identify the issuing country of all allowances surrendered within their economic territory[26]. But, as shown below using the flows described in Worked Example 3 above, other problems can also arise with the financial asset approach within a multinational scheme.

The accounts would look as follows for (i) the debt-cancellation approach, Table 3a, and (ii) the Taxes to the R.O.W approach, Table 3b:

Worked Example 3a: Financial asset approach – Debt cancellation approach

	Year 1		Year 2		Year 3		Year 4		Year 5	
	Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received	50	10	50	10	50	10	50	10	50	10
Debt Cancellation – capital transfer					50		50		50	
Capital transfers received										150
Net-lending	50	10	50	10	0	10	0	10	0	160
Fin liabilities	50	190	0	180	0	170	0	160	0	0
Cash	100	200	100	200	100	200	100	200	100	200

[26] Alternatively, if co-ordinated internationally and done correctly, the net flows are available. However there would be a risk of BoP asymmetries.

Worked Example 3b: Financial asset approach – Taxes to R.O.W

	Year 1		Year 2		Year 3		Year 4		Year 5	
	Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received from domestic enterprises	50	10	50	10	0	10	0	10	0	10
Taxes received from non-resident enterprises										150
Taxes paid by domestic enterprises to R.O.W					50		50		50	
Net lending	50	10	50	10	0	10	0	10	0	160
Fin liabilities	50	190	0	180	0	170	0	160	0	0
Cash	100	200	100	200	100	200	100	200	100	200

Clearly, by design, the two approaches lead to different estimates of total taxes on production received by government. For example government A receives a total of 250 in taxes with the debt cancellation approach versus 100 via the Taxes to the R.O.W approach. But net lending and financial liabilities are the same in both cases. However, the difficulties presented by the financial asset approach are more subtle.

The first is rather straightforward and relates to the interpretability of the accounts. Both tables show that government A's financial liabilities reduce to zero after two years but resident producers in its economy will have to purchase an additional 150 units of allowances over the following three years. B's gross debt on the other hand is still at 160 in the fourth year, but 150 units of allowances will never need to be redeemed by government B; as it has a significant surplus of allowances over emissions.

From an economic perspective the fact that (i) government A has no liabilities from the third year onwards despite the fact that its domestic enterprises will be required to purchase allowances and (ii) B has significant liabilities until year 5, despite the fact its government will never redeem the allowances is difficult to explain in an economically simplistic (and arguably meaningful) way, particularly if there are significant differences in the cash received by governments when the allowances were issued and the taxes recorded at surrender; for example if government B issued all of its allowances for free both its net and gross debt would increase significantly but the actual structural position and wealth of the government would be in reality unchanged.

Paradoxically therefore, assuming that domestic enterprises surrender allowances allocated to them by their governments before surrendering allowances issued by other governments, a country with relatively high emissions relative to its allocated quota of allowances is likely to have its government's financial liabilities extinguished sooner than a country with a surplus of allowances relative to its expected emissions, meaning that all other things equal, the 'low emitting allowance rich' country will have a structurally higher gross debt than the 'high emitting

allowance-poor' country; a position that is more starkly illustrated when allowances are issued for free, as the impact is on both net as well as gross debt.

There is however an additional problem. Irrespective of the approach (debt cancellation or taxes to the R.O.W), the same emissions in countries A and B, can lead to very different profiles of net-lending and financial liabilities (and taxes, using the R.O.W approach) depending on which allowances are surrendered by an enterprise at any given point in time – noting that the enterprise is indifferent to its choice.

For example imagine instead that all allowances issued by B are surrendered to B and other countries in the first year and that allowances issued by A are surrendered to A in years 2 and 3, instead of years 1 and 2. The accounts would look as follows:

Worked Example 3a (Variant 2): Financial asset approach – Debt cancellation approach

	Year 1		Year 2		Year 3		Year 4		Year 5	
	Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received	50	10	50	10	50	10	50	10	50	10
Net-lending		200	50	0	50	0	0	0	0	0
Debt Cancellation – capital transfer	50			10		10	50	10	50	10
Capital transfers received		190								150
Fin liabilities	100	0	50	0	0	0	0	0	0	0
Cash	100	200	100	200	100	200	100	200	100	200

Worked Example 3b (Variant 2): Financial asset approach – Taxes to R.O.W

	Year 1		Year 2		Year 3		Year 4		Year 5	
	Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received from domestic enterprises	0	10	50	0	50	0	0	0	0	0
Taxes received from non-resident enterprises		190								
Taxes paid by domestic enterprises to R.O.W	50			10		10	50	10	50	10
Net lending	0	200	50	0	50	0	0	0	0	0
Fin liabilities	100	0	50	0	0	0	0	0	0	0
Cash	100	200	100	200	100	200	100	200	100	200

The table below synthesizes the results of all variants above, describing the flows recorded in the first two tables (3a) and (3b) as Variant 1 and the second as Variant 2. Note that the "Taxes received by Gov" row only refers to the figures using the 'taxes paid to the R.O.W' approach, as, using the debt cancellation approach total taxes received by government are the same for both variants. The net-lending and financial liability rows reflect the impact using both the debt-cancellation and taxes to the R.O.W approaches. Note also, that in all approaches and variants, taxes paid by emitters are unaffected.

Worked Example 3ab: Financial Asset approach and asymmetries

		Year 1		Year 2		Year 3		Year 4		Year 5	
		Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received by Gov – Tax on ROW approach	Variant 1	50	10	50	10	0	10	0	10	0	160
	Variant 2	0	200	50	0	50	0	0	0	0	0
Net lending	Variant 1	50	10	50	10	0	10	0	10	0	160
	Variant 2		200	50	0	50	0	0	0	0	0
Fin liabilities	Variant 1	50	190	0	180	0	170	0	160	0	0
	Variant 2	100	0	50	0	0	0	0	0	0	0

The table shows that the net-lending and financial liability series of government vary depending on the issuing country of allowances surrendered by emitters. Given the indifference of enterprises to which allowance they surrender and the full exchangeability between allowances, these effects are problematic, especially given the political sensitivity attached to net-lending and debt figures.

How big a problem this is in practice, is difficult to say. If, for example, countries are allocated allowances on the basis of emissions in previous years, countries reduce their emissions at similar rates, and countries auction their allowances at similar times, one can expect the indifference of enterprises to the allowances they surrender to have little impact on the profile of net-lending and financial liability time-series (or taxes received). However[27] the idea that emission allowances are allocated on a more equitable basis, such as per capita, has been on the policy agenda for a while and schemes that allocate allowances on this basis could cause problems (in particular in interpreting liabilities) for the accounts.

[27] Indeed one does not need to search for 'Utopian' examples. The Kyoto protocol for example set national targets on the basis of 1990 emission levels. A number of transition economies, in particular Russia, saw precipitous falls in economic activity and emissions after 1990.

Indifference in the Financial Asset approach

Some members of the TF argued that the indifference of an enterprise to whether it surrenders in country C an allowance that was issued in country A or B in settling its obligations in relation to emissions was not problematic, and argued that the accounting flows were little different to settling obligations in different currencies. Others however argued that there were differences which suggested that the currency analogy was not perfect in this regard as: (a) in accepting payment in the currency of country A, country C does not impute a debt-cancellation and (b) the analogy did not deal fully with the impact free allowances make on the economy, since, other things being equal, they had no impact on the real economy whereas the printing and free distribution of currency does. The key point in this counter argument is not that the accounts are not able to coherently record the flows related to allowances in a way that is analogous to cash or other financial asset transactions. They clearly are. The point is do the flows make sense in terms of interpreting what happens in the real economy? If, for example, governments provided securities for free there would certainly be an impact on the real economy, even if the securities were zero interest bearing; as the markets would know that the government had created liabilities that would have to be repaid at some future date in hard currency or by selling new securities. Some members of the TF argued that this illustrated the key difference with emission allowances, particularly those issued for free, and other financial assets. Unlike conventional securities, allowances are intrinsically linked to a future event (an emission) when government charges a tax which rises and falls in line with the value of the allowance. This makes it different to a, or at least a very special type of, financial asset; a view also recognized by proponents of the financial asset approach who recommended the creation of a new category of financial asset.

Consistency with other schemes

Unlike the case for purely national schemes, it is not always clear which country issues the allowances related to equivalent mechanisms, such as CDMs. This can create difficulties for the financial assets approach within multinational schemes. The simplest solution would be to treat CDMs as NPNF assets or alternatively as financial assets issued by an international body. The former is, albeit not significantly, problematic in that it creates an asset distinction between allowances. The latter requires the recognition of such an international body; which is explored in more detail as option (d).

Summary Assessment of (c)

The financial asset approach records taxes at the time emissions occur in line with the opportunity cost perspective of emitters. It also ensures that only emitters pay the tax. The underlying principle is that the allowances are little different from other more conventional financial assets, such as securities, and, so, are merely a means to settle the (tax) obligations of emitters.

However there are three important features of allowances that create difficulties in drawing analogies with conventional financial assets:

- At present, most, allowances are provided to emitters for free.
- Governments accepting a financial asset issued by another country as a way of settling tax obligations do not generally cancel the liability of the issuing country.
- The idea that the allowance is merely a means to settle the tax obligations of emitters underplays the links between the two: the price of the allowance determines the tax liability.

Whilst the accounts can deal with these three features in a way that is consistent with the idea that allowances can be recorded as financial assets, it is clear that they create interpretative difficulties for users.

For some users of the economic accounts, the key disadvantage of the proposal is that the cash receipts, both in terms of size and timing, do not align with recorded taxes. If all allowances were sold on the market this difference (in issue and 'emission' prices), in practice, might not be significant. However whilst most allowances continue to be issued for free, the difference will be significant.

To get an understanding of why this is important to these users, one only need consider the situation where a government only, and always, allocates its allowances for free: in other words government never receives any cash in relation to the allowances. The financial asset approach leads to increases in government liabilities, net-lending in the issue year, and taxes. But all that has happened is that government has created an instrument/mechanism with which enterprises can trade with each other in order to motivate reductions in emissions.

Equally, for allowances that are sold via auction, users may find it hard to understand why the price agreed with government at the time of the auction does not reflect the tax paid, as opposed to the price of the allowance when the emissions occurred; as, over the lifetime of an allowance, (between issue and emission and assuming that the price of the allowance changes between these two dates) the net worth of government will in actual fact change by the amount of cash received at issue and not by the taxes recorded[28]

The financial asset approach therefore means that net-lending and total liability series may move in directions that are difficult to reconcile, even after taking into account price changes in liabilities. For example if one allowance was issued in year 1 for free, with a market value of 50 and then surrendered in year 5, with a market value of 100. The accounts would show total net-lending over the period of 50 (minus 50, capital transfer, +_ 100 taxes) but no change in government's balance sheets.

Equally, with multinational schemes, the option presents interpretative problems for net-lending and gross debt figures: the accounts of governments A and B are not invariant to whether an enterprise chooses to surrender an allowance issued by government A to government B rather than an allowance issued by government B. Despite the fact that all that changes hands is an allowance and everything else is entirely equal. Put simply, the net-lending and gross debt figures of both governments will be different if the enterprise surrenders an allowance issued by A rather than

[28] Whilst the SNA does not explicitly specify that the cash received by government need necessarily align with the taxes accrued, users of the national accounts do expect to see broad equalities over the medium term. Indeed Article 2 of Regulation 2516/2000 of the European Parliament and Council, which relates to ESA95, states explicitly that: *the impact on general government net lending/ borrowing of taxes and social contributions recorded in the system on an accrual basis shall be equivalent over a reasonable amount of time to the corresponding amounts actually received*. This requirement cannot be guaranteed with the financial asset approach and certainly not for free allowances.

one issued by B. This is the case whether the debt cancellation approach or the taxes to the R.O.W approach is used, and, for the latter, taxes received by government are also affected.

The financial asset approach provides further interpretative challenges in this regard. A developing country with disproportionately more emissions than the size of its economy dictates would see its gross debt levels increase when it issued allowances even though there would be very little likelihood that the majority of allowances would be surrendered to it. Explaining the fact that the country's liabilities had grown in this context would be challenging, particularly if all its allowances were issued for free.

A model approach to deal with 'indifference' in the Financial Asset approach

One of the characteristics of international emissions cap and trade schemes (which results in the 'indifference' problem in the financial asset approach) is their collective nature; specifically, the fact that all governments operating in the scheme agree to accept allowances irrespective of where they were issued.

Multinational schemes work on the basis that a total level of allowances is set that are then allocated to countries on the basis of national quotas agreed within the scheme.

The pure financial asset approach described above works on the principal that the allowances issued by a particular government become solely the liabilities of that government. But, although cross country flows can be dealt with via debt cancellations or taxes to the R.O.W., this approach to some extent does not fully embody the collective nature of the international scheme; in particular the fact that all governments agree to accept the allowances as settlement for emissions that occurred in their territory, and the fact that the scheme is designed to cap emissions at the multinational level and not the national level.

If instead of focusing on emissions that occur within national boundaries we focus on emissions at the international level, it is possible to develop an accounting mechanism that overcomes problems caused by indifference. In other words, whenever a polluter emits they 'use' up a proportion of the internationally agreed total limit of emissions and not a proportion of the national levels, commensurate with the original allocation of allowances to that economy.

Although on the surface this appears to be little different to the flows recorded with the conventional financial asset approach, the underlying principle embodied in the fact that the cap is multinational is that all governments own part of each individual allowance, in proportion to the shares they were allocated at the start of the scheme. As such, irrespective of which country issues an allowance, liabilities of all participating countries rise (in line with their respective share of the allowance); which reflects the collective nature of the scheme.

In some respects an analogy can be made with a common currency such as the Euro. With the Euro, all Euro area countries have a collective liability for any Euro in circulation, irrespective of where it was originally issued.

The approach does have some additional consequences however. When an allowance is sold, the government that sells the allowance receives all of the cash but all governments share the liability;

meaning that when a single allowance is sold, net debt measures will be affected. In theory a capital transfer should be recorded from other governments to the government selling the allowance, the modelled approach used here however recommends that such a flow is not recorded for practical purposes. This reflects the fact that over the lifetime of an emissions trading scheme the capital transfer flows between governments will tend to net out, (and will exactly net out if prices in the allowances remain stable or if, in any accounting period, all governments issue allowances, as a percent of total allowances issued in that accounting period, in line with their allocated quota ratios). In any case the fact that net debt rises in other countries when one government issues an allowance arguably correctly reflects the collective nature of such international schemes, since, in practice, when any government issues an allowance it creates a liability of sorts for all other governments; who have agreed to accept the allowance as a means of settling the emissions of their resident polluters.

There are a number of benefits from looking at allowances in this way. The first is that the indifference of polluters to the allowance they surrender no longer causes variability in the flows recorded in government accounts. In other words, whether a polluter surrenders an allowance issued in country A or country B to government B, the same flows are recorded in the accounts; which also means that comparisons of government liabilities better reflect their collective obligations in respect of their allowances. The second concerns CER type mechanisms, where the recognition that all governments have liabilities in respect of the allowances, means that any new allowances created through CER type schemes can be allocated as liabilities (proportionately) to all governments participating in the scheme.

An additional benefit is more practical in nature. Such an approach simplifies the way in which flows can be estimated. Whatever concept is used, national accountants will typically know what allowances were surrendered for emissions in a particular accounting period some time after the accounts for that period are published. For the 'conventional' or 'national' financial asset approach, this means that at the time the accounts are prepared, assumptions relating to (i) the proportion of all allowances surrendered in the relevant economy as settlement for emissions in that accounting period, that were originally issued in that economy and (ii) the total number of allowances issued by the relevant economy but surrendered abroad, are needed. The assumptions themselves are not onerous but the point is that estimates based on these assumptions will be subject to revision, even if estimates for actual emissions that occurred (and so the total number of allowances surrendered) are not. Taking a collective view of allowances (in other words the view that all governments collectively share liabilities for all allowances) means that such revisions need not occur.

The table below illustrates the flows that would occur for examples 3a and 3b with the modelled approach. For a given method (taxes to the R.O.W or debt cancellation approach) they show that the flows are invariant to where allowances were originally issued and surrendered. As noted above however the method could result in taxes being recorded even when no emissions occur but this is also a feature of the taxes on the R.O.W approach with the conventional financial asset approach.

Worked Example 3ab: Modelled Financial Asset approach and symmetries

		Year 1		Year 2		Year 3		Year 4		Year 5	
		Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received by Gov – Tax on ROW approach	Variant 1	20	40	20	40	20	40	20	40	20	40
	Variant 2	20	40	20	40	20	40	20	40	20	40
Taxes received by Gov – debt cancellation	Variant 1	50	10	50	10	50	10	50	10	50	10
	Variant 2	50	10	50	10	50	10	50	10	50	10
Net lending	Variant 1	20	40	20	40	20	40	20	40	20	40
	Variant 2	20	40	20	40	20	40	20	40	20	40
Fin liabilities	Variant 1	80	160	60	120	40	80	20	40	0	0
	Variant 2	80	160	60	120	40	80	20	40	0	0

Option (c): The Split Asset approach

The TF also examined a third major option, namely the treatment of an allowance as two separate assets, a financial asset and a non-produced non-financial asset. The rationale for the split, or two asset, approach is that cash received by government equals taxes recorded.

At issue of an allowance a financial asset is created, valued at the price of purchase from government and, at any subsequent point in time the difference between the market-price and the original purchase price is treated as a non-produced non-financial asset. The financial asset could be viewed as a tax pre-payment or a security. The non-produced non-financial asset is created through an OCV in the accounts of the acquiring unit. A liability corresponding to the financial asset is recorded in the government account, and retains the same value (initial purchase price) throughout the life of the allowance. This would have no impact on government net-lending at the time of allowance issue.

Between the issue and surrender date the allowance can be bought and sold, with changes in the value reflecting changes in the value of the non-produced non-financial asset – which could have a negative value[29].

At surrender, the financial part of the mixed asset reflects the payment of the tax while the non-financial part is removed by an OCV in the accounts of the unit surrendering the allowance. Tax revenues (and therefore net-lending) of government would increase by the value of the financial asset surrendered (i.e. the original price paid for the allowance).

Pure National Scheme

Worked Example1: Split asset

		Year 1		Year 2		
		Gov A	**Corp Y**	**Gov A**	**Corp Y**	**Corp Z**
Taxes received		50		100		
Net-lending		50	-50	100	-60	-40
Balance sheets						
Financial	**Assets**		4950		4850	
	Liabilities	4950		4850		
	NPNF				-970	
	Cash	5000	-5000	5000	-4960	-40

Note that the net-lending of Corporation Y is minus 60, reflecting the payment of tax of 50 to Government A and the sale of a NPNF asset to Corporation Z, worth minus 10. Correspondingly Corporation Z has net-lending of minus 40, reflecting the payment of a tax of 50 and a purchase of a NPNF asset worth minus 10, which is written off as an OCV change when the allowance is surrendered to Government A.

[29] The Task Force took note that the possibility of non-financial assets with negative value is highly unusual in the SNA system, with the only case being that of transferrable leases.

Free Allowances

When allowances are provided for free, the acquiring unit gains a non-produced non-financial asset; no financial asset/liability is recorded. As was the case for the pure non-produced non-financial asset approach the flows from government to the acquiring unit in respect of the transfer of the allowance could be ignored or imputed with a capital transfer; although there are good arguments to suggest that a capital transfer should be recorded counter arguments to suggest that this is not always the case also exist, as discussed in Section 1.

The following tables show the flows recorded using Worked Example 2a and 2b. For both, two variants are shown. In the first, enterprise Y only surrenders 10 allowances it purchased in years 2 and 3, and in the second, it only surrenders allowances it acquired for free. As before only free allowances are surrendered in the first year in both variants. Note that in Table 2a, whilst transactions between government and enterprises in respect of free allowances are ignored, they are not ignored on the balance sheets of enterprises that hold them; as they can be sold on to other enterprises.

Worked Example 2a: Split asset – free allowances ignored

		Year 1		Year 2		Year 3	
		Gov X	**Corp Y**	**Gov X**	**Corp Y**	**Gov X**	**Corp Y**
Taxes received	V1	0		100		100	
	V2	0		0		0	
Net-lending	V 1&2			250	-250	500	-500
Balance sheets							
Financial: Assets (+ve)	V1			-150	150	-300	300
Liabilities (-ve)	V2			-250	250	-750	750
NPNF	V1		400		650		900
	V2		400		550		450
Cash	V1&2			250	-250	750	-750

Worked Example 2b: Split asset – free allowances imputed

		Year 1		Year 2		Year 3	
		Gov X	**Corp Y**	**Gov X**	**Corp Y**	**Gov X**	**Corp Y**
Taxes received	V1	0		100		100	
	V2	0		0		0	
Net-lending	V 1&2			250	-250	500	-500
Capital Transfer/Subsidy		500	-500	250	-250		
Balance sheets							
Financial Assets(+ve)	V1			-150	150	-300	300
Liabilities (-ve)	V2			-250	250	-750	750
NPNF	V1		400		650		900
	V2		400		550		450
Cash	V1&2			250	-250	750	-750

The tables show that the flows are largely unaffected by imputations made from government to the acquiring unit in respect of free allowances. However they also show that the indifference of enterprises towards the allowance they surrender has an impact on the time-series of taxes recorded. Moreover the tables also reveal a difference in the balance sheet split between NPNF and financial assets – which could be important for analysts of productivity data and who often impute capital services from NPNF assets.

The tables present a very simple exposition for convenience. However, it follows that if different vintages of allowances issued at different prices were in the market at the same time the problem illustrated above in respect of free allowances would also occur. In other words, recorded taxes at any point in time would be dependent on the original issue price paid for the allowance. This would mean that the indifference of enterprises to which allowance they surrendered would make a material difference to recorded taxes, government gross debt, and stocks of NPNF held by enterprises. It is also important to note that a mix of vintages could also have an impact on the profile of net-lending too. Sales of allowances between enterprises would also be complicated as these could have an impact on enterprises' net-lending figures.

An additional complication with the approach in general is that is assumes the existence of a financial asset that neither appreciates nor depreciates in value nor provides any return to the holder. In periods of high or negative inflation this could be problematic.

Consistency with other schemes

Within a national scheme the simplest option to record allowances gained via CDM type mechanisms would be to record an OCV change in the accounts of the acquiring enterprise.

Multinational Schemes

Given that, for pure national schemes, recorded tax receipts are not indifferent to the mix of allowances surrendered by enterprises, despite the indifference of enterprises to the allowance they surrender, it is clear that multinational schemes will be similarly affected.

For financial assets it was possible to consider two ways of dealing with international flows between governments – debt cancellation or taxes to the ROW. Given the rationale of the split-asset approach – i.e. to create a consistency between cash received and taxes recorded at the national level - it follows that the debt cancellation approach is not appropriate here but taxes to the R.O.W are, by design, necessary.

The following table reflects the flows recorded with the split-asset approach on the basis of the transactions described in Worked Example 3. Further, assuming that 50 of B's allowances are provided for free, three variants are investigated.

Variant 1 assumes that domestic enterprises in B only surrender free allowances and Variant 2 assumes they only surrender purchased allowances. A third variant shows the flows that would occur if all of B's allowances were surrendered in year 1 with all of its free allowances surrendered to A, and 50 allowances issued by A surrendered to A in years 2 and 3, with all other flows remaining the same.

For simplicity we also assume that no imputations are made when free allowances are provided by government (which makes no material difference to the exposition that follows

Worked Example 3b: Split asset approach – Taxes to R.O.W

		Year 1		Year 2		Year 3		Year 4		Year 5	
		Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received from domestic enterprises	V1	50	0	50	0	0	0	0	0	0	0
	V2	50	10	50	10	0	10	0	10	0	10
	V3	0	10	50		50		0		0	
Taxes received from non-resident enterprises	V1										150
	V2										100
	V3		100								
Taxes paid by domestic enterprises to R.O.W	V1					50		50		50	
	V2					50		50		50	
	V3	0			10		10	50	10	50	10
Net lending	V1	50	0	50	0	0	0	0	0	0	150
	V2	50	10	50	10	0	10	0	10	0	110
	V3	0	110	50	10	50	10	50	10	50	10
Fin liabilities	V1	50	150	0	150	0	150	0	150	0	0
	V2	50	140	0	130	0	120	0	110	0	0
	V3	100	0	50	0	0	0	0	0	0	0
NPNF – held by enterprises	*V1*		*40*		*30*		*20*		*10*		*0*
	V2		*50*		*50*		*50*		*50*		*0*
	V3		*0*		*0*		*0*		*0*		*0*
Cash		100	150	100	150	100	150	100	150	100	150

The table shows that net-lending, taxes and government gross debt differ depending on whether and when free allowances are surrendered to B. Moreover they show that total recorded taxes paid by producers can also differ. For example in A, a country where no free allowances were issued, a total of 250 in taxes is paid by resident enterprises to government A and the R.O.W under variants 1 and 2 but only 200 with Variant 3; giving the, albeit misleading, impression that enterprises in A benefit from the provision of free allowances by government B. Naturally, the more international the flows, with a mix of vintages and issue prices of allowances, the more complicated the recording difficulties.

Consistency with other schemes

As was the case for pure national schemes, the simplest option would be to record an OCV change in the accounts of the acquiring enterprise.

Summary Assessment of (e)

The TF noted that the split asset approach, while neatly addressing the concerns of some users that taxes recorded should equal cash received for allowances, raises the possibility of a non-produced non-financial asset with negative values and retains some of the problems of both pure financial assets approach and the pure NPNF approach; for example those relating to the impact and indeed comparability of government debt and the need to impute taxes paid to the R.O.W.

The reallocation of taxes to other governments means that recorded taxes-on-production received by a government may relate to activities (emissions) that occurred in the economic territory of another government, and paid by an enterprise whose economic activities were also in another territory. The production accounts will therefore show gross value-added being expropriated directly by other governments with further flows recorded in the generation of income accounts.

Like options (b) and (d) recorded taxes are paid by the actual emitters and, so, there is a correlation between emissions and taxes in terms of timing.

Again like options (b) and (d) because there is a financial asset component, the option does present interpretative problems for government debt. Moreover, net-lending and gross debt figures are not invariant to the type of allowance surrendered by an enterprise. Put simply, the accounts of governments A and B are not invariant to whether an enterprise chooses to surrender an allowance issued by government A to government B rather than a allowance issued by government B. This affects net-lending, gross debt, taxes received by government, and taxes paid by enterprises.

In addition it is possible that tax and net-lending figures will be volatile, with the profile dependent on where enterprises choose to surrender allowances and when.

Perhaps one of the biggest complications however is a practical one. The method requires that national accountants have detailed information that states which country issued an allowance and at what price.

Unlike all of the other options based on recording taxes at the market price of allowances when emissions occurred, however, which require additional adjustments to reflect changes in the value of allowances between the emission and surrender dates, the same adjustments are not needed for option (c).

A model approach to deal with 'indifference' in the Split-Asset approach

Although the split-asset approach has strong appeal to some users, particularly those interested in the share of national income appropriated by government in taxes, the problems presented by the indifference of polluters to the allowances they surrender creates considerable challenges for users, including those whose main interest is in tax statistics; an important constituency who are partly the reason why the split-asset was first developed. As described above the split-asset approach in its pure form has the potential to create tax time series that bear little relation to the quantity of emissions to which they supposedly relate for a given accounting period.

One way around the problem related to the indifference of enterprises to the allowances they surrender having a variable impact on the tax, net lending and gross debt figures of governments is to explicitly recognise the agreement made by countries to participate in an international scheme: in other words to formalize the equivalence of allowances irrespective of when and where they originated, and to relate the flows of taxes and net-lending and gross debt within such a framework.

In doing so however it is necessary to relax the requirement that tax payments recorded for a single allowance are equal to the cash payments initially made for that same allowance when it was originally issued – although, importantly, for supporters of the split-asset approach, the modelled approach maintains a consistency between overall cash received and taxes recorded.

In summary the modelled approach is designed on the basis that, in a given accounting period and given country, the same tax figures are recorded irrespective of where an allowance was originally issued and at what price, with the constraint that overall taxes recorded in a single country are equal to cash received over the period of the trading scheme.

In order to meet the first requirement, the approach needs to recognise the collective nature of allowances operating in international schemes – in other words the approach needs to embody, from the outset, the collective responsibility of all participating governments for all allowances.

With the financial asset approach, when a single allowance is surrendered, all participating governments receive a tax payment (or a debt cancellation) in proportion to their share of the allowance. With the split-asset approach however, the tax payments made to each participating government (and debt cancellation is not an option for the split-asset approach) are based on the cash individual governments received for the allowances they issued to the market. For example if half of the governments in the scheme allocated all of their allowances for free and the other half allocated all of their allowances at a market price, any surrender of a single allowance would need to ensure that taxes received (whether directly or from the R.O.W) by governments who issued their allowances for free were always recorded as zero. In other words, the collective approach for split-asset allowances necessitates more than a simple calculation, based on a single country's share of overall allowances, to calculate tax flows.

There is more however. In order for recorded taxes in respect of a surrendered allowance to be the same in a given country irrespective of whether an allowance was originally issued for price X or price Y, it is clear that for any single allowance, the link that explicitly ties the financial part of the split asset to its original issue price cannot be sustained. This means that, for a single allowance, the value of the financial part of the split-asset must be able to change and, in consequence, that the financial part of the asset cannot be classified as a pre-payment of tax. But with the constraint that, in any single country, over the lifetime an emissions trading scheme, total taxes recorded are equal to total cash received for total allowances issued.

As for the modelled financial asset approach the principle that underlies the modelled split-asset approach is that each government within the international scheme owns a part of each allowance. However the share owned by a single government is dependent on the cash received (and, so, liabilities owed) by each respective government and, so, information on the actual share of

allowances a government is allocated in respect of an emissions trading scheme is ultimately not a necessary variable.

The principal behind the modelled approach is that at the beginning of time t, government i will have total liabilities L_t^i and these liabilities will reflect the cash received for all allowances it sold from the beginning of the scheme up to and including time t, $\sum^{j=t} C_j^i$, minus all taxes it received in respect of emissions up to time t, $\sum^{j=t-1} T_j^i$.

Where C_t^i = the cash received by government i for allowances it sold in time t (and for convenience it is assumed that all cash is received at the beginning of the year) and T_t^i = the tax received by government i for emissions that occurred in time t.

At the beginning of year t therefore:

$$L_t^i = C_t^i + \sum_1^{t-1} (C_j^i - T_j^i) \qquad (1)$$

The underlying principle is that at time t government i has liabilities associated with every allowance issued and still circulating within the scheme, G_t, irrespective of which country originally issued the allowance and that wherever emissions occur government.

The average liability of government i for a single allowance in time t is therefore equal to

L_t^i / G_t = the value of the financial part of the split-asset at time t.

Total taxes received by government i are dependent on the total numbers of allowances surrendered in time t S_t , irrespective of which country they were surrendered in, and so

$$T_t^i = L_t^i * S_t / G_t \; . \qquad (2)$$

Total taxes paid by domestic enterprises to government i,

$$TD_t^i = L_t^i * S_t^i / G_t \qquad (3)$$

(where S_t^i = the number of allowances surrendered directly to government i).

And total taxes paid by domestic enterprises to government i and the R.O.W,

$TT_t^i = L_t * S_t^i / G_t$ (4) (where L_t = the total liabilities of all governments operating within the scheme).

Note that for the national accounts of a single country the only information required to calculate L_t = the total cash received by the scheme at time t and information on total surrenders for emissions up to t-1 (as is evident from (1) above).

It can be shown by manipulation (or the simple first principal that liabilities at the beginning of time t equal liabilities at the beginning of t-1 plus the cash raised in time t minus the taxes received in t-1) that equation (1) above is equivalent to:

$$L_t^i = C_t^i + L_{t-1}^i - T_{t-1}^i, \qquad (5)$$

This provides the ability to calculate estimates of liabilities and taxes relatively simply, as, at the beginning of the scheme in year 1, $L_1^i = C_1^t$.

It is relatively simple to show that the method ensures that total taxes recorded are equal to total cash received. In the final year of the scheme, z, total taxes received will be equal to the value of the financial part of all remaining assets, as, from (2) above:

$T_z^i = L_z^i * S_z / G_z$ and $S_z / G_z = 1$, (the ratio of allowances surrendered for emissions in z divided by all remaining allowances in z, $G_z = S_z$.

So, $T_z^i = L_z^i$.

Further, $T_z^i = L_z^i = C_z^i + \sum_1^{z-1} (C_j^i - T_j^i)$

And so, $= \sum_1^z T_j^i \;\; = \sum_1^z C_j^i$

The strength of the 'modelled' approach is that it removes the interpretative problems caused by 'indifference' whilst constraining total taxes and total cash received.

To illustrate this, the example below follows the same flows as used in 3c above (where it is further assumed that all allowances not issued by governments A and B were issued for free; although this is only for simplicity and not because it changes the conclusion).

The table shows that in each year Governments A and B receive the same flow of taxes from resident and non-resident enterprises, irrespective of the variant accounted for.

So, in year 1, B receives 150 units of cash from its sale of 150 allowances, recalling that it also issued 50 for free for which no imputation is made in the split-asset approach.

At the beginning of year 1 therefore it's liabilities, L_1^B,=150. The total number of allowances on the market at that time, G_1 = 100. In year 1, a total of 200 allowances are surrendered to

governments participating in the scheme. The total taxes paid to government B therefore = $T_1^B = L_1^B * S_1 / G_1$ = 150*0.2= 30.

Taxes paid by domestic enterprises to B, $TD_1^B = L_1^B * S_1^B / G_1$ =150*10/1000=1.5.

Taxes paid in the R.O.W to B = $T_1^B - TD_t^B$ =28.5.

Taxes paid by domestic enterprises to B and the R.O.W, $TT_1^B = L_1 * S_1^{iB} / G_1$ = (150+100), the sum of cash raised by governments B and A in year 1), * 10/1000=2.5.

So taxes paid by domestic enterprises to the R.O.W = 2.5-1.5=1.

Net-lending in each year is equal to taxes paid by non-resident and resident enterprises.

End-year financial liabilities for government B = the value of outstanding allowances to B at the end of the year = $(G_1 - S_1) * L_1^B / G_1$ = 800*150/1000=120 or $L_1^B - T_1^B = 150 - 30 = 120$.

Worked Example 3b (I) : Split asset approach – Taxes to R.O.W – collective ownership

		Year 1		Year 2		Year 3		Year 4		Year 5	
		Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received from domestic enterprises	V1,2,3	5	1.5	5	1.5	5	1.5	5	1.5	5	1.5
Taxes received from non-resident enterprises	V1,2,3	15	28.5	15	28.5	15	28.5	15	28.5	15	28.5
Taxes paid by domestic enterprises to R.O.W	V1,2,3	7.5	1	7.5	1	7.5	1	7.5	1	7.5	1
Net lending	V1,2,3	20	30	20	30	20	30	20	30	20	30
Fin liabilities	V1,2,3	80	120	60	90	40	60	20	30	0	0
Cash		100	150	100	150	100	150	100	150	100	150

The table is clearly different to 3b, shown above. But the flows are more stable and are not, by design, affected by the indifference of enterprises to the origin of allowances they surrender. It is interesting to note, as described in the Annex, that the methodology described above will result in the same flows, whether the allowances are purchased *voluntarily* or *compulsorily*.

The example above is deliberately simplistic to illustrate the feasibility but it's important to note its applicability even in cases where allowances are issued over more than one year and by different countries. For example consider the flow of tables below:

Allocation of allowances to countries

Country	A	B	C	D
Number	**2300**	1500	1600	700

A global agreement sees countries A, B, C and D agree to a cap and trade emission scheme to operate over a ten year period with the allocation of **6100** allowances as shown. This information is not actually needed in the split-asset modelled approach but is included here to set the scene.

Government	Year 1	Year 2	Year 3
A	1000	900	400
B	500	400	600
C	700	800	100
D	200	300	200
Total	**2400**	**2400**	**1300**

Countries issue allowances over a three year period as shown. For simplicity all allowances are issued at the beginning of the year

Profile of allowances surrendered in each country, (S_t^i)

Government	Year 1	Year 2	Year 3	Years 4-10
A	**80**	**80**	**40**	**1500**
B	40	50	30	1000
C	50	40	40	800
D	280	480	280	1310
total	**450**	**650**	**390**	**1490**
	S_1	S_2	S_3	$\sum_{i=4}^{10} S_i$

Allowances are surrendered in each country in years 1, 2 3 and 4 to 10 as shown

Cash received from issues, (C_t^i)

Government	Year 1	Year 2	Year 3
A	**10000**	**4500**	**3200**
B	0	2000	2400
C	4200	0	900
D	200	0	0
Total	14400	6500	6500

The total cash received from the issuance of allowances is as shown

Accounting Flows - Year 1

Country	Total tax received by Gov: T_1^i	Financial liabilities - beginning year: L_1^i	Total tax paid by residents TT_1^i	Tax paid by residents to resident Gov: TD_1^i
A	**1875**	**10000**	**480**	**333.3**
B	0.00	0	240	0
C	787.50	4200	300	87.5
D	37.50	200	1680	23.3
Total	2700.00	14400	2700	444.2

Total tax received by government i, is equal to the number of allowances surrendered in all countries multiplied by the average liability government i has in respect of each allowance.

So, $T_1^i = L_1^i * S_1 / G_1$

For government A, T_1^A = 10,000*450/2400.

Total; taxes paid by resident enterprises = $TT_1^i = L_1 * S_1^i / G_1$. So for enterprises resident in A, $TT_1^A = L_1 * S_1^A / G_1$ = 14,440*80/2400=480. Of which $TD_1^A = L_1^A * S_1^A / G_1$ =10000*80/2400 =333.33 are paid to government A.

Accounting Flows - Year 2

Country	Total tax received by Gov: T_1^i	Financial liabilities - beginning year: L_1^i	Total tax paid by residents TT_1^i	Tax paid by residents to resident Gov: TD_1^i
A	**1886.5**	**12625.0**	***334.7***	**232.2**
B	298.9	2000.0	*209.2*	23.0
C	509.9	3412.5	*167.4*	31.4
D	24.3	162.5	*2008.3*	17.9
Total	2719.5	18200.0	*2719.5*	304.5

Government A's liabilities at the start of year 2 = its liabilities at the start of year 1 plus the cash raised at the start of year 2 minus taxes it received in year 1.

$L_2^A = C_2^A + L_1^A - T_1^A$ =4500+10000-1875=12625.

Similarly the total stock of liabilities at the global level L_2 , = 6500+14400-2700=18,200.

The total stock of allowances at the international level at the start of year 2, G_2 = $G_1 - S_1$.

It follows that

$T_2^A = L_2^A * S_2 / G_2$ =12625*650/4350=1886.5.

$TT_2^A = L_2 * S_2^A / G_2$ =18200*80/4350 =334.7

$TD_2^A = L_2^A * S_2^A / G_2$ =12625*80/4350= 232.2.

Accounting Flows - Year 3

Country	Total tax received by Gov: T_1^i	Financial liabilities - beginning year: L_1^i	Total tax paid by residents TT_1^i	Tax paid by residents to resident Gov: TD_1^i
A	**1087.2**	**13938.5**	**175.8**	**111.5**
B	319.9	4101.1	131.9	24.6
C	296.6	3802.6	175.8	30.4
D	10.8	138.2	1230.9	7.7
Total	1714.5	21980.5	1714.5	174.3

In summary for a single county A's national accounts, the information set needed is:

- The total number of allowances that remain on the market at the start of an accounting period.
- The total number of allowances surrendered in each accounting period.
- The cash received for sales of allowances by A in each accounting period.
- The cash received for sales of all allowances by all countries in each accounting period.
- The number of allowances surrendered in A in each accounting period
- The stock of allowances includes any allowances gained via equivalent mechanisms such as CDMs (which are treated in the same way as allowances provided for free).

Option (d): The Supranational approach

Cognisant of the difficulties multinational schemes present for the financial asset approach, the TF considered a variant that resolved many of these difficulties, albeit introducing others. Unfortunately the option was formulated too late for the TF to thoroughly consider it but it is considered more fully below.

The proposal was to recognise the existence of an international body, such as the UN or EU, or other accounting entity, which could be identified in a definable way, even if only as an abstract concept, as being the originator of the allowances,

A feature of multinational schemes is that by collective agreement allowances are allocated amongst participating countries. Variants of supranational approaches exist but the one considered in this report and discussed by the TF was to record a capital transfer to government from the supranational body reflecting the market value of the allowances they have been allocated. The approach assumes that allowances are transferred from the supranational body to a government at exactly the same time that the government issues the allowance to units.

The initial transfer from the supranational body will increase net-lending of governments but not gross debt as the allowances are financial liabilities of the supranational body.

Free allowances

Allowances are recorded as having been transferred to a government at exactly the same time as they are allocated to enterprises (via auctions or for free). If they are provided for free, a capital transfer should be made from government to the receiving enterprise. For the free allowances this exactly offsets the capital transfer received from the supranational body when the allowances were allocated.

To illustrate the flows we return to the flows used in Worked Example 3.

Worked Example 3a: Supranational (Financial asset) – Debt cancellation approach

	Year 1		Year 2		Year 3		Year 4		Year 5	
	Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received	50	10	50	10	50	10	50	10	50	10
Net-lending	100	200	0	0	0	0	0	0	0	0
Debt Cancellation – capital transfer	50	10	50	10	50	10	50	10	50	10
Capital transfers received	100	200								
Fin liabilities	0	0	0	0	0	0	0	0	0	0
Cash	100	200	100	200	100	200	100	200	100	200

Worked Example 3b: Supranational (Financial asset) – Taxes to R.O.W

	Year 1		Year 2		Year 3		Year 4		Year 5	
	Gov A	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**	**Gov A**	**Gov B**
Taxes received	0	0	0	0	0	0	0	0	0	0
Capital transfers received	100	200								
Taxes paid by domestic enterprises to R.O.W	50	10	50	10	50	10	50	10	50	10
Net lending	100	200								
Fin liabilities	0	0	0	0	0	0	0	0	0	0
Cash	100	200	100	200	100	200	100	200	100	200

In describing the financial asset approach (option (d)), it was clear that, for multinational schemes, key aggregates were affected by the indifference of units to the allowances they surrendered.

For example the variants of 'Worked Example 3' in the financial asset approach showed that if all allowances issued by B were surrendered to B and other countries in the first year and allowances issued by A were surrendered to A in years 2 and 3, instead of years 1 and 2, the accounts in both governments A and B would differ despite the indifference of enterprises to the allowances they surrendered. However with the supranational approach there would be no difference to the accounts.

Summary assessment of (d)

For a single government the net sum of all the flows related to transactions in allowances is an is an increase in net-lending equal to the cash received from enterprises but with taxes recorded when emissions occur either to the international entity or to the government where the allowance is surrendered, with a corresponding debt cancellation entry; whereupon the liabilities of the international entity are extinguished. The scheme, by design because the allowances are viewed as liabilities of the supranational body, means that national estimates of government debt are unaffected by allowances and also by any indifference to whether an enterprise surrenders an allowance originally sold by government X or government Y.

In this respect the approach has an advantage over the financial asset approach (in a multinational scheme but without a supranational body) but there remain some difficulties. One consequence of the supranational approach is that the financial asset approach should also be adopted for purely national schemes. But this would mean that governments operating a pure national scheme would have financial liabilities and those that were in an international scheme did not. Moreover additional complications would arise for the accounts when a government that previously operated a purely national scheme moved to a multinational scheme. For example, assuming all other things equal, the financial liabilities of the government that joined would be transferred to the supranational body with a corresponding capital transfer imputed to reflect this transfer.

Of the two possibilities – debt cancellation or a tax paid to the international entity – some users may have a preference for the former rather than a latter, as the former provides governments with a mechanism, that might be seen by some, as artificially reducing the tax burden imposed by government; certainly when compared with any of the viable options for national schemes, where taxes to government will always be recorded.

Another advantage of the supranational approach is that it allows allowances related to other (e.g. CDM) schemes to also be treated as financial liabilities, in this case financial liabilities of the supranational body.

Perhaps the biggest disadvantage of the approach, however, is the "political" dimension; namely the requirement that some institution or body is recognised as being the issuer of the allowances and, so, the ‘debtor’ with the liabilities.

Comparing options

To simplify the discussion the table below summarises the key pros and cons of the various key options:

(a) NPNF - OCV in the acquiring unit – tax recorded at issue.

(b) Financial asset

(c) Split asset and

(d) Supranational financial assets.

The table illustrates that none of the approaches is perfect and, as stated earlier, this to a large extent, reflects the fact that unlike other taxes, the cash received by government does not necessarily equal the prices paid by emitters for allowances or the price of allowances when the emissions occurred.

Cash received and taxes recorded

Options (a) and (c) both provide a mechanism where the cash received by governments is exactly equal to the taxes recorded For option (a) this occurs at the same time, in other words, taxes will not be recorded when emissions occur, and, so, would appear to be inconsistent with SNA accrual recording principals. The two remaining options record taxes on the basis of the market price of allowances when emissions occur

Tax event - Timing

In considering this issue the TF expressed a strong preference for recording taxes when the emissions occurred – which by extension eliminated option (a). For the financial asset and supranational financial asset approaches this requires the recording of additional flows to record changes in the value of allowances between the surrender and emission dates. The Task Force did not develop proposals on how these flows should be recorded but one option would be to record capital transfers between government and emitters, depending on whether there was a holding gain or loss; which would impact on net-lending figures.

In practice allowances are surrendered some time after the period in which emissions occurred. If, for example, allowances for emissions undertaken in period t were surrendered in t+1, assumptions would be required to estimate taxes in year t in real time (i.e. year t). For the financial asset approach assumptions relating to the relative shares of the issuing countries of surrendered allowances in t+1 will be needed. And for the split asset approach, a further assumption relating to the original issue price of the surrendered allowances will also be needed. By design, the 'modelled' approaches 'implicitly' build in these assumptions from the outset. For the modelled split-asset approach therefore only revisions in expected emissions in year t will impact on the initial estimates made for year t. For the modelled financial asset approach, the accounts in year t will require additional assumptions about any expected price change between

the emission date and the surrender date (to reflect the value of implicit capital transfers/reciepts), so revisions may also occur here.

Taxes: Enterprise and Government perspectives

If the surrender and emission dates are the same, the financial asset and supranational financial asset approaches reflect the *opportunity cost* perspective of emitters in valuing taxes. However in practice there is typically a difference between the two dates meaning that the taxes recorded will not reflect the instantaneous opportunity cost of emitters.

Taxes on Production to the R.O.W

All of the options except the non-financial non-produced asset approach raise the prospect of taxes on production paid by resident enterprises to the R.O.W. Whilst not inconsistent with the SNA many TF members were uncomfortable with this. As such, for the financial asset and supranational financial asset approaches there was a general preference for recording the flows using the debt-cancellation variant. For the split-asset approach this alternative is not available as the rationale for the option is that cash received and taxes recorded are equal in a given country, which cannot be achieved with the debt cancellation variant.

Free allowances

The split-asset approach assumes that all of the value of an allowance provided for free is a non-produced non-financial asset. This means that when allowances are provided for free by government no imputations for a capital transfer are needed. Although strong arguments exist that a capital transfer should be made to reflect this transaction it is not clear that this should always apply, as discussed in Section 1.

Indifference of enterprises to the allowances they surrender

In theory at a given point in time enterprises will place the same value on allowances irrespective of where and when they were issued, and at what original price. An enterprise is therefore indifferent to the origin of the allowance it surrenders. However this indifference is not necessarily repeated in the accounts, which affects the financial asset option and the split-asset option.

For the financial asset approach irrespective of whether the debt cancellation or tax to the R.O.W approach is used, net-lending and gross debt figures will be affected. In other words these variables will differ if enterprise A decides to surrender an allowance originally issued by country X rather than country Y; a decision to which it is completely indifferent.

For the split-asset approach recorded taxes will also be affected. For example if just before it was required to surrender 10 allowances, a polluter acquired allowances on the market that were initially allocated for free but now had a market value of 20, no taxes on production would be recorded. If however the same polluter instead acquired 10 allowances that originally had a market value of 30, taxes on production of 300 would be recorded. From the polluter's perspective this is incongruous as the polluter is indifferent to the original issue price of the

allowances. In effect a payment of 200 by the polluter would translate into a tax payment of either zero or 300.

The indifference phenomenon does not make the accounts wrong. But the fact that the same emissions and the same number or surrendered allowances can lead to a different set of accounts, does make it difficult to interpret the accounts. To overcome these interpretative problems modelled approaches for both the financial asset and split-asset approach have been developed; both of which are relatively simple to implement. At any point in time both the modelled split-asset approach and the modelled financial asset approach record the same flows in the accounts irrespective of the original issue country and issue prices of actual surrendered allowances.

Complementary (CDM-type) schemes

Interpretative difficulties are also presented for the financial asset approach when complementary mechanisms are considered and where it is difficult to meaningfully identify to which country the associated liabilities are allocated. The modelled financial asset approach is however able to overcome this difficulty since it recognizes by design that all countries have collective liabilities in association with allowances.

Impact on	A	B	C	D
Government Net-Lending				
At Issue	Equal to cash received from sales of allowances.	Zero	Zero	Equal to cash received from sales of allowances - equal to imputed capital transfer from supranational body.
At Surrender	Zero	Net lending in Government A increases by: market value of allowances at surrender, for allowances issued by and surrendered in A, minus market value of allowances surrendered in A but issued by another country.	Net lending in Government A increases by: issue price of allowances at surrender, for allowances issued by and surrendered in A, minus issue price of allowances surrendered in A but issued by another country.	Zero
Time Series	Net-lending increases only when allowances are sold.	Net lending increases when free allowances are issued. Net lending will vary depending on whether allowances surrendered were issued by receiving government or another government.	Net-lending will vary depending on what the original issue price of the surrendered allowance was and the country in which it was issued.	Net-lending increases only when allowances are sold.
Taxes received by government				
Timing	Recorded at issue date - not when emissions occurred	Recorded at point emissions occurred	Recorded at point emissions occurred	Recorded at point emissions occurred
Value	Equals market value of allowances when issued - with variant that allows for imputation of free allowances	Equals market value of allowances at emission - with two approaches. One that records a debt cancellation when allowances issued by country B are surrendered in country A and one with a reallocation of taxes to country B	Issue price of allowances - with taxes reallocated to country B for allowances issued by B but surrendered in A.	Market value of allowances at emission - with two approaches. One that records a debt cancellation when allowances are surrendered and one with a reallocation of taxes to the supranational body.
Taxes paid by enterprises				
Timing	Recorded when allowances are purchased - the enterprise may not be the polluter.	Recorded at point emissions occurred	Recorded at point emissions occurred	Recorded at point emissions occurred
Value	Market value of allowances when issued - with variant that allows for imputation of free allowances	Market value of allowances at emission - with taxes paid to the R.O.W even if the enterprise has no activities there, unless the debt-cancellation approach is used.	Issue price of allowances - with taxes paid to the R.O.W even if the enterprise has no activities there.	Market value of allowances at surrender - with taxes paid to supranational body unless the debt-cancellation approach is used
Government Debt	No impact	Gross debt increases by market value of allowances - including free allowances - and reduces only when allowances are	Gross debt increases by issue price of allowances and reduces only when allowances are surrendered,	No impact on national debt

		surrendered, irrespective of when and where. Net debt increases when free allowances are issued.	irrespective of when and where. Net debt is unaffected	
Consistency with other schemes	Allowances would be ignored in government accounts	It is difficult to meaningfully identify an individual government with the liability.	Allowances would be ignored in government accounts.	Allowances can be treated as financial assets in the same way as cap and trade allowances.
Practicalities				
Data required for government accounts	*At issue*: Market price or cash received by government. *At surrender*: None	*At issue*: Market price. *In between issue and surrender*: market price (for balance sheets) and quantity of allowances not surrendered. *At surrender*: Market price, with ability to differentiate between allowances issued by different governments	*At issue*: Market price. *In between issue and surrender*: Issue price (for balance sheets) and quantity of allowances not surrendered At surrender: Original issue price with ability to differentiate between allowances issued by different governments	At issue: Market price. At surrender: Market price.
Interpretability Difficulties	Taxes may be paid and recorded by units that may never pollute and by non-resident producers	No cash is actually received by government when taxes are recorded. International comparisons of debt may be 'distorted' reflecting the invariance of enterprises to the original issuing country (or type e.g. CDM) of allowances they surrender. Taxes recorded will also be affected by this invariance if the tax on the R.O.W approach is used. Countries with a surplus of allowances to expected emissions will also have debts. A smaller difficulty concerns the argument that taxes recorded by producers reflect the opportunity cost to them, which may not align with their perspective, which might be based on the price they paid for the allowance	No cash is actually received by government when taxes are recorded. International comparisons of debt may be 'distorted' reflecting the invariance of enterprises to the original issuing country and issue price of allowances they surrender. Taxes recorded will also be affected by this invariance. Countries with a surplus of allowances to expected emissions will also have debts. The amounts recorded as tax received by government will not necessarily align with the perspective of enterprises. The financial asset provides no return for the holder which could be problematic in periods of high-inflation.	No cash is actually received by government when taxes are recorded. The creation of a supranational body with liabilities may be difficult to justify, particularly as its genesis is an accounting construct. A smaller difficulty concerns the argument that taxes recorded by producers reflect the opportunity cost to them, which may not align with their perspective, which might be based on the price they paid for the allowance. Some complications would arise when a government operating a purely national scheme joined a multinational scheme, in respect of its liabilities, which would be transferred to the supranational body. Moreover comparisons of government debt levels across countries with national and multinational schemes would be distorted.

6. Recommendations for Emission Allowances

Recommendations

The TF was not able to reach a consensus on the options. Over half were in favour of option (c) the split-asset approach, a group that included a strong user caucus, such as the ECB, OECD Tax Directorate and IMF. Strong support was also received for option (b) the financial asset approach, reflecting in its entirety the views of national statistics offices. The TF did not unfortunately have sufficient time to consider the supranational approach in detail but in discussions the majority of supporters of options (b) and (c) intimated that their views were sufficiently solid to not be affected.

On the key issues therefore, and for emission allowances issued via cap and trade schemes, the Task Force:

- was not able to come to a common view on the nature of the tradable asset (e.g. non-financial, financial etc);
- was in broad agreement that the tax event was when the emissions occurred, and not when allowances were auctioned or allocated;
- was not able to agree on what value should be recorded for taxes at the time of the tax event - the issue price or the market price at the time of emission.

Because the TF was not able to arrive at a consensus it was agreed that the issue should be deferred to the ISWGNA who are asked to consider the various options and to recommend one of the options, even if only in setting a convention. The ISWGNA is however encouraged to consider the following criteria in arriving at its decision:

- Data requirements
- International comparability;
- Economic interpretability;
- Consistency with other parts of the SNA; and
- The creation of a new sub-category of financial/non-financial asset, tax and transfers related to emission trading schemes.

7: Emission Permits

The deliberations of the TF on emission allowances operating within ETSs have naturally led to some questions relating to the treatment of taxi and casino licenses in the SNA. As the report makes clear, the important distinction between ETS type emission allowances and taxi and casino licenses relates to the timing of the compulsory event. For ETS emission allowances the compulsory event occurs *when* the emissions occur (underlying activity occurs) but for taxi and casino licenses the compulsory event occurs *before* most of the activity occurs.

The Task Force's primary focus was on allowances and not permits per se. However it is instructive to consider what the Task Force's deliberation imply for permits more generally – in other words to consider what the deliberations would imply if emission permits required in advance of any activities related to emissions, were issued.

For emission permits such as these, the parallels between taxi and casino licenses are much stronger. Following the SNA, the consequence would be that the full cost of the permits would be recorded as a tax in the year that an enterprise purchased them, assuming of course that governments have no liability to reimburse payments in the event they are not used, in other words option (a).

Permits that spanned a single accounting period could be treated in much the same way that taxi and casino licenses are currently treated. However, although such emission permits were not explicitly discussed by the TF, it follows from the discussions on conventional emission permits, that TF members, in particular those reflecting the user constituency, would find the use of option (a) undesirable for permits that spanned more than one accounting period. This reflects two points:

(i) the potential size of emissions permits and their impact on the accounts, in particular taxes, and the fact that the timing of recorded taxes would bear little relation to emissions; and
(ii) the significant 'speculative' trade in permits; meaning that some enterprises would be deemed to have paid a tax despite the fact they had no emissions; a situation that is exacerbated by the fact that the trade is global.

Recording emission permits that had to be purchased before emissions occurred in line with any of the options proposed in this report, except option (a), would create an implicit inconsistency with the SNA treatment of taxi and casino licenses in which government had no liability to reimburse licensees (which itself is arguably inconsistent with the accrual recording of taxes).

This raises a question mark about the current treatment of taxi and casino licenses. Indeed options (b) to (d) involve the recording of a tax payment in the relevant period in which emissions occurred irrespective of whether governments explicitly recognized a liability in the event that the permit was not used.

Making changes to the SNA in this regard would not of course be impossible. But there are a number of additional factors to consider.

For taxi and casino licenses the 2008 SNA, in effect, decomposes the overall value of the rights into two distinct parts:

- a tax component, where the payments are accrued over the lifetime of the license, if government recognizes a liability, or otherwise, recorded in the acquisition period; and
- a holding gain component, which reflects the monopoly profits in excess of the underlying tax payments that are expected by the licensee from holding the rights.

When governments issue these licenses, the accounts record only the cash transaction between government and the licensee; the monopoly profits appear as an OCV change in the accounts of the licensee when the gain occurs (although in practice the 2008 SNA recommends that the gain is only recorded when realized.

But, if one considers the analogies with free permits (permits issued below market price) this treatment would not be the case for many of the options considered by the TF.

Consider the example formulated in the 2008 SNA §17.354 to §17.357. The main thrust of which is as follows: unit A purchases the rights to engage in an activity for three years. The rights have a market value of 19 in year 1 (12 reflecting taxes, which it pays to government as the price for the permit and 7 reflecting its expected monopoly profits from the license). The market value of the permit falls to 13 at the start of the second year. The example does not explicitly give a market price for year 3 but for sake of argument we assume here that it is 6.5. If government does not offer a refund in the event of a cancellation, taxes of 12 are recorded in year 1. If government does offer a refund, taxes of 4 are recorded each year.
Now consider the example in the context of emission permits. In other words imagine that 3 permits are issued, each with value 7 (4 taxes + 3 monopoly profits per year).

Options (b) and (c) would record taxes of 7 in year 1, and 6.5 in years 2 and 3; meaning that total taxes received by government would be 20 over the period; 9 higher than the figures recorded following the SNA logic for casino licenses. However net-lending figures would differ depending on whether government offers a refund or not; recalling also that a capital transfer of 9 - the difference between the market value of the three permits (3*7) and the cash paid to government (3*4) - from government would also need to be recorded in year 1.

Option (c) would return the same tax figure of 12 as in the 2008 SNA, spread over the 3 years. But net-lending would differ compared to casino licenses where government did not offer a refund.

That all being said a more philosophical question concerning the compulsory nature of permits and the flow of taxes or other revenue to government merits discussion. §11.26 of the 2008 SNA makes clear that assets cannot be created by government based on the wrapping up of future streams of tax revenues. But this rule is to some extent blurred in the case of some permissions and licenses – taxi and casino licenses included. Intuitively one could construct an argument that such licenses are merely mechanisms that create assets out of future tax revenue streams. Indeed, in the case of licenses where government has a liability to reimburse payments where they are not used, the 2008 SNA explicitly makes this link.

The implication of all of this is that it might be preferable, for such licenses, to accrue tax payments over time irrespective of whether government has a liability to reimburse payments. This means that an 'other account payable' will appear in the government balance sheet whilst the license is operational. The deliberations of the Task Force on emission permits seem to suggest that the appetite for making such a change is relatively strong

The TF encourages the ISWGNA to also consider the current treatment of tax and casino licenses where government does not have a liability to reimburse payments in its deliberation.