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Implementation Guidance Note on Recording of Emission Permits in Macroeconomic Statistics

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Implementation Guidance Note on Recording of Emission Permits in Macroeconomic Statistics[1]

This Implementation Note provides guidance on the recording of tradable emission permits in macroeconomic statistics, addressing both single-country and multi-country cases. The approach to recording and valuation of emission permits, as outlined in 2025 SNA*, reflects international consensus developed through consultations with the IMF Committee on Balance of Payments Statistics (BOPCOM) and the Advisory Expert Group on National Accounts. Emission permits are classified as taxes on production under current guidance and are valued at their issuance prices. Consequently, they are recorded as a category of other accounts receivable/payable until they are surrendered. This approach balances conceptual rigor with practical necessity to maintain government accounts consistent; however, compilation challenges remain, particularly concerning free allocations, cross-border transactions, and identification of emission permit holding sectors. While some administrative data appear to satisfy the data needs of compilers, practical challenges persist. Methodologies and assumptions are needed to allow for time of recording, valuation, and other adjustments. Harmonization efforts continue to enhance consistency and reduce asymmetries in international statistics. Members of the IMF BOPCOM are invited to provide feedback on the guidance and recommendations presented in this note.*

BACKGROUND INFORMATION AND CONCEPTUAL FRAMEWORK

1. **This Implementation Note aims to clarify the practical application of guidance from the *System of National Accounts 2025* (*2025 SNA*) and *Integrated Balance of Payments and International Investment Position Manual, seventh edition* (*BPM7*) on recording of emission permits in macroeconomic statistics.** The example in the Appendix I is built on the numerical example from the "Summary of Workshop and Proposed Recording guidance note WS.7 Treatment of Emission Trading Schemes" modified to take into account impacts on external sector statistics (ESS) when nonresident enterprises are involved in emission permits trade. Appendix II provides a numerical example of how to record transactions and positions of freely allocated emission permits.

2. **The updated macroeconomic standards recommend the following recording practices in macroeconomic statistics.** For the detailed recommendations of *2025 SNA* see the Appendix IV.

3. **Emission permits are tradable instruments issued by governments that grant enterprises the right to emit a specified quota of pollutants, typically greenhouse gases, under a cap-and-trade scheme.** Emission permits are considered as taxes on pollution emitters and are classified as taxes on production.[2] Each permit represents the legal allowance to emit a specified amount of pollution (often expressed as the equivalent of CO_2 gas). Corporations must hold sufficient permits to cover their emissions, if required by the legislation. In cases where a corporation does not have sufficient emission permits, it needs to acquire additional permits from the market.

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[1] Prepared by Emmanuel Manolikakis, Real Sector Division, and Mher Barseghyan, Balance of Payments Division, STA (IMF), with comments and inputs from Eurostat, Germany, and the Netherlands.

[2] If the atmosphere is considered as an economic asset this recommendation could be reconsidered (see *2025 SNA*, paragraph 27.86).

4. **Emission permits are usually allocated in two ways – sold on auctions and provided for free.** Emission permits sold by governments through auctions represent prepaid taxes on production until they are surrendered.[3] They are classified as financial assets under other accounts receivable/payable.

5. **Tax revenue is recognized when permits are surrendered to cover emissions and is recorded at the original issuance (auctioned) price.** Until that point, governments record the issuance of permits as financial liabilities (Other Accounts Payable – Emission Permits – F82). Correspondingly, enterprises that purchase emission permits record them as financial assets (for macroeconomic statistics - claims on the government issuing the permits) under Other Accounts Receivable – Emission Permits. While they are classified under other accounts payable/receivable, these instruments are tradable and can be traded on organized markets.

6. **Sale of permits between enterprises are recorded as exchange of financial assets valued at market prices.** However, only initial auctions or surrenders affect government accounts; positions on the government accounts are always valued at issuance prices and remain unchanged by secondary market transactions between corporations. As a result, the business accounts differ from the government's accounts. To ensure consistency between all sectors' accounts as well as between transactions, other economic flows and positions, compilers need to revalue corporations' positions before and after secondary market transactions.[4] In so doing, the surplus, assets, and liabilities of enterprise's will not be aligned with their actual balance sheet and profit and loss statement. Notably, corporations will value emission permits on their balance sheets at market prices even if the emission permits are purchased at primary auctions or initially granted for free; if the corporation (especially if it is a financial corporation which follows IFRS accounting standards) purchases emission permits for resale purposes, it can be valued at fair value in business accounting.

7. **Recording cross-border permit trading should be consistent and symmetric in all economies to avoid asymmetries in balance of payments (BOP) and international investment position (IIP) statistics.**

8. **Emission permits can be surrendered at any time; therefore, they should be treated as on-demand maturity instruments and classified as short-term at issuance.**

9. **A general numerical example is provided in the Appendix I.** In principle, the example is generic for both single country and multi-country emission permit schemes. However, the data collection for multi-country emission permits is significantly more challenging.

10. **For the purposes of macroeconomic statistics, freely allocated emission permit positions are recorded at zero value both as financial assets and liabilities.**[5] Permits allocated freely to enterprises are recorded at zero value in government accounts, as they generate no tax revenue or financial asset/liability, although enterprises may record their economic value in their accounting records. To respect government liability, the accounts of corporations need to be adjusted. As a result, the surplus

[3] It is assumed that the time the emission permit is surrendered corresponds to the time that emissions occurred.

[4] See the Annex I for the numerical example.

[5] The current recommendation calls for freely issued permits to be revalued to zero. An argument could be made that allocation of freely issued permits has economic value and may be considered as transfers. The treatment of freely issued permits should be considered as part of the research agenda of the treatment of emission permits.

of the institutional units will not be aligned with the institutional units income nor balance sheet. More importantly, this will create asymmetries in cross-border trade as the corporations may not know whether the acquired or disposed emission permit was initially provided freely. As in the case of trade in secondary market, such situation distorts national accounts, and compilers need to adjust corporations accounts to revalue the free emission permits to zero value. This will also occur when the secondary market valuation differs from the initial auctioned price. However, while positions should be valued at zero, transactions must be recorded in macroeconomic statistics, and cross-border transactions involving free permits must be recorded as well. Revaluation adjustments should be applied on the seller's balance sheet to increase the zero-valued free permits to the transaction price, followed by an immediate downward revaluation by the purchaser to restore the zero valuation of the free permit. [6]

Table 1. Summary of recordings according to *2025 SNA and BPM7*

Transaction Type	Government Accounts	Enterprise Accounts	Valuation Basis
A. Issuance of permits (auction)	Creation of financial liabilities - accounts payable (prepaid taxes); in parallel - cash inflow.	Increase in financial assets (accounts receivable (prepaid taxes); in parallel - cash outflow.	Auction price (issuance price)
B. Enterprise-to-enterprise sale	No government transaction/no changes in positions.	Exchange of financial assets at market price	Market (transaction) price
a) Pre-sale adjustments	No changes in positions.	Revaluation of assets sold at market values	Market (transaction) price
b) Post-sale adjustments	No changes in positions.	Revaluation of assets to the issuance price	Auction price (issuance price)
C. Free allocation of permits	No cash transaction; no financial liability recorded	No financial assets recorded; permits held at zero value	Zero valuation
a) Enterprise-to-enterprise sale of free permits	No government transaction/no changes in positions.	Exchange of financial assets at market price	Market (transaction) price
b) Pre-sale adjustments	No changes in positions.	Revaluation of assets sold at market values	Market (transaction) price
c) Post-sale adjustments	No changes in positions.	Revaluation of assets to zero value	Zero valuation
D. Surrender of permits for emissions	Financial liability reduction; tax revenue recognized	Financial asset reduction; expense recognized as tax on production	Auction price (issuance price)

[6] See the numerical example in Appendix II.

TREATMENT OF SINGLE-COUNTRY EMISSION PERMITS SCHEMES

11. **A single-country national emission permits scheme is a regulatory system operating within a single national/regional jurisdiction,** where the government sets a cap on total emissions within its territorial boundaries and issues permits to domestic entities. These permits are valid only for the specific country issuing them. While purchase of these permits by non-residents is still possible, surrender must occur with the issuing jurisdiction.

12. **A sub-national emission-permit scheme is a cap-and-trade framework established by a state, province, region or city within a sovereign country,** under which the sub-national authority sets an emissions cap for installations located in its territorial boundaries and issues permits that are valid solely for compliance within that jurisdiction. Although entities resident outside the state or province (including nonresidents) may acquire such permits, surrender must occur inside the issuing jurisdiction (or within any formally linked peer jurisdiction) in accordance with the scheme's regulatory provisions. Conceptually there is no difference between recordings in sub-regional and national emission permits schemes on national level. Current schemes involving cooperation between administrative units of different countries are similar to multi-county trading schemes and will be briefly discussed in the multi-country trading schemes.

13. **Emission permits may be held by a range of corporations, including those wishing to resell them.** Financial institutions sometimes retain permits for future transactions with clients, while others may be held in custody accounts or for investment purposes – potentially to earn capital gains. Notably, some countries indicate that financial institutions often hold significant quantities of emission permits.

14. **A particular challenge concerns the valuation of emission permits upon surrender and the accurate calculation of taxes on production.** Permits issued constitute actual liabilities of the government until they are surrendered, irrespective of the timing of surrender. Within this framework, two practical challenges may emerge.

a) Emission permits issued more recently may be surrendered prior to those issued earlier. This situation presents challenges because permit issuance prices may vary over time too along with market prices. The origin of surrendered permits should be traceable using local registration numbers. In the absence of such detailed data, compilers may assume that permits are surrendered in chronological order of issuance considering the average maturity duration for emission permits which can be estimated though administrative data and applying average auction prices of specific issuance to value the surrendered permits. The EU experience suggests that permits have a very short service life as permits are usually surrendered within two years of issuance. As such, this may not be a serious concern for EU member countries.

b) If permits have a limited validity period, unclaimed permits should be removed from the accounts upon expiration through other changes in volume, including from the government accounts. This can be tracked by the registration numbers of permits. However, if they don't have any maturity date then un-surrendered permits may need to be removed after a certain date.[7]

[7]An agreement is needed for when to remove un-surrendered permits.

15. **When a non-resident purchases emission permits under single-country schemes, the transaction is recorded in the BOP and integrated IIP.**[8] Initially, it is recorded as the acquisition of a financial asset (prepaid taxes). The subsequent recording depends on the purpose of purchasing the emission permits. Data on nonresidents' holdings can be derived from register records, cross-border payments statistics or alternatively estimated by deducting domestic holdings from the total amount of issuance. In principle, non-residents are not expected to engage in long-term productive activity within the territory of the reporting economy. Therefore:

a) If a non-resident is engaged in production of goods or services over a long period or the permit is purchased on behalf of a local branch of the non-resident entity, the compilers need to investigate further to explore possible classification of the transactions as direct investment. In the first case a resident quasi corporation should be established. In the case where a purchase has been made for the benefit of a direct investment enterprise (DIE), the purchase is rerouted as being conducted between resident unit and resident government, at the same time increasing the amount of direct investment in the DIE.[9]

b) If the permits are surrendered against short-term activities (or activities that do not meet the criteria of a notional production of goods and services), they should be recorded as production taxes paid by non-residents and financed through other accounts payable. Such activities may include air or sea transportation, fishing, where specific requirements are set for international carriers which remain nonresidents.

16. **Another particular challenge is related to the identification of the price of emission permits.** While auction prices are typically available from registry auction data, secondary market prices need to be collected separately. This can be achieved through surveys of exchanges authorized to trade and record emission permits. Alternatively, prices may be indirectly observed from data collected via custodians and enterprises directly, although this approach can be costly.

17. **Freely allocated emission permits can pose practical challenges in distinguishing them from auctioned permits, particularly when compilers lack access or resources to retrieve data from registries.** Although each type carries a unique identifier, they exhibit nearly identical characteristics and are traded on secondary markets. Administrative sources and government records can, in principle, be used to allocate freely issued permits in government accounts. However, on the corporations' balance sheets, they will be valued at non-zero prices rather than purchase price or fair value will be used. When freely allocated permits are traded, enterprises typically cannot differentiate between them and those acquired via purchase through organized auctions. In cases with no cross-border transactions, government finance records can be matched with corporate accounts only upon surrender as registries should contain information about each permit issued. Accounting for free allocations becomes significantly more complex when free permits are traded internationally. Ensuring consistency among government finance statistics (GFS), national accounts, and external accounts statistics is essential. A practical approach is to estimate corporate and cross-border balances by

[8] Transaction involving free permits are discussed in paragraph 17. Particularly, while the transactions will still be recorded in the integrated IIP, the positions in free permits will be valued at zero.

[9] This treatment follows the general recommendations on direct investment statistics and should ideally be followed if compilers have data. However, identification of direct investments is not a priority topic in this note given other serious data challenges.

applying the proportion of auctioned versus freely allocated permits. At the same time compilers in economy of nonresidents holding emission permits may not have access to the same information as the compilers in issuing economy. Alternatively, one can assume that the permit may be surrendered in the economy where the corporation operates, if it was acquired in the issuing jurisdiction. However, this may be a bold assumption as data shows that some countries are recording a significant imbalance between issued and surrendered permits, creating large imports of permits.

TREATMENT OF MULTI-COUNTRY EMISSION PERMITS SCHEMES

18. **Multi-country emission trading schemes introduce additional complexity to the recording and compilation of emission permits due to their cross-border nature yet centralized regulatory frameworks.** These schemes, such as the European Union Emission Trading System (EU ETS) or Western Climate Initiative (WCI)[10], operate under a unified cap that spans multiple jurisdictions, allowing permits to be freely traded among corporations located in different countries and to be freely surrendered in any country participating in the schemes. For national compilers, this requires careful coordination to ensure consistent and symmetric recording across participating economies, to avoid discrepancies in bilateral BOP and IIP statistics.

19. **Multi-country emission permit schemes may cover only a limited number of jurisdictions in each country, such as the WCI, which includes California and Québec.** In principle, the general recording principles and compilation challenges under such schemes are the same as those applicable to multi-country trading schemes in general.

Box 1. Emission Trading Under Western Climate Initiative

California and Quebec operate a joint cap-and-trade program that links their efforts to curb greenhouse gas (GHG) emissions. This system establishes a shared emissions ceiling across both regions, requiring companies to hold tradable permits for every ton of GHG they release. Over time, the total number of permits is gradually reduced, creating a market-driven incentive for businesses to cut back on their emissions and invest in cleaner practices.

Within this integrated market, emission allowances and offset credits issued by California are fully interchangeable with those from Quebec for regulatory compliance. This cross-border compatibility expands the market's size and liquidity, offering businesses greater flexibility while driving down the overall cost of meeting emissions targets.

Although California and Quebec's cap-and-trade programs do not involve direct financial compensation, they include a mechanism to track the net exchange of emissions allowances between the two jurisdictions. Known as a "corresponding adjustment," this process ensures that each region accurately accounts for its share of emissions reductions within the joint market. By calculating the annual net flow of compliance instruments traded and retired, the system identifies whether one jurisdiction has effectively transferred more allowances to the other.

[10] Western Climate Initiative (WCI) is a cap-and-trade program between California and Quebec.

20. **Emission permits are usually issued separately for each country (individually or by a coordinating body on behalf of each country individually).** In the case of country-specific issuance schemes, as with the EU ETS, the situation is somewhat favorable for compilers, since each issuance is attributed to a specific country that receives the proceeds from specific issuance, and ideally can be traced by identification number. If issuance is done on behalf of all countries or jurisdictions collectively, the situation becomes more complex. Although participating jurisdictions receive proceeds proportionally, individual emission permits cannot be assigned to a specific jurisdiction.

21. **Recording principles for multi-country schemes without compensatory government transfers align with single-country frameworks.** Since there are no compensatory payments exchanged between the government that issues the permit and the government where the permit is ultimately surrendered in practice, no additional transactions or accounting adjustments are necessary.

22. **If a compensatory transfer/settlement takes place, it should be recorded as transfer between governments rather than adjustment to tax income expenses.**

23. **However, the surrender of permits in a jurisdiction different from the one that issued them can create a paradox.** While permits are surrendered in one jurisdiction, the associated taxes should be recognized as paid to the country of issuance. This situation requires careful adjustments to enterprise accounts and transactions, as enterprises may not be aware of the origin of the permits and could report gross values surrendered only. The presence of freely allocated permits—including those issued abroad—further complicates these practical calculations and the necessary data to accurately compile statistics may not always be available.

Box 2. Recording of EU ETS Permits in the Netherlands

The current compilation of EU ETS permits data in Dutch National Accounts is based on the international national accounting standards (*2008 SNA*, *ESA 2014*). EU ETS permits are valued at issuing price in year T+1, when the EU ETS allowances are surrendered. The issuing price of surrendered allowances is calculated based on an inventory system that considers allowances that are auctioned by the Dutch authorities and allowances that are issued for free. The auction price is the issuing price. If a permit was issued for free, it is valued at a zero price. By definition, its surrender cannot lead to a tax, even though in a subsequent step this permit may have been transacted in the market. All EU ETS data is publicly available on the website of the Dutch Emission Authority.

A challenging aspect is the recording of cross-border trading of emission allowances. Since 2013 the Netherlands appears to be a net importer of ETS permits. The number of allowances surrendered in the Netherlands (for Dutch emissions) are structurally higher than the allowances issued by the Dutch government. These foreign purchases are currently not included in the ETS tax receipts of the Dutch government and are also ignored in the national accounts ETS tax estimates. In practice, we correct for this by increasing the number of allowances issued for free. This does not affect the registration of government revenues.

The current approach in the Netherlands is unsatisfactory. De Haan and Koops (CBS, 2024) argue that a valuation method based on market prices is not only easier to implement but is also conceptually more sound, particularly from an emitter's cost perspective.

24. **Because permits can be surrendered in any participating jurisdiction, this introduces several challenges for accurate data compilation and maintaining consistency between stock and flow records.**

a) **Matching the timing of surrender:** Permits may be purchased years before they are surrendered, and surrender deadlines often cluster around compliance dates (e.g., 30 April in the EU ETS). As each permit has a unique identification number, register data can be matched to identify the exact data of surrender to reconcile fiscal accounts if compilers have full access to microdata. If access to registry data—both issuance and surrender—is not available at the individual permit level, GFS compilers may be unable to precisely align the timing of permit surrender with the relevant accounting periods. At the same time there might be difficulties matching corporate accounts with governments accounts, which will require separate data reconciliation exercises; collection of corporate holding on individual level can be seen as a costly exercise.

b) **Identifying the ultimate holders of emission permits:** Ownership chains often pass through clearing houses or custodians, which can obscure the residency of the beneficial owner. Without access to detailed registry metadata as well as bank and custodian reports, compilers risk misallocating assets and liabilities across economies and institutional sectors. In some cases, the account holders are not the actual economic holders of emission permits, such as in the case of custodians/clearing houses and corporate pooling arrangements. This challenge is similar to identifying securities holding sectors and may be addressed using similar statistical techniques.

c) **Determining the issuer of permits held or surrendered:** In multi-jurisdiction schemes, permits may originate from different sovereign (EU ETS) or sub-sovereign (WCI) issuers but trade interchangeably. Accurate attribution of the issuing authority is critical for recording government liabilities, auction revenue, and cross-border positions. Utilizing data from registers can solve the problem if compilers collect data on registry numbers or require corporations to account for such permits based on the registry database. A combination of administrative data collection and surveys may provide better results. However, compilers indicate difficulties with correct allocation of accounts to corporations, mentioning restricted access to microdata. Such approach also implies extensive data collection on a very disaggregated level. The issues mentioned above especially relevant when compiling cross-border data, which are challenging without supranational coordination and data collection. For the government accounts, it is difficult to estimate the value of emission permits held by non-residents, as GFS compilers may not have access to all the data of enterprises located abroad. One solution is to collect data on domestic holdings and estimate cross-border holdings as residual.

d) **Use of appropriate prices for the valuation of emission permits:** Many secondary-market transactions occur bilaterally or on foreign exchanges where price transparency is limited. Compilers may need to survey intermediaries, custodians and exchanges, collect data from corporations directly, or apply model-based proxies to value transfers and holdings when observable market quotations are unavailable. For estimates of cross-border trade data on international payments can be used. At the same time, positions need to be valued at issuance prices, for which centralized registry data can be utilized.

e) **Separating freely allocated permits from auctioned permits in cross-border flows:** The valuation of free permits differs: government records will value free permits at zero, but traded permits have a market value on the balance sheet of corporations. Distinguishing between these categories is essential to avoid overstating government revenue and to maintain coherent external-accounting statistics. In principle information about free permits should be available from the central register as well.

f) **Ensuring symmetric recording of cross-border transactions:** Divergent valuation conventions, reporting thresholds, or timing practices between partner economies can generate bilateral asymmetries in BOP and IIP data. Systematic data exchanges, mirror data checks, and harmonized methodological guidance are required to secure symmetry and comparability.

25. **Emission permits can be pooled by a parent company that manages them on behalf of installations to supply them back for the surrender.**[11] If the permits are pooled, they may be held (deposited) in a single account, while the actual owner is located in a different jurisdiction. In analogy to cash pooling arrangements, these schemes should be recognized as claims on the managing unit—classified as other accounts receivable, rather than as emission permits. In situations involving cross-border claims, these claims should be categorized as direct investment. The treatment is correct only for cases when the emission permits are originally held by installations; in cases when the parent company purchases permits and sells later to installations, the economic owner is the parent company.

26. **Supranational cooperation and coordination as well as extensive data exchange is crucial for compilation of data in the case of multi-country emission permits trading schemes.** To overcome all the challenges mentioned, compilers in member countries need access to granular—often individual level data. Access to data in partner countries seems even more challenging. Additionally, reconciliation exercises may lead to differences in reported figures across member countries. In principle, a centralized compilation of the data based on all available national data can be seen as the best solution in cases when a coordinating agency is in charge of compilation of the data (e.g., Eurostat). Centralized compilation will allow not only to collect all available sources but also ensure compatibility and consistency of the data in all member countries. Such reconciliation exercises involving relevant data sources and national data sources are being conducted now and the results and efficiency will be discussed after a full-scale exercise is conducted.

[11] This treatment, as in the case of 15a, follows the general recommendations of *BPM7*, including guidance on cash pooling agreements (see *BPM7*, paragraphs A6.39–A6.42). This note discusses it as an example of possible arrangements rather than as a priority topic requiring immediate attention.

Box 3. Compilation of Emission Permits Data for BOP purposes – European Lessons

Statistics on emission permits in the EU draw on multiple sources: the European Union Transaction Log (EUTL), national registries, and direct reporting systems from banks and enterprises, complemented by custodians, brokers, and exchange data. Registry datasets provide the backbone for issuance and surrender tracking but remain account-based rather than enterprise-based, with restricted microdata access and incomplete mapping of account holders to real economic owners. Direct reporting systems improve residency and sectoral attribution but face practical limitations: respondents may not reliably distinguish domestic from foreign certificates, intermediary banks often obscure the final owner or activity, and clearing arrangements can distort partner-country allocation. Across the EU, BOP flows derived from payments often exceed registry values, since ownership changes captured in financial reporting may not be reflected in registries or may be recorded with delay. Persistent mismatches in timing, valuation, and counterparty attribution illustrate the difficulty of reconciling these sources in practice. Although in principle such gaps could be solved by reconciliation exercises and supplementary registers, in reality some of the needed information is not available to BOP compilers.

This underlines the need for closer integration between registry and payment evidence, greater access to microdata, and structured reconciliation across Member States to reduce asymmetries and ensure robust, internationally comparable emission permits statistics.

CONCLUDING REMARKS

27. **The methodological treatment of emission permits under the *2025 SNA/BPM7* involves considerable complexity, requiring compilers to address various conceptual and practical challenges.** These include revaluation adjustments for secondary market transactions, asymmetries in revaluation accounts, and difficulties aligning corporate and government accounts. The presence of freely allocated permits further complicates calculations, while multi-country schemes add complexity by requiring consistent and symmetric recording across participating countries/jurisdictions.

28. **Data compilation for emission permits is equally demanding, requiring access to detailed registry datasets, direct reporting systems, custodian records, and corporate disclosures.** Identifying the origin of permits and the residency of holders is often complicated by pooling arrangements, involvement of custodians, and necessity to obtain data on secondary market transactions. To overcome these challenges, supranational cooperation and systematic data sharing are essential, though they alone may likely not fully resolve them. Centralized compilation efforts for multi-country schemes can enhance consistency, reduce asymmetries, and improve the reliability of macroeconomic statistics but there is need to test the efficiency of such data compilation

29. **Divergence between registry and other source data (both the value and timing) highlights the need to reconcile these sources.** Such discrepancies may arise from differences in the valuation of emission permits, particularly due to market prices used for real payments and the trade of freely allocated permits, as well as from incorrect allocation of permits to various types of holders, including nonresidents. Compilers may face challenges accessing payment data with the same level of detail and

disaggregation as the data available from registries. This issue is further complicated in the context of cross-border trade, where access to payment information from third countries is necessary.

30. **Initial feedback from compilers indicates significant challenges in the compilation of emission permits data, despite the methodological framework being sound.** These difficulties may arise because some proposed approaches have yet to be fully implemented, and comprehensive large-scale data collection exercises are still ongoing. To date, no country has commenced compiling emission permit statistics strictly in accordance with the new recommendations. This underscores the importance of discussing the practical solutions within the *SNA/BPM* research agenda. The research agenda will offer a forum to analyze different datasets, reconciliation methods and assess whether they can resolve existing issues or if alternative solutions are necessary to help countries minimize asymmetries and ensure alignment between the conceptual foundations of the SNA/BPM. Establishing a task force to coordinate work among countries could facilitate discussions and accelerate the identification of key findings from reconciliation exercises.

31. **Emission permits present challenges similar to those associated with negotiable instruments, requiring rigorous methodologies, well-founded assumptions, and thoughtful adjustments.** Importantly, these efforts should be commensurate with the economic impact of the system. In other words, a cost-benefit analysis is essential before committing substantial time, resources, and effort. For certain economies, this evaluation becomes especially critical, as the administrative burden and market complexity may outweigh the potential gains. This is seen as an important argument for relaunching discussion about the treatment of emissions permits (and the broader topic of treatment of the atmosphere) in the *SNA/BPM* research agenda as a priority research topic.

Questions for the Committee:

1) *Do members agree that the suggested recording of revaluation for auctioned and freely allocated permits in the integrated IIP is consistent with SNA/BPM framework? Do members have suggestions on how to minimize asymmetries?*[12]
2) *Do members agree with:*
    a. *the suggested classification of emission permits maturity as short-term at issuance;*
    b. *the write-off mechanism for unclaimed emission permits whose validity period has passed;*
    c. *and possible removal of unclaimed emission permits after some period?*
3) *Do members suggest other data sources for emission permits data calculations?*
4) *Do members agree to form a task team to continue the methodological work and include emission permits topic in the AEG/BOPCOM research agenda, including review of the recommendation on statistical treatment of emission permits given the challenges related to the current treatment?*

[12] The suggested recording means that auctioned permits are revalued from market price back to issuance price after secondary market transactions, while freely allocated permits are revalued to zero after each transaction to align with government accounts. Asymmetries may arise because government accounts remain at issuance price or zero, while corporate accounts reflect market prices.

5) *Do members agree to discuss further the treatment of free permits and possibly consider allocation of free permits as transfers.*

6) *Do members have any other comments on the Implementation Note and the examples provided, or suggestions on integration of specific country cases into the Implementation Note?*

7) *Do members agree that the updated note incorporating the comments from AEG/BOPCOM members be posted for global consultation?*

Appendix I. Numerical Example on Recording of Emission Permits Trade in a Single-Country Scheme

1. Corporation A, resident in Country A, and Corporation B, resident in Country B, hold liquid assets amounting to $2,000 and $1,500, respectively (Section A). The government of Country A issues 200 emission permits priced at $10 each, which are purchased by Corporation A at the primary auction. The government records a cash inflow of $2,000 along with an equivalent increase in financial liabilities classified as Other Accounts Payable, representing prepaid taxes on production. Correspondingly, Corporation A records a cash outflow of $2,000 and an increase in financial assets classified as Other Accounts Receivable—a claim on the government (Section B).

2. Subsequently, Corporation A sells 100 emission permits to Corporation B (a nonresident) at a unit price of $15. The financial claims held by Corporation A must first be revalued from $1,000 (100 permits × $10) to $1,500 (100 permits × $15). The revalued claims are then transferred to Corporation B in exchange for cash. This revaluation and subsequent sale are recorded in the integrated IIP and BOP accounts of both countries, generating external assets and liabilities. The remaining holdings of Corporation A are not revalued and continue to be valued at issuance prices.

3. A discrepancy arises following these transactions because the government's financial liability remains recorded at the original issuance value, while Corporation B's financial claim reflects the higher market price. Given that government accounts are maintained at issuance prices in anticipation of permits being surrendered at that value, statistical adjustments need to be done when bringing Corporation B's accounts into national accounts[13] to revalue the emission permits downward and align their valuation with issuance prices (Section C). An adjustment to the income statement of Corporation B is also required; the income should be adjusted by the revaluation amount to maintain balance between assets and liabilities.

4. It should be noted that the revaluation is done only in enterprises' accounts. These revaluations offset each other; however, to maintain conceptual consistency, such revaluation should have also been carried out in the debtor's (government's) accounts, which is not being done under current guidance. As the pre and post transaction revaluations balance each other such situation numerically keep consistency of the accounts (government accounts could have recorded upward and downward revaluations which net each out). However, when nonresidents are involved in a transaction, there may be only one entry in the IIP or corporate accounts, while the government accounts remain unchanged and no revaluation is recorded. Therefore, there is asymmetry in revaluations which is a consequence of the current framework.

5. The final step involves the surrender of half of the emission permits held by Corporation B. The recognition of taxes on production occurs simultaneously with a corresponding reduction in the government's financial claims, both valued at issuance prices (Section D).

[13] As well as into ESS.

Recording of Emission Permits Trade in National Accounts

	Government A		Corporation A		Corporation B	
	Assets	**Liabilities**	**Assets**	**Liabilities**	**Assets**	**Liabilities**
A. Starting point						
Balance sheet: cash			2000		1500	
B. Issuance of emission permits						
Financial account						
Cash	+2000		-2000			
Other accounts receivable/payable		+2000	+2000			
Balance sheet						
Cash	2000		0		1500	
Other accounts receivable/payable		2000	2000			
C. Market price of emission permits increases from $10 to $15 and 100 units are sold to another corporation						
Financial account						
Cash			+1500		-1500	
Other accounts receivable/payable			-1500		+1500	
Revaluation account						
Other accounts receivable/payable			+500		-500	
Balance sheet						
Cash	2000		1500		0	
Other accounts receivable/payable		2000	1000		1000	

	Government A		Corporation A		Corporation B	
	Assets	**Liabilities**	**Assets**	**Liabilities**	**Assets**	**Liabilities**
D. Surrender of half of the emission permits by Corporation B at the issuance price						
Current account						
Taxes on production	500					500
Net lending/borrowing	500				-500	
Financial account						
Cash						
Other accounts receivable/payable		-500			-500	
Revaluation account						
Other accounts receivable/payable						
Balance sheet						
Cash	2000		1500		0	
Other accounts receivable/payable		1500	1000		500	

Recording of Emission Permits Trade in External Sector Accounts

Recording of the transactions and positions in the BOP of Country A

Section C. Market price of emission permits increases from $10 to $15 and 100 units are sold to another corporation	**Credit/Revenues**	**Debit/Expenses**
Current account		
Earned income account		
	NAFA	**NIL**
Financial account (Other Investments)		
Cash and deposits	+1500	
Other accounts receivable/Payable		+1500

Section D. Surrender of half of the emission permits by Corporation B at the issuance price	**Credit/Revenues**	**Debit/Expenses**
Current account		
Earned income account	+500	
	NAFA	**NIL**
Financial account (Other Investments)		
Cash and deposits		
Other accounts receivable		-500

Recording of the transactions and positions in the integrated IIP of Country A

Section C. Market price of emission permits increases from $10 to $15 and 100 units are sold to another corporation	*Positions at the beginning of the period*	*Transactions during the period C*	*Price changes*	…….	*Positions at the end of period C*
Assets					
Other Investments					
Cash and deposits	*0*	*+1500*			*1500*
Liabilities					
Other Investments					
Other accounts payable		*+1500*	*-500*		*1000*

Section D. Surrender of half of the emission permits by Corporation B at the issuance price	*Positions at the beginning of the period*	*Transactions during the period C*	*Price changes*	…….	*Positions at the end of period C*
Assets					
Other Investments					
Cash and deposits	*1500*				*1500*
Liabilities					
Other Investments					
Other accounts payable	*1000*	*-500*			*500*

Recording of the transactions and positions in the BOP of Country B

Section C. Market price of emission permits increases from $10 to $15 and 100 units are sold to another corporation	**Credit/Revenues**	**Debit/Expenses**
Current account		
Earned income account		
	NAFA	**NIL**
Financial account (Other Investments)		
Cash and deposits	-1500	
Other accounts receivable	+1500	

Section D. Surrender of half of the emission permits by Corporation B at the issuance price	**Credit/Revenues**	**Debit/Expenses**
Current account		
Earned income account		500
	NAFA	**NIL**
Financial account (Other Investments)		
Cash and deposits		
Other accounts receivable	-500	

Recording of the transactions and positions in the integrated IIP of Country B

Section C. Market price of emission permits increases from $10 to $15 and 100 units are sold to another corporation	*Positions at the beginning of the period*	*Transactions during the period C*	*Price changes*	…….	*Positions at the end of period C*
Assets					
Other Investments					
Cash and deposits	*1500*	*-1500*			*0*
Other accounts receivable		*+1500*	*-500*		*1000*

Section D. Surrender of half of the emission permits by Corporation B at the issuance price	*Positions at the beginning of the period*	*Transactions during the period D*	*Price changes*	…….	*Positions at the end of period D*
Assets					
Other Investments					
Cash and deposits					
Other accounts receivable	*1000*	*-500*			*500*

Appendix II. Numerical Example on Recording of Freely Allocated Emission Permits Trade

1. Corporation A and Corporation B hold liquid assets amounting to $2,000 and $1,500, respectively (Section A). The government allocates 200 free emission permits to Corporation A. There is no cash flow associated with the allocation, therefore there are no financial assets/liabilities to be recorded in accounts of the government and corporations.

2. Subsequently, Corporation A sells 100 emission permits to Corporation B at a unit price of $15. The financial claims held by Corporation A must first be revalued from $0 to $1,500 (100 permits × $15). The revalued claims are then transferred to Corporation B in exchange for cash. The remaining holdings of Corporation A are not revalued and continue to be valued at 0. The revaluation is necessary to maintain consistency between transactions and stocks.

3. As free permits are valued at zero, discrepancy arises following these transactions because the government's financial liabilities associated with the issuance of free permits remain zero, while Corporation B's financial claim reflects the market price. Given that government accounts are maintained zero, the financial claims on Corporation B's books require downward revaluation to zero to align with the government's accounts (Section C).

4. The final step involves the surrender of the emission permits held by Corporation B. again, as emission permits freely allocated are recorded at zero value, there is no transaction in taxes (Section D).

Recording of Freely Allocated Emission Permits in National Accounts

	Government A		Corporation A		Corporation B	
	Assets	**Liabilities**	**Assets**	**Liabilities**	**Assets**	**Liabilities**
A. Starting point						
Balance sheet: cash			2000		1500	
B. Issuance of free emission permits						
Financial account						
Cash						
Other accounts receivable/payable		0	0			
Balance sheet						
Cash			2000		1500	
Other accounts receivable/payable		0	0			
C. Sale of free permits by $15 to another corporation						
Financial account						
Cash			+1500		-1500	
Other accounts receivable/payable			-1500		+1500	
Revaluation account						
Other accounts receivable/payable			+1500		-1500	
Balance sheet						
Cash			3500		0	
Other accounts receivable/payable			0		0	

D. Surrender of the freely allocated emission permits						
Current account						
Taxes on production	0					0
Net lending/borrowing	0				0	
Financial account						
Cash						
Other accounts receivable/payable		0			0	
Revaluation account						
Other accounts receivable/payable						
Balance sheet						
Cash			3500		0	
Other accounts receivable/payable		0	0			

Appendix III. Data Sources to Consider

Registry Datasets

Data on emission permits is typically stored in centralized databases. The European Union Transaction Log (EUTL) and similar national registries—such as CITSS[14] in California and ETRS in Korea—serve as primary ledgers for the issuance, transfer, and surrender of permits. These datasets often include details about accounts, account holders, transaction identifiers, account numbers, counterparties, and, in the case of auctions, clearing prices. Such registries can be used to create processed datasets, like those developed by Jan Abrell (2024) based on Eu ETS database, which enhance usability by linking installations, account holders, and transaction blocks, thereby providing a more comprehensive view of market activity. However, data gaps arise at the interface of accounts, installations, and corporations: a single corporation can own several of installations and each installation may operate multiple registry accounts. In addition, some accounts can be held by intermediaries acting as custodians. This situation complicates identification of residency of the holders of emission permits, prevents straightforward reconciliation of nominal holdings of emission permits with real economic holdings. As a rule, registers should also contain information about issuance prices, preferably on each issuance. However, if compilers do not have full access to microdata, it will not be possible to trace the origin of emission permits (hence, the issuance price, residency of issuer, etc) or the ultimate holder of emission permits.

Data on Cross-Border Payments

Direct-reporting systems—such as Germany's AWV payment reports—under which banks and, in some cases, large enterprises are legally required to transmit transaction-level information on cross-border payments related to emission-permit trading directly to the balance-of-payments compiler. These reports typically capture the settlement date, transaction value, currency, counter-party residency, purpose code, , thereby allowing statistical agencies to record acquisitions and disposals of permits as external flows in the BOP. However, the payment information may not include in most cases the identification number of emission permits traded. Because the data originate from the payment system rather than the emissions registry, they may supplement complement registry extracts by providing residency attribution and cash-flow timing, but they may require additional matching to distinguish primary from secondary market trades, auctioned permits from free permits and to link payment flows to the underlying permit serial blocks.

Custodians

Emission permits can also be held in brokers' or custodians' accounts. In these cases, emission permits may be traded on organized markets, and data collected from custodians can be used to supplement information obtained from registries and direct reporting systems. When emission permits are traded with ISIN codes which differs from registration numbers, custodians should be able to track down the ISIN codes. However, the link between ISIN codes and registers may not be possible to allocate properly between all holders. The usefulness is also limited by potential gaps in transparency, especially when permits are pooled or held on behalf of multiple beneficial owners. Additionally, confidentiality and

[14] Used by Quebec too.

data-sharing restrictions may constrain access to granular custodian information, making it challenging for compilers to fully reconcile custodian records with registry and corporate data.

Direct Reports and Corporate Disclosures

Direct reports from corporations can be utilized to collect data on emission permits. If these survey methods are integrated within the framework of data collection on securities, they benefit from established methodologies already well-developed and familiar to compilers. However, one limitation is that direct data collection may lack information on permit registration numbers, as some permits may be held through custodians. This necessitates an additional alignment process involving data from custodians to ensure data consistency. Combining direct reporting with custodian data improves the granularity and reliability of emission permit statistics

Government Finance and Tax Ledgers

GFS accounts may provide information about the issuance of emission permits. These data can be combined with other data sources to validate reconciliation exercise outcomes.

Secondary-Market Price and Volume Feeds

Data from exchanges can be used to collect data on emission permits market prices. However, it is difficult to link these data to specific issuances, as traded volumes may be identified by ISIN codes rather than registration codes. The information can be used as a supplementary source in cases when data on real transactions cannot be collected and market prices are used to value the transactions.

Appendix IV. References to *2025 SNA*

Permissions to use the environment as a sink

27.77 Governments are increasingly issuing emission permits as a means of controlling total emissions. 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 emissions, for example greenhouse gases) that can be emitted (the quota). As such, each company must have a permit with a sufficient quota of units of emissions to cover their needs.

27.78 In the initial stages of some cap-and-trade schemes, permits are given to non-financial corporations freely. As a result, firms do not incur any additional production costs, unless they exceed their quota and are required to purchase additional permits from others. Increasingly, however, governments are auctioning permits rather than giving them freely. In these auctions, the purchase of a permit is not restricted to the emitting unit – permits can be purchased by any market participant – individuals, investors, governments, non-profit institutions, financial and non-financial companies.

27.79 Nonetheless, the schemes are structured primarily for non-financial corporations, who are most likely to emit. If companies exceed their quota of 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 more easily than others.

27.80 The recommended approach for recording emission permit systems in the integrated framework of the SNA is to record the issuing of the emissions permit as a financial asset/liability valued at the auction price. Thus, the issuance of permits is regarded as the purchase of a financial asset – accounts receivable/payable – where the payment grants the acquirer the right to emit a pre-specified quantity of emissions sometime in the future. This approach aligns with the recording of permits in company financial statements where the emitting corporation incurs an expense at the time of surrender of the permit, which impacts their net lending/borrowing. In the treatment of the integrated framework, when the company surrenders the permit, it is recorded as taxes on production. Any change in price from the issuance date is "written off" in the revaluation account each time there is a transaction. This ensures that the flow of taxes will always reflect the original issuing price and not the current exchange value of the permit which could include holding gains or losses.

27.81 Emission permits provided freely to corporations do not have an associated tax cashflow. If taxes are maintained at issuance price (i.e., at zero), this implies that freely provided emission permits have zero value. In so doing, emission permits auctioned or provided freely will follow the actual cash revenue received by governments. However, the exchange value of emission permits (including freely provided ones) is clearly not zero. When emission permits are transacted amongst corporations, domestically or with non-residents, they should be recorded in the accounts. If a corporation exceeds its quota and requires additional permits, it will purchase them from the market, some of which could have been initially provided freely. Although there are good arguments that could be considered for emission permits issued freely to be assigned a value, it may be difficult to consistently assign values and countries may need to resort to imputations. Given the complexity, conceptual and practical difficulties, and notwithstanding the need for imputations, compilers should preferably not record any asset/liability for freely issued emission permits, and instead revalue them back to zero every time there is a transaction with an emission permit that was freely issued.

27.82 It is important for users to be able to easily identify all transactions of emission permits in the accounts. In order for emission permits to be visible, it is recommended that a separate classification for emission permits be assigned that aligns with the new classifications of flows and stocks.

27.83 Methodologies and assumptions are needed to allow for time of recording, valuation, and other adjustments. It is assumed that the time the emission permit is surrendered corresponds to the time that emissions occurred. This assumption implies that the payments for emission permits issued by the government in year t will be recorded as tax revenue in year t+n, i.e., the year the emission permit is surrendered. Adjustments are also needed to align corporate expenses reported in business accounts with government revenue and to record cross-border transactions and stocks in relation to international or multi-country permit schemes/arrangements, such as the European Union Emission Trading Scheme (EU ETS).

27.84 To illustrate these concepts the following numerical example is provided. The starting point for the numerical example is that corporation A and corporation B have liquid assets (currency) of 1,000 and 1,500, respectively. The government then issues 100 emission permits at a price of 10 each. The recording of the purchase of these permits by corporation A is rather straightforward. Government receives cash of 1,000 with the equivalent increase of liabilities (other accounts receivable/payable) representing the prepaid taxes on production, while corporation A pays 1,000 in cash with a concomitant increase in claims towards the government.

27.85 Next corporation A sells the permits to corporation B at a price of 15 for each permit. To arrive at an appropriate recording, the claims are first revalued from 1,000 (= 100 * 10) to 1,500 (= 100 * 15), after which the claims are sold at the agreed exchange price, in exchange for cash, to corporation B. At this point the value of the financial claims of the government differs from the value of the corresponding claims in the books of corporation B. Since the treatment is that the value in the government accounts does not change (consistent with the surrender of the permits being recorded at issuance prices at a later moment in time), the claims in the books of corporation B need to be revalued downwards. In the last stage of the example, half of the permits are surrendered, to be recorded as taxes on production with a counterpart decrease in the value of the financial claims.

27.86 It is noted that where emissions concern emissions to the atmosphere, an alternative recording may be envisaged if the atmosphere itself would be treated as an asset (which is not the case in the integrated framework of the SNA). The research agenda of the *2025 SNA* includes further consideration of the treatment of the atmosphere as an asset and, depending on the outcomes of that research, the treatment of emission permits may be revisited.

27.87 Governments may also issue permissions to use the environment as sink without the use of trading schemes as described above. Payments may be made for these permissions. To describe the different ways of treating the payments, the case of payments for discharging water may be considered as an example. Four alternatives are possible:

• If a payment to discharge water is a fine intended to inhibit discharge, it should be treated as a fine.

• If a limited number of permits is issued with the intent to restrict discharges, 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 integrated framework of the SNA.

• If the discharge medium is an asset and the necessary conditions are met concerning the terms on which the discharge is permitted, then the payment for the permit should be treated in the same way as the payment for a licence to use the radio spectrum for mobile phones.

• If the payment is linked to remedial action, then it is treated as a tax.

Treatment of the atmosphere as an asset

A5.54 It is considered important to further investigate possible ways of recording the atmosphere and measuring the value of depleting the atmosphere by using it as a sink. This research may have implications for the recording of emissions and other sinks. Similarly, the recording of oceans may need further consideration.