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WS.7 Guidance Note on the Treatment of Emission Trading Schemes

Prepared by the Well-being and Sustainability Task Team (WSTT)

Treatment of Emission Trading Schemes

Treatment of Emission Trading Schemes[1]

SECTION 1: THE ISSUE

BACKGROUND

1. One of the research items on the SNA agenda is a re-examination of the treatment and recording of emissions trading schemes in the national accounts. Currently it is recommended to record all emissions trading schemes (ETS) as taxes on production, in part because the SNA notes that these permits do not involve the use of a natural asset. This note proposes two alternative methods in which the atmosphere is viewed as a natural asset and therefore, proceeds from ETS permits sold by governments are not recorded as taxes but (1) as sales of non-produced assets or (2) as a rent payable for the right to use a non-produced asset, i.e. the atmosphere, for emitting CO2.

2. Greenhouse gas (GHG) emissions, originating from production and consumption activities are having far reaching and permanent impacts on the climate. To reduce GHG emissions or eliminate them altogether, countries around the world have introduced, or are introducing, various policies aimed at reducing GHG emissions. In general, these policies apply a price to a broad set of emission sources that are aimed at encouraging businesses and individuals to innovate and change their behavior and therefore reduce the level of GHG emissions. Emission trading scheme is one such mechanism.

3. As countries adopt emission trading schemes, it is important that the associated transactions (non-financial and financial) across all sectors are properly accounted for and transparently presented in the System of National Accounts (SNA). Extensive discussions regarding the recording of such schemes had taken place when the *2008 SNA* was drafted, as reflected in section Q of chapter 17, however emissions trading schemes were in their infancy. This guidance note proposes recommended updates to the SNA to clarify the treatment of emissions trading schemes.

EMISSIONS PERMITS (CAP AND TRADE)

4. An emissions permit (cap-and-trade) system is a flexible market mechanism that establishes a maximum level of pollution - a cap. Companies must have a permit to cover each unit of pollution they produce. Each permit stipulates the amount of GHG emissions that can be emitted (quota). As such, each company must have a permit with a sufficient quota of units of emissions to cover their needs. In the initial stages of some cap-and-trade schemes, permits were given to non-financial corporations freely. As a result, firms did not incur any additional production costs, unless they exceeded their quota and were required to purchase additional permits from others. More and more governments have now decided to auction permits. The purchase of the permit is not restricted to the emitting entity - permits can be purchased by any market participant - individuals, investors,

[1] Prepared by Emmanuel Manolikakis & James Tebrake (both IMF) and the Task Team on Wellbeing and Sustainability.

governments, nonprofit institutions, financial and non-financial companies[2]. The schemes are structured primarily for non-financial corporations, who are likely to emit. If companies exceed their quota for emissions, they can purchase unused permits from others, adjust their production or in the longer-term, install technology that reduces emissions. Depending on the adaptability of firms' production functions, some firms will be able to adjust to the limits much easier than others. The cap-and-trade system, by establishing an overall ceiling on emissions, is expected to lead to a reduction in the overall levels of emissions.

CURRENT GUIDANCE – EMISSIONS PERMITS RECORDED AS SPLIT ASSETS, WITH TAXES ON PRODUCTION RECORDED AT SURRENDER

5. The *2008 SNA* recommends that payments for permits relating to emissions into the atmosphere should be recorded as taxes because "*These permits do not involve the use of a natural asset (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. The permits therefore constitute assets and should be valued at the market price for which they can be sold."* (Paragraph 17.363).

6. Recognizing that the proposed treatment in the *2008 SNA* does not fully articulate all the dimensions of tradeable emission permits, further guidance was requested by the ISWGNA[3]. A task force (TF) was established in 2009, which examined the issue and produced a final report "*OECD/Eurostat Task Force on the Treatment of Emission Allowances and Emission Permits in the National Accounts Final Report October 2010*"[4]

7. The TF took as its starting point the recommendations found in the 2008 SNA manual, which stipulates that the atmosphere should not be considered as an economic asset, and that accordingly the permits when transacted with government should be recorded as taxes. Although, some TF members argued against this view, the discussions were framed within this context. The TF examined and took into considerations numerous aspects: the timing of the tax event; the valuation of the tax event; whether either the surrender or issue date of permits should be used and what type of asset an emission permit resembles.

8. The review also considered and provided numerical examples of various options ranging from non-produced non-financial assets, financial assets, split assets which embody two distinct assets - a non-produced non-financial asset and a financial asset. The TF even explored the possibility of a super national body where a distinction between national type programs and international ones were discussed. The TF recognized from the outset that although emission permits share similar attributes with some of the options considered, emission permits do not perfectly align with any and therefore the TF needed to consider other criteria such as practicality,

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[2] Participation restrictions may be introduced in the future.

[3] The following points are summaries of the discussions from **THE RECORDING OF EMISSION PERMITS ISSUED UNDER CAP AND TRADE SCHEMES IN THE NATIONAL ACCOUNTS,** Update to SNA News and Notes Number 30/31 (February 2011), number 32/33, March 2012.

[4] The report may be found at http://unstats.un.org/unsd/nationalaccount/criList.asp

interpretability, data availability etc., to formulate a recommendation for the treatment and recording of emission permits.

9. Even after much deliberation, the TF could not reach a consensus on the most suitable alternative for consistently treating the transactions related to emission permits according to the principles adopted in the national accounts. TF members seemed to lean towards two possible options to record emission schemes. Both options aligned with the *2008 SNA* recommendation to record payments for emissions permits as other taxes on production on an accrual basis, however there were differences in the amount of taxes payable and in the type of assets involved, depending on the preferred treatment.

10. The first alternative, referred to as the **split asset approach**, treats the government auction of permits as a prepaid tax payable by corporations and a prepaid tax receivable by government. Upon surrender (as a proxy to the time of emission), government would record revenue (other taxes on production) at the original issue price and corporations would record a corresponding expense. As such, the tax accrual will be recorded when the emissions occurred at the original issuance value. If at any time the price of the permit differs from the original issuance price that difference will be recorded as a non-produced non-financial asset (NPNF) of the permit holder, where the value of the asset is **equal to the difference between the original issuance price and market price of the permit**. The appearance of the NPNF asset is not considered a transaction rather it will appear through the other change in volume account (OCVA). With this alternative, the taxes payable by the non-financial corporation will be equal to the cash received by the government. One anomaly with this approach is that the value of the non-produced non-financial asset may be negative if the market price falls below the issuance price[5]. In addition, the expense that will be incurred by the non-financial corporation upon surrender of the permit and recorded in their financial statements may not align with the original tax liability to the government[6]. As the tax recording requires for each permit information on issuance prices, this option is potentially highly data demanding, particularly in the case of international permit trading schemes.

11. The second alternative, the **financial asset approach**, treats emission permits as financial assets valued at market prices. As permits are auctioned, the auctioned price will be the market price and the issuer (government) will incur a financial liability and the acquirer of the permit will have obtained a financial asset. The type of financial asset/liability was required to be defined. Given the marketability of the permit, it was not deemed appropriate to record the financial asset as a prepaid tax as in the first option. Furthermore, the surrender value will be based on the prevailing market price which may differ from the issuance (auctioned) price, when a difference arises an 'other change in asset account' transaction (revaluation) will be recorded. Similar to the first proposal, emission permits are treated as other taxes on production for polluters and the tax will be recorded

[5] If this continues to be the recommended approach perhaps it could be amended not to allow the NPNF asset to go negative.

[6] For further information regarding the split asset approach please refer to the TF document on the treatment of emission allowances and emission permits in the national accounts pages 11-15 and for numerical examples starting on page 53. Note that it is not unusual for there to be differences between taxes in financial statements, and tax revenues recorded by government in macroeconomic statistics, as we are directing compilers to only record taxes likely to be received, whereas corporations will record tax expenditures based on what is legally due to be paid. This issue is therefore not specific to emissions permits, and therefore not a major problem.

at the time the permit is surrendered (as a proxy to the time when the emissions occurred), and the value of the permit will be based on the prevailing market price. Unlike the previous alternative, this treatment is more likely to align with the accounting records of the company where the tax accrual amount can differ from the original issuance value. Consequently, the tax revenue of the government may not equal the initial sales value of the emission permits[7].

12. In following the considerations of the Task Force, the ISWGNA chose to recommend the split asset approach. This recommendation which was described in SNA News and Notes numbers 30/31 and 32/33. It was this approach that was later described in the GFSM 2014 and has been adopted by most countries. There are several challenges that countries have experienced when trying to implement the split-asset approach. Key amongst these is: (i) how to deal with cross-border trading of permits and the resultant discrepancy between government revenue from auctions and the subsequent surrender of permits? (ii) how to treat permits which are freely given away by governments? (iii) how to record permits bought when there is no intention to use them – for example when purchased by environmental NPOs?

13. In addition, to interpretation and valuation issues, there are other practical data issues with the recommended split asset approach. Firstly, the data required to ensure the proper identification and sectoring of permits from the initial sale to the subsequent trading of the permits. Moreover, the approach requires complex recording of transactions across the sequence of accounts. These data demands could be very challenging and subject to potential recording error.

14. Many corporations expense the market value of permits at the time of surrender which, as has been highlighted, may deviate from its issuance price. An additional consideration is that the data requirements for a mixed asset recording are significant, with the need for obtaining information related to the original issuance of the permit on not only the issuance price but also the issuing jurisdiction (in case of an international permit trade scheme).

15. Another complication pertains to international or multi-country permit schemes / arrangements, such as the European Union Emission Trading Scheme (EU ETS) which covers all the European member states and the Western Climate Initiative which covers the U.S. states of California and Washington, and the Canadian provinces of Québec and Nova Scotia.

16. With these types of schemes, the issuing country will receive the proceeds of the sale of the permits through an auction process, however the use (surrender) of the permits can be in a different jurisdiction, which could result in countries being net exporters of emission permits or net importers without any direct correlation with emissions in that country.

17. Recording of these emission permits as an other tax on production at the time of surrender at the initial issuance price may create a situation where an economy will be receiving tax revenue from production activities that have occurred outside of the domestic boundary. When non-residents purchase / surrender emission permits, an other tax on production with the rest of the world needs to be recorded[8].

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[7] For further information refer to TF document pages 5 – 11 and numerical examples starting on page 42.

[8] Although in principle flows of other taxes on production with the rest of the world (ROW) should be recorded it was recommended by the ISWGNA that in practice, it would be easier to ignore these flows and deal with them instead through other changes in volume of assets (see SNA News and Notes 32/22).

18. In the absence of a centralized body to co-ordinate the sales and purchases of emission permits on behalf of the participating regions / countries, multi-country schemes may create asymmetries between national accounts sectors when differences arise between the values of permits issued by the country and the corresponding amounts surrendered to the country. As corporations are generally indifferent to who originally issued the permit they are surrendering, the sectoral flows related to the original issuance of the permits may not match the sectoral flows at surrender

19. Difficulties in understanding and interpreting government taxes, indicators used to analyze progress on emissions, net lending and net borrowing of institutional sectors, operating surplus and corporate tax liabilities may arise. These difficulties will impact all participating countries' institutional sector accounts. As corporate tax liabilities and savings will not be aligned with government revenues and savings. These discrepancies in net lending / net borrowing will be difficult to reconcile and interpret.

20. The discrepancy may be compounded if corporations attempt to incorporate multi-country arrangements to their overall tax strategy to maximize earnings as opposed to altering their production processes and emit less.

21. The issues raised above were discussed in the 2010 Eurostat/OECD Taskforce, regarding the possible imbalance between taxes payable/receivable in international trading schemes.

22. Given some of the recording challenges associated with the current treatment, a desire among some compilers to recognize the atmosphere as a natural asset that supports production and offers climate regulating services to the economy and society more broadly, and a need for users to better observe emission trading schemes reflected in the national accounts an alternative treatment(s) is proposed for consideration.

ALTERNATIVE OPTIONS CONSIDERED

OPTION 1: EMISSION PERMITS AS NON-PRODUCED NON-FINANCIAL ASSETS (CONTRACTS, LEASES AND LICENSES)

23. The current recommended treatment is based on the premise that the atmosphere is not a natural asset as per paragraph 17.363 of the 2008 SNA, where it states, "*these permits do not involve the use of a natural asset (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*." Proponents of the view that the atmosphere is an asset note that the atmosphere conveys many benefits such as precipitation services and radio transmission services which enable activities ranging from agricultural production to mobile phone use.

24. Additionally, it could be argued that when the government auctions off emissions permits, they are placing a value on the right to use the atmosphere's climate regulating services. "In many countries permits to use natural resources are generally issued by government since government claims ownership of the resources on behalf of the community at large" (paragraph 17.313).

25. The atmosphere is not owned or controlled by any economic unit and therefore this proposal does not suggest that the SNA asset boundary be extended to include the atmosphere. "It must be noted that the accounts and balance sheets of the SNA are compiled for institutional units or groups of units and can only refer to the values of assets that belong to the units in question. Only those

naturally occurring resources over which ownership rights have been established and are effectively enforced can therefore qualify as economic assets and be recorded in balance sheets" (paragraph 10.167). Rather, what is proposed is the SNA recognizes the atmosphere as an asset in much the same way it recognizes fish stocks or electromagnetic spectrum – as an implicit asset from which it can establish a permit that reflects the right to use the asset as part of specific production activities. These assets first belong to governments stemming from each governments ability to regulate the behavior of the institutional units in their jurisdiction. Governments engage in this regulation to limit the degradation of the atmosphere (preserve its climate regulating services). This is consistent with permits to use natural resources. When the user of the natural resource is given the right to use the natural resource without any intervention for a period of time, this "leads to the creation of an asset for the user, distinct from the resource itself but where the value of the resource and the asset allowing use of it are linked." (paragraph 17.315)

26. Consider the way the SNA recommends recording electromagnetic spectrum. An electromagnetic spectrum is considered a non-produced non-financial asset. When a government auctions off the electromagnetic spectrum (by selling transferable licenses), an asset (permit to use the electromagnetic spectrum) first appears via the other change in the volume of assets account on the government's balance sheet. Once its rights are sold there is a sale of an existing asset recorded in the capital account. The government receives cash and the corporation that purchased the permit receives rights to use the asset and records these rights to use the spectrum as an asset on their balance sheet. Since the rights can be sold the asset is recorded at market value and revalued over the life of the license[9].Similarly, one could argue that a fishing quota is not related so much to the fish but rather to the ocean (similar to the atmosphere). The ocean (ecosystem) can only produce so many fish – the government needs to restrict the amount of fish that are caught to ensure sustainability. Fishing quotas are treated as assets because the fish are considered a natural resource.

27. Should the right to use the atmosphere be treated differently from the right to use the electromagnetic spectrum? According to the SNA (paragraph 10.158), "*the category other natural resources currently includes radio spectra. Given the increasing move to carry out environmental policy by means of market instruments, it may be that other natural resources will come to be recognized as economic assets. If so, this is the category to which they should be allocated*." Recognizing the atmosphere as a resource would allow emission permits to be treated in a similar way to radio spectra. By treating permits as 'right-to-use' assets, which are created and sold by government, most of the practical concerns related to recording permits as taxes are overcome, particularly the issue of how to value the permit.

28. Further, in the case where emission permits are given freely by governments to non-financial corporations, the treatment will vary depending on whether the permits are considered a tax on production or an asset. The discussion has demonstrated that permits are valuable and when given freely could be considered as capital transfers or as subsidies if they are deemed to reduce the intermediate expenses of non-financial corporations. Such a treatment is straightforward where the government is selling a non-produced non-financial asset, but more challenging and complex in the

[9] Emission permits are not exactly the same as the use of the electromagnetic spectrum. First, the rights to use the spectrum are only given to institutional units that will use the spectrum in their production process. Secondly, once the spectrum becomes non-marketable, the services of the spectrum will be returned and will remain intact, whereas emission permits degrade the atmosphere.

split-asset approach where a tax on production is being recorded at surrender, and payments at auction are prepayments of tax.

29. Consider the following example in which a government issues 100 units for $10 and a non-financial corporation bought all 100 units.

30. In the first period, an appearance of an asset (emissions permit) in the government sector would occur through a volume change in the OCVA account when the auction occurs. Simultaneously there is a positive entry under acquisition less disposals of non-produced assets in the capital account for the nonfinancial corporation and a corresponding negative entry for government. For simplicity, we assume that there is no ownership transfer cost involved. There is no impact on GDP, however, the net lending/borrowing of corporations and governments will be impacted, to show the sale of the existing asset from the government account to the corporation's accounts. Limiting the impact of the recording of the permits on net lending / borrowing is reasonable where the economic nature of the permit is seen to be a tradable asset. Limiting the impact to net lending / borrowing would not be appropriate if permits are viewed as being primarily a cost of production for emitters.

31. This recording implies that the materialization and sale of the emission permits does not have an impact on the operating surplus / deficit of governments. It could be argued that the revenue from emission permits is not intended to finance current government operations, and therefore treating it as a sale of an asset may provide a clearer picture of government operating balances. Given these permits are auctioned it also means that governments do not have an a priori target revenue they are trying to achieve, another indication that it may not be appropriate for this transaction to impact the operating balances of government.

32. In period 2, assume the market price of a unit of emissions increases to $15. The change in market price will be shown in the revaluation account for the nonfinancial corporations. When the nonfinancial corporation surrenders its permits, the impact will be recorded in the other change in volume accounts to illustrate the write down in the asset. In this scenario, there will not be any direct implication regarding government tax revenues, net lending / borrowing or debt. There will be numerous indirect impacts on government revenues, net lending / borrowing or debt due to the adjustments that firms need to make to their prices and/or technologies in response to the emission permit. These indirect impacts are not illustrated in this example.

Table 1: Government Establishes Emission Permits

Account	**Economic Flow or Stock**	**Government**		**Non-financial Corporations**	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Other Change in the Volume of Asset Account	Contracts, leases, licenses	1000			
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Contracts, leases, licenses	1000			

Table 2: Government Auctions Emission Permits / Purchased by NFC

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Resources	**Uses**	**Resources**	**Uses**
Capital Account	Sale / Purchase of Existing Asset		1000	1000	

		Change in Assets	Change in Liabilities	Change in Assets	Change in Liabilities
Financial Account	Cash	1000		(1000)	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Contract, leases, and licences	(1000)		1000	

Table 3: Market Price of Emission permits increases from $10 to $15

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Revaluation Account	Contract, leases and licences			500	
Balance Sheet Account		**Assets**	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
	Contract, leases and licences			1,500	

Table 4: Nonfinancial Corporation surrenders half of its permit

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Other change in the volume of assets account	Contract, leases and licences			(750)	
		Assets	**Change in Liabilities**	**Assets**	**Change in**
Balance Sheet Account	Contract, leases and licences			750	

33. The source data requirements when emissions permits are recorded as a sale of an asset are relatively straightforward and are aligned with how emissions permits are recorded by some corporations. Businesses do not provide clear and uniform disclosures of cap-and trade impacts to the market. It has been noted that when permits are used to offset GHG emissions they are shown as current assets and valued similarly to inventory valuation. In other cases, they will be recorded as intangible assets or not disclosed altogether.

OPTION 2 – EMISSION PERMITS RECORDED AS A RESOURCE LEASE (FINANCIAL ASSET), WITH RESOURCE RENT RECORDED AT SURRENDER

34. An alternative approach, which also assumes that the atmosphere is an economic asset, is to treat the initial transaction as a resource lease. This is similar to the treatment of fishing quotas, timber and mineral resources. For instance, with fishing quotas the aim is to allow the institutional unit to fish at a level that will sustain the natural resource. It could be argued that governments have the same objective with emission permits – limit the amount of pollution to a level that does not impact the atmosphere.

35. The resource lease approach considers the issuance of permits as the purchase of a financial asset – a forward where the payment grants the acquirer with the right to emit a pre-specified quantity of GHG sometime in the future. ***A forward contract is a non-standardized contract between two parties to buy or sell an asset at a specified future time at a price agreed on at the time of conclusion of the contract.*** A benefit of this approach is that it does align

with the recording of permits in some company financial statements in that the emitting corporation incurs an expense at the time of surrender of the permit, which will impact their net lending/ borrowing. When the company surrenders the permit it is recorded as a resource rent payable and a resource rent receivable by the government.

36. To illustrate this recording (and the associated source data requirements) consider the example of where a government auctions 100 units for $10 a unit to a non-financial corporation. At T=0, the sales of the permits initially lead to an increase (decrease) in cash for the government (corporations) exchanged for a financial asset for the non-financial corporation and a corresponding liability for the government. In the following period (T=1), the market price increases from 10 to 15 per unit. In this case the financial asset and liability increase through the revaluation account. Assume that in time T+1, $750 of the permit is surrendered. This is recorded as a resource rent (paid by the non-financial corporation to the government) of $750. Note that this implies that the governments revenues from the resource rent include the holding gains (losses) that accrued to the non-financial corporation. Tables 5-7 illustrates the recording of these transactions.

Table 5: Government Establishes Emission Permits

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Resources	**Uses**	**Resources**	**Uses**
Allocation of Primary Income Account	Property Income				
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Financial Account	Emissions Permit - Forward		1000	1000	
	Cash	1000		(1000)	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Emissions Permit – Forward		1000	1000	

Table 6: Market Price of Emission permits increases from $10 to $15

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Revaluation Account	Emissions Permit - Forward		500	500	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Emissions Permit - Forward		1500	1500	

Table 7: Nonfinancial Corporation surrenders half of its permit

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Resources	**Uses**	**Resources**	**Uses**
Allocation of Primary Income Account	Property Income – Natural Resource Rent (Climate Regulating Services)	750			750
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**

Financial Account	Emissions Permit - Forward		(750)	(750)	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Emissions Permit - Forward		750	750	

OPTION 3: EMISSION PERMITS RECORDED AS CONTRACTS, LEASES, LICENSES, WITH TAXES ON PRODUCTION RECORDED AT AUCTION.

37. The current ISWGNA/AEG split asset approach has significant source data requirements. If this approach continues to be endorsed, then treating the initial transaction on a cash basis may help to alleviate some recording burden, resulting in both a more accurate and transparent presentation for users. Under this treatment the initial auction of the permit is treated as a payment of taxes on production by the purchaser to the government. Immediately following the transaction, a nonfinancial non-produced asset (Permit – right to use the atmosphere) is recorded on the balance sheet of the purchaser. Any future sale of this asset occurs through the capital account with changes in the market value recorded in the revaluation account. The surrender of the asset occurs in the other change in the volume of asset account. This approach does not adhere to the accrual accounting principle. To the extent that these permits are issued on an annual basis this may not be a significant limitation.

38. To illustrate this treatment, consider the case where a government issues 100 units for $10 to a non-financial corporation. At T=0, the sales of the permits initially lead to an increase in taxes on production for the government and a payment of tax by the non-financial corporation. In addition, a non-produced non-financial asset is recorded on the balance sheet of the non-financial corporation. In the following period (T=1), the market price increases from 10 to 15. The increase in the market price is recorded in the revaluation account and reflected in the balance sheet account at the end of the period. In period T=2 the nonfinancial corporation surrenders the permit. This is recorded in the other change in the volume of asset accounts and reflected in the balance sheet account at the end of the period. Table 8-10 illustrates the recording of these transactions.

Table 8: Government Auctions Permits

Account	**Economic Flow or Stock**	**Government**		**Non-financial Corporations**	
		Resources	**Uses**	**Resources**	**Uses**
Allocation of Primary Income Account	Taxes on production	1000			1000
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Other Change in the Volume of Asset Account	Contracts, leases, licenses			1000	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Financial Account	Cash	1000		(1000)	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Contracts, leases, licenses			1000	

Table 9: Market Price of Emission permits increases from $10 to $15

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Revaluation Account	Contracts, leases, licenses			500	
Balance Sheet Account		**Change in Assets**	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
	Contracts, leases, licenses			1,500	

Table 10: Nonfinancial Corporation surrenders half of its permit

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Other change in the volume of assets account	Contracts, leases, licenses			(750)	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Contracts, leases, licenses			750	

OPTION 4 – EMISSION PERMITS RECORDED AS A FINANCIAL ASSET WITH TAXES ON PRODUCTION RECORDED AT SURRENDER

39. An alternative approach is to record the issuing of the emissions permit as a financial asset / liability valued at the auction price. The financial asset approach considers the issuance of permits as the purchase of a financial asset – a debenture type loan where the payment grants the acquirer with the right to emit a pre-specified quantity of GHG sometime in the future. A benefit of this approach is that it does align with the recording of permits in some company financial statements in that the emitting corporation incurs an expense at the time of surrender of the permit, which will impact their net lending/ borrowing. When the company surrenders the permit, it is recorded as taxes on production. Any change in price from the issuing date is "written off" in the revaluation account. This ensures that the flow of taxes will always reflect the original issuing price and not the current market value of the permit which could include holding gains or losses.

40. To illustrate this recording (and the associated source data requirements) consider the example of where a government auctions 100 units for $10 a unit to a non-financial corporation. At T=0, the sales of the permits initially lead to an increase (decrease) in cash for the government (corporations) exchanged for a financial asset for the non-financial corporation and a corresponding liability for the government. In the following period (T=1), the market price increases from 10 to 15 per unit. In this case the financial asset and liability increase through the revaluation account. Assume that in time T+1, 50 units of the permit are surrendered, and the current market price is $15 per unit. This is recorded as taxes on production (paid by the non-financial corporation to the government) of $500 along with an other change in the volume of asset account adjustment to the financial asset / liability equal to $250 which reflects the difference in prices between the issuing price and the current market price. Tables 11-13 illustrates the recording of these transactions.

Table 11: Government Establishes Emission Permits

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Resources	**Uses**	**Resources**	**Uses**

Allocation of Primary Income Account	Taxes on production				
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Financial Account	Emissions Permit		1000	1000	
	Cash	1000		(1000)	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Emissions Permit		1000	1000	

Table 12: Market Price of Emission permits increases from $10 to $15

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Revaluation Account	Emissions Permit		500	500	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Emissions Permit		1500	1500	

Table 13: Nonfinancial Corporation surrenders 5 units of the permit

Account	Economic Flow or Stock	Government		Non-financial Corporations	
		Resources	**Uses**	**Resources**	**Uses**
Allocation of Primary Income Account	Taxes on production	500			500
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Financial Account	Emissions Permit		(500)	(500)	
Other change in the volume of assets account	Emissions Permit		(250)	(250)	
		Change in Assets	**Change in Liabilities**	**Change in Assets**	**Change in Liabilities**
Balance Sheet Account	Emissions Permit		750	750	

41. Given the above recording may be difficult for compilers to implement consideration could also be given to record the other taxes on production at surrender at the surrender price ($750 in this example). This would then negate the need to record an entry in the other change in the volume of asset account. One issue with this approach is that the value of government taxes would be overstated by the difference between the issuance value of the permit and the value of the permit at surrender. Given this difference may not be material (relative to total taxes) this would be a more pragmatic approach.

42. The implications of the above treatments on key accounting items / concepts are summarized in the following table

Table 11: Implications of proposed treatments

Approach/Impacts	Emissions Permits recorded as a non-produced non-financial asset – contracts, leases, and licenses (Option 1)	Emissions permits recorded as a resource lease (financial asset), with resource rent recorded at surrender (Option 2)	Emissions permits recorded as contract, leases, and licenses with taxes on production recorded at auction (Option 3)	Emission Permits recorded as a financial asset with taxes on production recorded at surrender (Option 4)	Emission Permits recorded as split assets, with taxes on production recorded at surrender (Option 5)
Recognition of the Atmosphere as a natural asset	X	X	X		
Impact on Government Operating Surplus / Deficit / Savings		X	X	X	X
Impact restricted to Government Net Lending / Borrowing	X				
Impact on GDP			X	X	X
Limited Source Data Requirements	X	X	X		
Clarity for Users	X	X	X	X (only if taxes on production are recorded at the value at surrender)	
Consistency with quotas and radio spectra	X	X			

4. RECOMMENDATION

43. This guidance note has outlined the current ISWGNA/AEG recommendations for recording Emission Permits along with alternative approaches that implies the atmosphere is a natural asset and that governments are able to establish permits that limit its use and sell these permits to other institutional units.

44. Emission permits resemble both a tax and an asset. The current ISWGNA/AEG guidance tries to appease both views by recommending a split asset approach. While eloquent, there are practical implications that make this difficult for some countries to implement. Alternative recording

options can be considered if the atmosphere is implicitly recognized as an asset within the System of National Accounts. Once implicitly recognized three additional recording options can be considered. One approach (option 1) would be to record emissions permits as the sale of a non-produced non-financial assets (contract, leases, and licenses) in the national accounts similar to radio spectra. Another approach (option 2) would be to record the surrendering of emission permits as a resource rent. A third approach (option 3) is record emissions permits as contract, leases, and licenses with taxes on production recorded at auction. These three options imply that the atmosphere is a natural asset, whose use is regulated by governments. These approaches also reduce the source data requirements for recording the transactions, other economic flows and stocks and make the information more visible within the SNA. A fourth option (option 4) is also presented in this guidance note. This option considers that upon purchase the emissions permit is recorded as a financial asset on the books of the holder and a liability of the government. When the emissions permit is surrendered taxes on production are recorded at the issuing price with any change in market price between the time of issuance and time of surrender recorded in the revaluation account.

45. International schemes will have varying impacts to the macroeconomic key metrics depending on which alternative is recommended to record emission permits. All of the options considered in the GN with the exception of option 1 - nonproduced nonfinancial asset (contract, lease and licenses) will have accounting, data and interpretation issues in dealing with multi-country schemes. Option 1 recommends for a sale of an asset (permit) by the government. Hence, only the government's capital account – sale of a NPNF asset will be impacted and any future transactions will be between non-government institutional units. Although option 2 - emission permits recorded as a resource lease with resource rent recorded at surrender aligns with the bookkeeping of corporations in terms of both the expense and timing of the surrender (market valuation), without some kind of intra-government cancellation mechanism the recurring practical data issues and interpretation challenges remain. Similarly, with the recording of the emissions permits as a financial asset and as other taxes on production at surrender there will be ongoing transactions with all the participating governments which will impact their net lending borrowing, taxes, and government debt. As a result, additional adjusting entries and data will be needed to accommodate international schemes.

Questions for the AEG:

1) *Do you agree the presented four options in the note are the most prominent alternatives for the current 2008 SNA recording of pollution permits?*

2) Do you consider the proposed global consultation questionnaire appropriate for global consultation, and that the GN is ready for global consultation?

List of references

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Annex 1: SNA Guidance on Taxes, Assets and the Valuation of Permits

46. By way of background it is important to recall SNA guidance related to Taxes, Assets and Valuation and their relationship to emission trading schemes.

Taxes

47. The *2008 SNA* states that emission permits should be treated as other taxes on production: “these consist of taxes levied on the emission or discharge into the environment of noxious gases, liquids or other harmful substances. They do not include payments made for the collection and disposal of waste or noxious substances by public authorities, which constitute intermediate consumption of enterprises”. (Paragraph 7.97f)

48. “Taxes are compulsory unrequited payments, in cash or in kind made by institutional units to the general government exercising its sovereign powers. Taxes are described as unrequited because, in most cases, the government provides nothing commensurate in exchange to the

individual unit making the payment. However, there are cases where the government does provide something to the individual unit in return for a payment in the form of the direct granting of a permit or authorization. In this case, the payment is part of a mandatory process that ensures proper recognition of ownership or that activities are performed under the strict authorization by the law" (Paragraph 22.88). The 2008 SNA explains in such case a proper recording requires additional guidance. For example, a purchase of services is recorded when a permit implies a proper regulatory function of governments (22.89b).

49. Emission permits are required by firms whose production processes generate pollution; the emission permit will not determine the optimum output the firm would like to achieve. A firm will consider the current market price that exists for emission permits and decide the optimal production function that will minimize costs, maximize profits, and comply with the pollution regulations.

50. There are international emission trading schemes where corporations may purchase emission permits from one country and surrender them to another country. These cross-border transactions may imply that a country will be receiving tax revenue from production activities that occurred in another jurisdiction and consequently there will be a misalignment in both countries institutional sector accounts. International schemes pose additional data requirements, in addition to information regarding the number of emissions issued, outstanding, tax revenue received, compilers need to be able to identify the debtor and/or creditor and their respective jurisdictions. Neither the split-asset nor financial asset approach are able to accommodate cleanly international schemes, additional adjusting entries are required, as such, the TF proposed a super national treatment (see page 65 of the TF report).

51. From the above discussion it is not apparent that emission permits fully satisfy the conditions of taxes as compulsory unrequited payments for all institutional units. A requirement exists for a non-financial corporation who exceeds the pollution regulation to either surrender an emission permit or face some punitive fine, however when an institutional unit other than an emitting non-financial corporation purchases an emission permit, they are acquiring a marketable asset. In addition, cross-border transactions in emission permits may (and do) create asymmetries for both the issuing country and the acquirer.

52. The previous arguments have highlighted some of the implementation and interpretability issues of treating emission permits as other taxes on production. Is the classification of a prepaid tax consistent with permit holders other than non-financial corporations? A different treatment could be considered when permits are purchased for other than emission objectives and by non-residents. The question that arises is whether the accounts should have a consistent treatment for all institutional units, or could the treatment vary depending on the intent?

Assets

53. According to the *2008 SNA*, the system defines an asset as "a store of value representing a benefit or series of benefits accruing to the economic owner by holding or using the entity over a period of time." (Paragraph 11.3). An asset, therefore, must have a life greater than one year; however, there are some exceptions to the one-year rule – inventories, short-term assets (commercial paper, trade receivable).. Economic assets are either non-financial or financial.

54. Non-financial assets can be further decomposed as produced or non-produced. Assets that are created from a production process, are classified as produced non-financial assets (AN1), whereas economic assets that do not originate from a production process are classified as non-produced non-financial assets (AN2).

55. Non-produced non-financial assets are further decomposed into the following subcomponents:

- Natural resources (AN21) such as land and mineral resources.
- Contracts, leases, licenses (AN22) are assets that have been created through government regulation, legislation or any other legal constructs, they consist of various non-produced assets: operating leases; licenses to undertake certain economic activities such as taxi licenses; permits to use natural resources (resource leases) and other government and legal constructs; and
- goodwill and marketing assets (AN23), a special type of asset that represents the difference between the acquisition price of a company and the fair value of the assets less liabilities (excluding equity).

56. In the case of contracts, leases and licenses, the *2008 SNA* stipulates, in paragraph 10.186, that in order to be classified as non-produced assets the following two criteria must be satisfied:

- "The terms of the contract, lease or license specify a price for the use of an asset or provision of a service that differs from the price that would prevail in the absence of the contract, lease or license"; and
- "One party to the contract must be able legally and practically to realize this price difference."

57. Although, emission permits share some attributes to contracts, leases and licenses, they do not fully comply with the current understanding of a contract, lease or license. First, with licenses the activity cannot be undertaken before a license or permit has been granted. Secondly, payment of the license or permit will be treated as a tax in exchange for a non-produced non-financial asset, unless the government has a financial obligation in which case the license will be shown as a financial asset, whereas the use of natural resources may be treated as a sale of an asset depending on whether the natural resource asset will be used to depletion and whether the right to use the natural resource transfers all the risk and rewards to the user.

58. One major difference between non-produced non-financial assets and produced non-financial assets is the treatment of consumption of fixed capital (CFC). With the latter, an estimate of the replacement value of maintaining the capital will be included to the sectors current and capital account to derive the sector's total saving from all sources. Charges for the depletion of natural resources or the write-down of a permit or license are not included in the estimation of CFC even though businesses will expense these as part of their operating costs. Rather, the accounts will account for these in the other changes in volume accounts. The treatment of depletion of natural resources is being re-examined as part of the 2025 update to the SNA.

59. Through these definitions the question that arises is whether emission permits satisfy the conditions of the **use of an asset**? From the introduction, we know that emission permits will provide a benefit to the economic owner, either in terms of being able to continue to operate or as a potential financial investment. Emission permits are designed to have a finite time period but will exist for longer than a year, the holder of the permit bears all the risks and rewards and they are transferable. As such, **they satisfy the conditions of an economic asset with the only exception that the atmosphere is not considered as such in the current SNA.**

Valuation of Permits

60. The SNA recommends that transactions should be recorded on an accrual basis and not necessarily when the actual payment is exchanged between the parties. This implies that emission permits, either as a pollution tax or as a right to use the atmosphere as a pollution sink, should be recorded when the actual emissions occur, the time at which the firm surrenders their permit being considered a proxy for this. As a result, a timing difference may exist between the issuance of and the surrender of the permit. This timing difference will give rise to a financial asset. For instance, if the emission permit is considered as an other tax on production, then the firm will have a financial asset - prepaid tax (other accounts receivable) and the government will show a financial liability - prepaid tax (other accounts payable).

61. In the initial discussions of emission permits, the atmosphere was not considered as an asset and the recommended treatment of emission permits was based on this assumption. In addition, there was considerable discussion regarding the proper valuation of emission permits – time of issuance or time of surrender and it was decided that the latter would be the recommended treatment. However, if the atmosphere is not considered as an asset and the current treatment as other taxes on production continues perhaps it would be worthwhile to re-consider the timing and valuation of permits at the time of issuance. As such, the initial transactions could be recorded as other taxes received by the government and the purchase of an asset by the entity purchasing the permit. This recording would address a number of the practical issues associated with the split asset approach.