TECHNICAL ASSISTANCE REPORT

SOUTH AFRICA

Report on the Virtual Energy Accounts Mission (February 13–17, 2025)

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Acronyms and Abbreviations

BUR	Biennial Update Report
DFFE	Department of Forestry, Fisheries, and Environment
DGI	Data Gaps Initiative
DMRE	Department of Mineral Resources and Energy
ESCOM	Electricity Supply Commission
GHG	Greenhouse Gas
IEA	International Energy Agency
IMF	International Monetary Fund
I-O	Input-Output (tables)
IPPU	Industrial Processes and Product Use
ISIC	International Standard Industrial Classification of all economic activities
NERSA	National Electricity Regulator of South Africa
NIR	National Inventory Reports
OECD	Organization for Economic Co-operation and Development
SAGERS	South African Greenhouse Gas Emissions Reporting System
SECO	Swiss State Secretariat for Economic Affairs
SEEA	System of Environmental Economic Accounting
SANBI	South African National Biodiversity Institute
SARB	South Africa Reserve Bank
SARS	South Africa Revenue Service
Stats SA	Statistics South Africa
SUT	Supply and Use Table
TJ	Terajoules (energy measuring unit)
TWG	Technical Working Group
UNFCCC	United Nations Framework Convention on Climate Change

Summary of Mission Outcomes and Priority Recommendations

1. A technical assistance mission was delivered virtually to Statistics South Africa (Stats SA) from February 13–17, 2025, under the "Environmental and Climate Change Statistics Capacity Development Program" supported by the Switzerland State Secretariat for Economic Affairs (SECO). The mission assisted the Environmental Economic Accounts (EEA Directorate) of Stats SA in finalizing the first compilation of energy accounts in line with the statistical standard, System of Environmental Economic Accounting (SEEA). The accounts are scheduled for release by end of March 2025, as a discussion document which, apart from the accounts and its analysis, would also include the concepts, definitions, sources and methods adopted for the compilation of the accounts. The mission also reviewed and supported finalization of the dissemination formats associated with the release.

2. This mission marks the third in a series aimed specifically at enhancing Stats SA's capacity for climate-relevant statistics, building upon previous diagnostic assessments and technical assistance efforts. During the first mission in June 2023, a diagnostic assessment was conducted for identifying indicators for implementation under the program given the country's existing data infrastructure and their climate priorities. For South Africa, being a G20 country, it was proposed that support be extended for the compilation of indicators recommended under the G20 Data Gaps Initiative (DGI), namely, energy and air emissions accounts.

3. A second mission, the first technical assistance mission, was conducted during June 10–14, 2024. During this mission, a review was conducted of the available official statistics to develop a detailed workplan for the compilation of energy and air emissions accounts. The mission included training sessions to familiarize the staff involved in the compilation of energy and air emissions accounts with their use in policy.

4. Ongoing support was provided on the compilation to the core team engaged in the compilation of these accounts through monthly virtual meetings. The team included representatives from (Stats SA, the Department of Mineral Resources and Energy (DMRE), and the Department of Forestry, Fisheries and the Environment (DFFE).

5. The compilation of energy accounts has paved the way for the regular production of energy accounts and has been instrumental to build capacity for the compilation of air emission accounts. To support progress in the above work areas, the mission made three priority recommendations shown in the following table.

TABLE 1. Priority Recommendations

Target Date	Priority Recommendation	Responsible Institution
August 2025	Actively engage with the members of the Technical Working Group to establish a clear and practical publication trajectory, so that all the agencies can agree on the scope and coverage of the air emissions accounts for the first phase of the compilation and commit to continuous improvement and expansion over a longer time frame.	*Stats SA*

Target Date	Priority Recommendation	Responsible Institution
December 2025–February 2026	Draft experimental air emissions accounts for the agreed temporal coverage are compiled and a discussion document presenting the experimental air emissions accounts is prepared.	*Stats SA*
November 2026	Discussion document on air emissions accounts disseminated.	*Stats SA*
Ongoing	*Stats SA accords a high priority to ensure that sufficient resources are made available for the work on the energy and air emissions accounts.*	*Stats SA*

6. Further details on the priority recommendations, the related actions/milestones and the workplan of activities can be found under the following section on Detailed Technical Assessment and Recommendations.

Detailed Technical Assessment and Recommendations

TABLE 2. Detailed Recommendations

Priority	Action/Milestone	Target Completion Date
H	Discussion document on energy accounts compiled for the years 2015 to 2021 released by Stats SA	March 2025
H	First draft experimental set of air emissions accounts for one year of reference is compiled.	July 2025
H	A clear and practical publication trajectory is established and shared with the members of the TWG, so that all the agencies come to an agreement on the intended temporal coverage of the air emissions accounts for the first phase of the compilation and commit to continuous improvement and expansion over a longer time frame.	July-August 2025
H/M	Stats SA undertakes a comprehensive review of methodologies, data presentations, and formats utilized in the discussion document on energy accounts and builds on them to set a workplan for regular production of energy accounts.	November 2025
H/M	Members of the TWG strive for detailed and accurate breakdowns in energy and air emissions accounts, utilizing data from the DMRE, DFFE and Stats SA to offer an elaborate view of energy consumption and production, emissions as well as emission intensities.	September 2025
M	The detailed energy consumption data and activity profile from the large sample surveys compiled and released by Stats SA are used to improve the information in the energy balances/energy accounts and in the estimates of the national greenhouse gas (GHG) inventory, especially in the Industrial Processes and Product Use (IPPU) sector and transportation within the Energy sector.	October 2025
H	Developing bridge tables to facilitate understanding of the overlaps and differences between national GHG inventories and air emissions accounts.	October 2025
M	Developing bridge tables to facilitate understanding of the overlaps and differences between energy balances and energy accounts	October 2025
M	Stats SA considers allocating resources to update and resume the production of input-output (I-O) tables to enhance environmental analysis, including carbon footprint assessments.	December 2025
H	Stats SA evolves methods for implementing the adjustments for the residence principle in air emissions accounts, based on available information.	December 2025

Priority	Action/Milestone	Target Completion Date
M	Stats SA evolves methods for implementing the adjustments for the residence principle in the energy accounts, based on available information.	December 2025
H	Draft experimental air emissions accounts for the agreed temporal coverage are compiled and a discussion document presenting the experimental air emissions accounts is prepared.	December 2025–February 2026
M	The data precision and comprehensiveness of the energy balance, as compiled by the DMRE, is enhanced by reviewing the 'non-specified' items and allocating them to appropriate categories.	March 2026
M	To ensure that energy data presented in various publications are interpreted correctly, differences in concepts and terminology should be explained during dissemination. (For instance, regarding the differences between inflows and outflows presented by the monthly energy statistics and the international trade flows presented by energy accounts.)	March 2026
M/L	Stats SA engages with the members of the TWG and other stakeholders to strategize the dissemination of in-depth analyses, briefing papers, and thorough documentation, to enhance the comprehension and uptake of the newly developed energy and air emissions accounts.	March 2026
H	Discussion document on the experimental air emissions accounts disseminated.	November 2026
L	Stats SA/DMRE explore the possibility of actively seeking information from enterprises that generate their own electricity to provide a fuller picture of the electricity sector.	March 2027
H	Stats SA accords a high priority for ensuring that sufficient resources are made available in the EEA Directorate for the future work and improvements on the energy and air emissions accounts.	Ongoing
Priorities - L: Longer-term priority; M: Medium-term priority; H: High Priority		

A. BACKGROUND

7. The Statistics Department of the International Monetary Fund (IMF) launched a two-year "Environmental and Climate Change Statistics Capacity Development Program." The program is aimed at assisting countries in establishing or strengthening programs in countries for developing timely and internationally comparable environment and climate change statistics that can help in formulating climate-relevant policies. The program supported by the Switzerland State Secretariat for Economic

Affairs (SECO), was launched in March 2023, with a diagnostic mission to South Africa, one of the program countries, delivered in July 2023.[1]

8. South Africa is a member of Group of 20 (or G20), an intergovernmental forum for economic cooperation of the world's leading developed and emerging economies. As a member of this forum, South Africa is participating in the Data Gaps Initiative Phase 3 (DGI-3),[2] which aims to address data gaps in economic decision making. The workplan for of this initiative, focuses on four main statistical and data priorities: (i) climate change, (ii) household distributional information, (iii) fintech and financial inclusion, and (iv) access to private sources of data and administrative data, and data sharing. The DGI-3 includes 14 recommendations, 7 of which related to climate change, are policy-oriented and flexible to accommodate different statistical capacities and infrastructures.

9. Energy and air emissions data linked to economic data play a pivotal role in climate mitigation policies by providing a solid baseline to set reduction targets and tailor specific interventions. Recognizing this, recommendations 1 and 2 of DGI-3 are intended to support the development of air emissions and energy accounts in the G20 countries. The workplan for DGI-3[3] emphasizes that accurate and transparent reporting of these accounts is essential for ensuring that policy decisions are both evidence-based and geared towards achieving substantial reductions in greenhouse gas emissions.

10. During the first mission in June 2023, a diagnostic assessment was conducted for identifying indicators for implementation under the program given the country's existing data infrastructure and the climate priorities. Since South Africa's priorities were mitigation and transition to a low carbon economy, and considering that South Africa is a G20 country, it was proposed that support be extended to South Africa for achieving air emission and energy accounts sto also address some of the data gaps identified data Gaps Initiative.

11. A technical assistance mission was conducted during June 10–14, 2024,[4] to support Stats SA in advancing the compilation of energy and air emissions accounts. The mission team held detailed discussions with the relevant data producer and user agencies during the mission to gain insights on the institutional set-up and available data. Based on this review, the mission team discussed the available methodological options and the required institutional mechanism for compilation of these accounts. A detailed workplan of activities was developed in consultation with the official agencies to support the implementation.

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[1] South Africa: Technical Assistance Report-Report on Macro-relevant Climate Change Statistics Diagnostic Mission (July 17–21, 2023) (imf.org).

[2] G20 Data Gaps Initiative (imf.org).

[3] https://www.imf.org/-/media/Files/News/Seminars/DGI/Home/g20-dgi-3-workplan-welcomed-by-the-finance-ministers-and-central-bank-governors-october-2022.ashx.

[4] South Africa: Technical Assistance Report-Report on the Compilation of Energy and Air Emissions Accounts Mission (June 10-14, 2024).

B. ACHIEVEMENTS MADE IN THE COMPILATION OF ENERGY AND AIR EMISSIONS ACCOUNTS

12. A Technical Working Group (TWG) for the Air Emission Accounts (AEA) and Energy Accounts (EA) has been constituted including members from Stats SA, Department of Mineral Resources and Energy (DMRE), Department of Forestry, Fisheries and the Environment (DFFE), Department of Planning, Monitoring and Evaluation (DMPE), National Treasury (NT), the Electricity Supply Commission (ESKOM), National Treasury, and South Africa Reserve Bank (SARB). The mandate of the group covers both energy and air emissions accounts and envisages to cultivate synergies, enhance collaborative efforts, maximize the use of available information across agencies and foster a thorough understanding of diverse data sets.

13. Multiple meetings of the AEA and EA Technical Working Group have been conducted by Stats SA during 2024 to look into the recommendations of the TA mission of June 2024 in respect of energy accounts. Topics of discussion included components of DMRE energy balances, incorporation of the additional datasets available from Stats SA and ESKOM, and analysis of datasets available to delineate the energy sourced from international aviation and marine bunkers by resident and non-resident transport companies. These discussions helped finalize the sources and methods to be adopted for the compilation of energy accounts.

14. One of the recommendations in the earlier mission had been to look for guidance from the International Energy Agency (IEA) to improve the existing DMRE energy balances. DMRE has been actively engaging with IEA in this regard during 2024, and a training workshop was recently organized during February 2025 by United Nations Framework Convention on Climate Change (UNFCCC), in collaboration with IEA, focused on the Quality Assurance of the National Energy Information Management System and Energy Statistics of South Africa. The collaboration between the various stakeholders with respect to energy statistics is likely to enhance the quality of energy statistics in the country.

15. Meanwhile, DFFE has been actively working on supporting Stats SA in the compilation of air emissions accounts. DFFE has submitted the national inventory document for the years 2002–2022 to the UNFCCC[5] in December 2024. DFFE is working on linking the latest available GHG inventory to ISIC and SIC at the most detailed level using the Business Register (BR) available within Stats SA. Further, DFFE is in the process of implementing the South African Statistical Quality Assessment Framework (SASQAF) for its GHG inventory data program. It is expected that these efforts would help streamlining the process of compilation of air emissions accounts and contribute to the advancement of energy accounts.

16. Post the TA mission in June 2024, monthly virtual meetings were held by the IMF staff to extend technical expertise to the staff involved in the compilation across Stats SA, DFFE and DMRE. These meetings helped in clarifying data compilation procedures and addressing queries on the source data and methods. The improved collaboration within the agencies and the continued technical support has enabled Stats SA to develop experimental energy accounts for the years 2015–2021 and to prepare for the compilation of air emissions accounts that are tentatively scheduled for release during FY 2026/27.

[5] National GHG Inventory for South Africa: 2000-2022.

C. ENERGY ACCOUNTS OVERVIEW: 2015–2021

17. Stats SA has compiled the physical energy flow accounts (PEFA), based on the framework prescribed by System of Environmental-Economic Accounting for Energy (SEEA-Energy),[6] for the years 2015–2021. PEFAs record energy flows in physical units (i.e., joules) from the initial extraction (i.e., the capture of energy from natural inputs from the environment) into the economy, the flows within the economy in the form of supply and use of energy products by industries and households, and, finally, the flows of energy back to the environment (as energy residuals). The format adopted by Stats SA is given in Appendix A.

18. PEFA adopts the same industry structure as the national accounts and are consistent with the System of National Accounts (SNA) allowing for easy integration of data from these two systems. Indicators of energy intensity, efficiency and productivity can be derived through the combining of these physical flows with corresponding monetary information on supply and use of energy products.

19. Stats SA has compiled the physical energy flow accounts, largely based on the energy balances being produced regularly by DMRE.[7] Complementing the physical energy flow accounts for the years 2015–2021, Stats SA has prepared a discussion document for releasing these accounts as part of the Stats SA Natural Capital (NC) series. The document includes a description of the sources and methods used for the compilation of these accounts and a section analyzing these accounts.

20. Stats SA conducts pivotal Large Sample Surveys[8] every 3–4 years, covering the key sectors of the economy by rotation. Using the physical and monetary data from these surveys, the end-use of the main energy products, namely, “coal,” “natural gas” and “oil & oil products” has been provided in a greater level of disaggregation of industries, as a supplement to the physical energy flow accounts.

D. NEXT STEPS FOR ADVANCING ENERGY AND AIR EMISSIONS ACCOUNTS

21. The release of the discussion document on physical energy flow accounts is a cornerstone for the implementation of a regular system for production of energy and air emissions accounts. Going ahead, Stats SA can engage with the members of the AEA and EA TWG and other stakeholders to develop a e dissemination strategy of in-depth analyses, briefing papers, and thorough documentation, to enhance the comprehension and uptake of the newly developed energy and air emissions accounts.

22. Under the auspices of the United Nations Committee of Experts on Environmental-Economic Accounting (UNCEEA), United Nations Statistics Division (UNSD) and the Organisation for Economic Co-Operation and Development (OECD) have launched a global data collection[9] for the Physical Energy Flow Accounts (PEFA) and Air Emission Accounts (AEA). The questionnaires,

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[6] SEEA-Energy, United Nations, 2019.

[7] Energy Balances: South Africa.

[8] Large Sample Surveys – Stats SA.

[9] Global Data Collection for SEEA.

developed under the auspices of the UNCEEA, represent different levels of disaggregation of economic activities and products and presented by different Tiers. They are fully consistent with the SEEA with. each questionnaire containing three different templates which correspond to different levels of data disaggregation. Using the information available across the different data sources, like the Large Sample Surveys, Supply-Use Tables and the data being collected by DFFE and DMRE for various purposes, Stats SA could work on enhancing the level of detail available in its accounts to respond to this data collection.

23. Given that Stats SA, as part of its obligation under the G20 Data Gaps Initiative, will now be compiling the experimental air emissions accounts, some of the recommendations of the earlier mission are still valid. During the mission, a need to continue the system of monthly meetings for technical discussions was expressed by Stats SA. A detailed workplan of anticipated activities was developed in consultation with the official agencies to facilitate the discussion during the monthly check-ins.

TABLE 3. Workplan of Activities for Energy and Air Emissions Accounts

Timeframe	Activities
July 2025	First draft experimental set of air emissions accounts for one year of reference is compiled.
July–August 2025	A clear and practical publication trajectory is established and shared with the members of the TWG, so that all the agencies come to an agreement on the intended temporal coverage of the air emissions accounts for the first phase of compilation and commit to continuous improvement and expansion over a longer time frame.
November 2025	Stats SA undertakes a comprehensive review of methodologies, data presentations, and formats utilized in the discussion document on energy accounts and builds on them to set a workplan for regular production of energy accounts.
September 2025	Members of the TWG strive for detailed and accurate breakdowns in energy and air emissions accounts, utilizing data from the DMRE, DFFE and Stats SA to offer a nuanced view of energy consumption and production, emissions as well as emission intensities.
October 2025	Developing bridge tables to facilitate understanding of the overlaps and differences between (1) energy balances and energy accounts and (2) national GHG inventories and air emissions accounts.
December 2025	Stats SA evolves methods for implementing the adjustments for residence principle in the energy and air emissions accounts, based on available information.
December 2025–February 2026	Draft experimental air emissions accounts for the agreed temporal coverage are compiled and a discussion document presenting the experimental air emissions accounts is prepared.
November 2026	Discussion document on air emissions accounts disseminated.

24. It was indicated to Stats SA that, subject to the extension of the program by SECO, a mission could be planned before March 2026 as the need arises, to review the sources and methods of the air emissions accounts and the discussion documents and to help plan the outreach for seeking broader feedback.

25. The mission also discussed some of the activities that would need to be taken up by Stats SA in the medium to longer time horizon, so that a system of continuous improvement is put in place. This would include review of the information in the energy balances compiled by DMRE, by contrasting them with other relevant data sources like the Large Sample Surveys and datasets maintained for the electricity sector.

26. There are several datasets available on the electricity sector in the official publications of South Africa. Stats SA may consider coordinating with the sources agencies to highlight the differences in concept and terminology in their publications.

27. Despite multiple agencies collecting data on the electricity sector, there is a recognized lack of adequate information of electricity generated for own use by enterprises. Stats SA and DMRE may explore the possibility of actively seeking information from enterprises that generate their own electricity to provide a fuller picture of the electricity sector.

28. To enhance the comprehension and uptake of the newly developed energy and air emissions accounts, Stats SA may consider collaborating with the members of TWG and other stakeholders to strategize the dissemination of in-depth analyses, briefing papers, and thorough documentation.

E. POTENTIAL CHALLENGES AND RISKS

29. The earlier noted allocation of only two staff members in the Environmental Economic Accounts (EEA) Directorate in Stats SA still poses a challenge for the envisaged activities for developing and maintaining energy and air emissions accounts. A robust and comprehensive approach to energy and air emissions accounting is essential for informing policy and meeting international reporting obligations. The mission re-emphasized that current staffing level may jeopardize the timeliness and accuracy of the accounts and limit the ability to incorporate advancements and adapt to evolving methodologies and standards.

30. Stronger collaboration with other agencies like the DMRE and DFFE may help alleviate some of the pressure in the meanwhile. Stats SA may consider strengthening the collaboration between the agencies, including probably through the establishment of a Memorandum of Understanding (MoU), that may help Stats SA leverage the activities and resources in these organizations.

Recommendation:

- Stats SA to accord a high priority for ensuring that sufficient resources are made available for the work on the energy and air emissions accounts.

F. OFFICIALS MET DURING THE MISSION

Name & Institution
Bokang Vumbukani-Lepolesa, Stats SA
Harry Thema, Stats SA
Robert Kwinda. DMRE
Ramaano Membahe, DMRA
Mahlomola Lefupana, Stats SA
Nwabisa Maya, Stats SA
Riaan Grobler, Stats SA
Robert Parry, Stats SA
Sewela Malaka, DFFE
Tshamaano Khalushi, DFFE

Appendices

A. FORMAT OF PHYSICAL ENERGY FLOW ACCOUNTS ADOPTED BY STATS SA: SUPPLY SIDE

PHYSICAL SUPPLY TABLE (unit: PJ)	Production (incl. household own account) and generation of residuals								Accumulation	Flows from the rest of the World (Imports)	Flows from the environment	TOTAL
	Industries (by SIC)							Households				
	Agriculture, Forestry and Fishery	Mining and Quarrying	Manufacturing	Electricity, gas, steam and air conditioni	Transportation and storage	Other industries	Total Industry					
SIC	1	2	3	4	7	Other		HH	Acc	RoW	Env	
1 Energy from natural inputs:												
Natural resource inputs											-	-
Inputs of energy from renewable sources											-	-
Other natural inputs											-	-
2 Energy products:												
Production of energy products by SIEC class:												
Coal	-	-	-	-	-	-	-			-		-
Peat and peat products	-	-	-	-	-	-	-			-		-
Oil shale / oil sands	-	-	-	-	-	-	-			-		-
Natural gas	-	-	-	-	-	-	-			-		-
Oil	-	-	-	-	-	-	-			-		-
Biofuels	-	-	-	-	-	-	-			-		-
Waste	-	-	-	-	-	-	-			-		-
Electricity	-	-	-	-	-	-	-			-		-
Heat	-	-	-	-	-	-	-			-		-
Nuclear fuels and other fuels	-	-	-	-	-	-	-			-		-
3 Energy residuals:												
Energy residuals from end-use	-	-	-	-	-	-	-	-				-
Energy residuals from losses	-	-	-	-	-	-	-	-				-
4 Other residual flows:												
Residuals from end-use for non-energy purposes	-	-	-	-	-	-	-	-				-
Energy from solid waste									-			-
5 TOTAL SUPPLY	-	-	-	-	-	-	-	-	-	-	-	-

B. FORMAT OF PHYSICAL ENERGY FLOW ACCOUNTS ADOPTED BY STATS SA: USE SIDE

PHYSICAL USE TABLE (unit: PJ)	termediate consumption, use of energy resources, receipt of energy loss							Final Consumption Households	Accumulation	Flows to the rest of the World (Exports)	Flows to the environment	TOTAL
	Industries (by SIC)											
	Agriculture, Forestry and Fishery	Mining and Quarrying	Manufacturing	Electricity, gas, steam and air conditioni	Transportation and storage	Other industries	Total Industry					
SIC	1	2	3	4	7	Other		HH	Acc	RoW	Env	
1 Energy from natural inputs:												
Natural resource inputs	-	-	-	-	-	-	-					-
Inputs of energy from renewable sources	-	-	-	-	-	-	-					-
Other natural inputs	-	-	-	-	-	-	-					-
2 Energy products:												
Transformation of energy products by SIEC class:												
Coal	-	-	-	-	-	-	-					-
Peat and peat products	-	-	-	-	-	-	-					-
Oil shale / oil sands	-	-	-	-	-	-	-					-
Natural gas	-	-	-	-	-	-	-					-
Oil	-	-	-	-	-	-	-					-
Biofuels	-	-	-	-	-	-	-					-
Waste	-	-	-	-	-	-	-					-
Electricity	-	-	-	-	-	-	-					-
Heat	-	-	-	-	-	-	-					-
Nuclear fuels and other fuels	-	-	-	-	-	-	-					-
End-use of energy products by SIEC class:												
Coal	-	-	-	-	-	-	-	-	-	-		-
Peat and peat products	-	-	-	-	-	-	-	-	-	-		-
Oil shale / oil sands	-	-	-	-	-	-	-	-	-	-		-
Natural gas	-	-	-	-	-	-	-	-	-	-		-
Oil	-	-	-	-	-	-	-	-	-	-		-
Biofuels	-	-	-	-	-	-	-	-	-	-		-
Waste	-	-	-	-	-	-	-	-	-	-		-
Electricity	-	-	-	-	-	-	-	-	-	-		-
Heat	-	-	-	-	-	-	-	-	-	-		-
Nuclear fuels and other fuels	-	-	-	-	-	-	-	-	-	-		-
End-use of energy products for non-energy purpos	-	-	-	-	-	-	-	-	-	-	-	-
3 Energy residuals:												
Energy residuals from end-use											-	-
Energy residuals from losses											-	-
4 Other residual flows:												
Residuals from end-use for non-energy purposes									-			-
Energy from solid waste	-	-	-	-	-	-	-					-
5 TOTAL USE	-	-	-	-	-	-	-	-	-	-	-	-