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Item 5 (b) of the provisional agenda of the preparatory segment*

**Vienna Convention issues: status of the General Trust
Fund for Financing Activities on Research and
Systematic Observations Relevant to the
Vienna Convention**

**General Trust Fund for Financing Activities on Research and
Systematic Observations Relevant to the Vienna Convention**

Note by the Secretariat

Introduction

1. The present note provides an overview of issues related to the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention for the Protection of the Ozone Layer (the “Trust Fund”). The issues are presented in the following order: background information on the establishment, life and institutional arrangements of the Trust Fund is presented in section A, followed by an update on the current status of the Trust Fund and the activities under its purview in sections B, C and D. A long-term strategy and a short-term plan of action for the Trust Fund are presented in section E of, and in the annex to, the present note, as developed by the Advisory Committee for the Trust Fund established by decision X/3 of the Conference of the Parties to the Vienna Convention at its tenth meeting, in November 2014.

2. The objectives and activities of the Trust Fund pertaining to research and systematic observation are central to the work of the Ozone Research Managers of the Parties to the Vienna Convention, not only due to their mandate under the Vienna Convention but also to their domestic responsibilities. The Ozone Research Managers reviewed the status and the activities of the Trust Fund, as well as the work of the Advisory Committee, at their tenth meeting, held in Geneva from 28 to 30 March 2017. On the basis of that review, the Ozone Research Managers made several recommendations, which were included in the report of that meeting¹ and which have been reproduced in document UNEP/OzL.Conv.11/5 for the consideration of the Conference of the Parties to the Vienna Convention at its eleventh meeting. Other issues for the consideration of the parties relate to the long-term strategy and the short-term plan of action for the Trust Fund, which were finalized by the Advisory Committee subsequent to the tenth meeting of the Ozone Research Managers.

* UNEP/OzL.Conv.11/1-UNEP/OzL.Pro.29/1.

¹ <http://conf.montreal-protocol.org/meeting/mop/cop11-mop29/presession/Background-Documents/10ORM-REPORT.pdf>.

A. Establishment, life and institutional arrangements of the Trust Fund

1. Establishment of the Trust Fund

3. By decision VI/2, the Conference of the Parties to the Vienna Convention at its sixth meeting, in November 2002, requested the United Nations Environment Programme, in consultation with the World Meteorological Organization (WMO), to establish an extrabudgetary fund for receiving voluntary contributions from the parties and international organizations for the purpose of financing certain research and systematic observation activities relevant to the Convention in developing countries and countries with economies in transition.

4. The primary aim of the Trust Fund according to the decision was to provide complementary support for the continued maintenance and calibration of the existing Global Atmosphere Watch ground-based stations for monitoring column ozone, ozone profiles and ultra-violet radiation in developing countries and in countries with economies in transition, to address balanced global coverage. The decision further stated that consideration should be given to supporting other activities identified by the Ozone Research Managers and in consultation with the co-chairs of the Scientific Assessment and Environmental Effects Assessment Panels, for the improvement of the observation network and relevant research.

5. Pursuant to that decision, the Trust Fund was established in February 2003. In September 2005, the United Nations Environment Programme, represented by the Ozone Secretariat, and WMO signed a memorandum of understanding on the institutional arrangements for making decisions on the allocation of funds in the Trust Fund, and presented it to the Conference of the Parties to the Vienna Convention at its seventh meeting in December 2005. The parties requested the United Nations Environment Programme and WMO to continue their cooperation with regard to the Trust Fund pursuant to the terms set out in that memorandum and on the understanding that the agreement could be changed as necessary to meet evolving needs and conditions.

2. Life of the Trust Fund

6. When the Trust Fund was established in February 2003, its operation was based on a five-year term ending on 31 December 2007. In decision VII/2, adopted by the Conference of the Parties to the Vienna Convention at its seventh meeting, in December 2005, the Executive Director of the United Nations Environment Programme was requested to extend the life of the Trust Fund until 31 December 2015. That extension was approved by the Governing Council of the United Nations Environment Programme in 2007.² In decision X/3, adopted by the Conference of the Parties at its tenth meeting, in November 2014, the Executive Director of the United Nations Environment Programme was requested to further extend the life of the Trust Fund up to 31 December 2020. The United Nations Environment Assembly of the United Nations Environment Programme at its second session, in May 2016, approved, however, further extension of the Trust Fund until 31 December 2019,³ based on a routine three-year extension cycle of similar trust funds administered by the United Nations Environment Programme. The Secretariat has since received confirmation from the Executive Director that provision has been made for the request for the extension of the Trust Fund to the date indicated by the Conference of the Parties in decision X/3 (31 December 2020), to be presented for approval at the third session of the United Nations Environment Assembly, to be held from 4 to 6 December 2017.

7. The Secretariat has prepared a place-holder decision for extending the Trust Fund to 31 December 2026 (UNEP/OzL.Conv.11/3-UNEP/OzL.Pro.29/3, section III, draft decision XI/[BB]), based on the three-year cycle of the meetings of the Conference of the Parties and the biennial sessions of the United Nations Environment Assembly that will approve the extension. It is up to the parties, however, to decide on the appropriate expiry date. In accordance with the decision of the parties at the present meeting, the Secretariat will take appropriate action to ensure that the request for a possible further extension of the life of the Trust Fund be considered by the United Nations Environment Assembly at its third session in December 2017.

3. Advisory Committee for the Trust Fund

8. By decision X/3, adopted by the Conference of the Parties to the Vienna Convention in 2014, the Ozone Secretariat was requested to coordinate with WMO to establish an advisory committee for the Trust Fund, with the following mandate:

² Governing Council decision 24/10 on management of trust funds and earmarked contributions, para. 5 (a) (xvi).

³ United Nations Environment Assembly resolution 2/23 on management of trust funds and earmarked contributions, section II, para. 6 (y).

(a) To develop a long-term strategy and implementation objectives and priorities in the light of the four overarching goals identified by the Ozone Research Managers at their ninth meeting;⁴

(b) To develop a short-term action plan that takes into account the most urgent needs of the Global Ozone Observing System and which will make the best possible use of the resources available in the Trust Fund;

(c) To ensure quality control of the individual project proposals developed under the Trust Fund, striving for regional balance in the projects supported by the Trust Fund and identifying possibilities for complementary funding to maximize its resources.

9. The decision further provided that the advisory committee would consist of not more than 10 members, including two co-chairs of the Scientific Assessment Panel, the two co-chairs of the Ozone Research Managers, one representative of the Ozone Secretariat and up to five scientists and experts in ozone observations, as well as one representative of WMO as an observer, striving for equitable geographical and gender representation. The committee would convene electronically or in the margins of other relevant meetings.

10. In response to the request by the parties, the Advisory Committee for the Trust Fund was established⁵ and met three times: in the margins of the Twenty-Seventh Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, in Dubai on 31 October 2015; in the margins of the Twenty-Eighth Meeting of the Parties to the Montreal Protocol, in Kigali on 9 October 2016; and in the margins of the tenth meeting of the Ozone Research Managers, in Geneva on 27 March 2017. A fourth meeting is planned to take place via teleconference prior to the eleventh meeting of the Conference of the Parties to the Vienna Convention.

11. In accordance with its mandate, and taking into account paragraph 3 of decision X/2,⁶ by the time of preparation of the present note the Advisory Committee had considered the status of the activities identified for priority funding at the ninth meeting of the Ozone Research Managers and project proposals submitted for funding in response to the Ozone Secretariat's 2016 invitation to developing countries and countries with economies in transition to do so. The outcome of the committee's evaluation is included in section C below. In addition, the committee has developed a long-term strategy and a short-term plan for the Trust Fund, which are set out in section E of, and in the annex to, the present note.

12. The terms of reference of the committee, developed and adopted at its second meeting in October 2016, may be found on the website of the Ozone Secretariat.⁷

B. Status of the Trust Fund

13. Pursuant to the memorandum of understanding between the Ozone Secretariat and WMO, the Conference of the Parties to the Vienna Convention requested the Secretariat, in decision X/3, to continue inviting parties, and relevant international organizations as appropriate, to make financial and/or in-kind contributions towards well-defined, well-budgeted project proposals developed under the Trust Fund. Accordingly, in 2016 the Secretariat invited contributions towards specific activities which had been reviewed and prioritized by the Advisory Committee. At the present meeting, the parties may wish to review the status of the Trust Fund and the activities for which funding has been requested but not yet approved by the committee due to lack of funds, and make any voluntary contributions.

14. The status of the Trust Fund from its inception in 2003 until 30 September 2017 is shown in the table below. In brief, the total income of the Trust Fund to date, including contributions made by 11 parties, a pledge received from one party in September 2017, interest and the exchange gain, amounts to \$355,381. Total outflow, including expenditures and advances for approved activities (completed and planned) amounts to \$244,736. In addition, an amount of \$82,345 has been committed (but not yet disbursed) for planned activities in 2017 and 2018. Taking these outflows into account, the current balance of the Trust Fund available for supporting any future activities is \$28,300.

⁴ <http://conf.montreal-protocol.org/meeting/mop/cop10-mop26/presession/English/COP-10-6E.pdf>.

⁵ The current composition of the Advisory Committee may be found on the Ozone Secretariat's website at: <http://ozone.unep.org/en/advisory-committee-vienna-convention-trust-fund-research-and-systematic-observation>.

⁶ Decision X/2, para. 3: "To accord priority to capacity-building activities, in particular the specific projects identified for priority funding under the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention, related to the inter-calibration of instruments, the training of instrument operators and increasing the number of ozone observations, especially through the relocation of available Dobson instruments".

⁷ <http://ozone.unep.org/sites/ozone/files/pdfs/Terms-of-reference-for-the-Advisory-Committee-of-the-Trust-Fund.pdf>.

**Status of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention as at
30 September 2017 (in United States dollars)**

<i>Party</i>	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	30 September- 2017	Total
Andorra									5 557							5 557
Australia													28 011			28 011
Czechia				8 000		10 000										18 000
Estonia				2 000												2 000
Finland	5 700	6 138	-			7 776	6 603	6 050	7 190		5 498	4 535		6 276		55 766
France							29 600			5 020				9 956	9 605	54 181
Kazakhstan		1 500	1 500	1 500	1 500	1 500	292	1 500			2 069					11 361
South Africa						30 000	30 000									60 000
Spain			6 306	6 035												12 341
Switzerland						20 677									15 856 ^b	36 533
United Kingdom of Great Britain and Northern Ireland		17 538				23 449										40 987
Subtotal	5 700	25 176	7 806	17 535	52 177	72 725	36 495	7 550	12 747	5 020	7 567	4 535	28 011	16 232	25 461	324 737
Interest income	16	431	911	2 757	5 494	7 326	4 686	1 597	1 844	1 082	765	693	201	781	259	28 843
Exchange gain/(loss)						196	2 989	7 013	(7 013)	(2 272)	(865)	(81)	1 449	(342)	727	1 801
Subtotal	16	431	911	2 757	5 494	7 522	7 675	8 610	(5 169)	(1 190)	(100)	612	1 650	439	986	30 644
Total income																355 381
Less expenditure ^a (for completed activities)		(16 950)		(18 193)			(26 839)		(40 903)				(14 544)	(29 373)	(20 279)	(167 081)
Less advances ^a (for planned activities)															(77 655)	(77 655)
Total outflow																(244 736)
Less funds committed to planned activities																(82 345)
Balance available																28 300

^a The figure includes 13 per cent programme support costs.

^b A pledge of 15,000 euros was received in September 2017. The US dollar equivalent is based on the United Nations operational rate of exchange of 0.946 as at September 2017.

C. Activities and associated costs

15. Since its inception in 2003, the Trust Fund has provided support for 14 activities, comprising the following:

- (a) Nine activities that were completed by August 2017;
- (b) Four activities that had been listed for priority funding at the ninth meeting of the Ozone Research Managers and are planned to take place in 2017 and 2018;
- (c) One new activity included in a project proposal submitted in 2016, planned to take place in the second half of 2017.

16. Parties may wish to note that the Ozone Research Managers at their ninth meeting, in 2014, accorded priority for funding to eight activities, one of which was subsequently cancelled.⁸ The remaining seven activities comprise completed activities 6, 8 and 9 listed below in section C-1, and planned activities 10, 11, 13 and 14 listed below in section C-2.

17. Parties may also wish to note that in response to the Secretariat's invitation in 2016 to all developing countries and countries with economies in transition to submit project proposals for consideration for funding under the Trust Fund, eight proposals have been received to date, six in 2016 and two in 2017. By the time of the preparation of the present note, the Advisory Committee had considered thoroughly the six proposals submitted in 2016 and provided feedback to the proposers, including in some cases requests for further clarification. Owing to the very limited funds available for supporting those activities, the committee has approved funding for only one component of one project proposal, as indicated under (c) above (also indicated as activity 12 below). The remaining seven activities are currently under consideration by the committee, pending the availability of funds and the submission of additional clarifications in response to requests addressed to certain proposers.

18. All of the above-mentioned activities and their associated costs are presented below. A list of the activities, along with summaries of those completed to date, may also be found on the website of the Ozone Secretariat.⁹

1. Completed activities

19. The nine activities completed to date are listed below, along with the associated expenditure (including administrative costs).¹⁰ Activities funded through joint agreements are listed together.

Activity 1: Dobson intercomparison, Dahab, Egypt, 23 February–12 March 2004 (\$16,950).

Activities 2 and 3: Calibration of Brewer instruments no. 116 in Bandung, Indonesia, 5–9 September 2006 and no. 176 in Kathmandu, Nepal, 20–26 September 2006 (\$18,193).

Activity 4: Dobson intercomparison, Irene, South Africa, 12–30 October and 15–26 November 2009 (\$26,839).

Activity 5: Workshop on data quality in the total ozone network, Hradec Králové, Czechia, 14–18 February 2011 (\$40,903).

Activities 6 and 7: Relocation of Dobson no. 14 (formerly deployed in Tromsø, Norway) to Tomsk, Russian Federation, and Dobson training courses in Hradec Králové, Czechia, 7–14 April 2015 and Amberd, Armenia, 28 September–4 October 2015 (\$14,544).

Activity 8: Dobson intercomparison campaign for Asia, Tsukuba, Japan, hosted by the Japanese Meteorological Agency, 7–25 March 2016 (\$29,373).

Activity 9: Dobson intercomparison campaign for Australia and Oceania, Melbourne, Australia, hosted by the Australian Bureau of Meteorology, 13–24 February 2017 (\$20,279).

Total expenditure: \$167,081

⁸ The cancelled activity concerned the relocation of the Dobson observation hatch from Arosa, Switzerland, to Nairobi; it was cancelled because it subsequently emerged that it would cost less to have such a hatch made locally than to transport it from Switzerland to Kenya.

⁹ <http://ozone.unep.org/en/activities-under-vienna-convention-trust-fund-research-and-systematic-observation>.

¹⁰ The lack of new activities between 2011 and 2015 was due to the fact that it took time to repair and refurbish the Dobson instruments destined for relocation.

2. Planned activities

20. The activities approved for funding by the Advisory Committee and planned to take place in 2017 and 2018 comprise four activities listed for priority funding at the ninth meeting of the Ozone Research Managers in 2014 (activities 10, 11, 13 and 14), accounting for a total of \$140,000, and one new activity included in a project proposal submitted in 2016 (activity 12) at a cost of \$20,000. Thus, the total funding allocated to those five planned activities is \$160,000, of which \$77,655 has already been advanced. Those activities, along with the funds allocated or requested and any advances made, including programme support costs, are listed below:

Activity 10: Dobson intercomparison campaigns for Northern and Southern Africa. The campaign for Northern Africa is to be held in El Arenosillo, Spain, 4–15 September 2017, hosted by the Spanish State Meteorological Agency. The campaign for Southern Africa is to be held in Irene, South Africa, in September/October 2018, hosted by the South African Weather Service.

Total funds allocated for the Northern and Southern Africa campaigns: \$50,000.

Funds advanced for the Northern Africa campaign: \$37,655.

Activity 11: Training course on ozone measurements with the Brewer instrument in conjunction with a Brewer Users Group meeting to be held in Sydney, Australia, 4–9 September 2017.

Funds allocated: The total cost of \$40,000 is to be shared between the Trust Fund and the Canadian Brewer Trust Fund, resulting in a Trust Fund contribution of \$20,000.

Funds advanced: \$20,000.

Activity 12: Joint project proposal by WMO/Global Atmosphere Watch and Southern Hemisphere Additional Ozonesondes: Jülich Ozone Sonde Intercomparison Experiment 2017, scheduled to be held in Jülich, Germany, 9–20 October and 23 October–3 November 2017.

Funds requested: \$42,660; funds approved and advanced: \$20,000.¹¹

Activity 13: Dobson intercomparison campaign for Latin America and the Caribbean, hosted by the National Meteorological Service of Argentina, scheduled to be held in Buenos Aires, 13 November–1 December 2017.

Funds allocated: \$50,000.

Activity 14: Relocation of Dobson no. 8 (formerly deployed in Spitzbergen and the property of the Norwegian Polar Institute) to Singapore, following repair and calibration in Germany, and sending of Dobson no. 7, currently out of order, to Germany for possible repair. The activity is tentatively scheduled to take place in the second half of 2018.

Funds allocated: \$20,000.

Total funds allocated: \$160,000.

Total funds advanced: \$77,655.

3. Additional project proposals submitted in 2016 and 2017

21. As mentioned above, of the eight project proposals submitted in 2016 and 2017, the Advisory Committee was able to approve funding for only one component of one project proposal, listed above as activity 12. The remaining seven proposals are listed below, along with the corresponding funds requested:

2016

(a) **Belarus:** Preparing for and undertaking intercomparison sessions of three instruments engineered and currently operated at the National Ozone Monitoring Research and Educational Centre, Belarusian State University, to monitor total ozone and ultraviolet radiation in Belarus. Funds requested: \$50,000;

(b) **Ecuador:** The Ecuadorian Highlands Ozonesondes project. Funds requested: \$49,824;

¹¹ Due to the lack of funds, the Advisory Committee was able to approve only \$20,000 of the total amount of \$42,660 requested under this project proposal. The approved amount will cover the travel expenses of a number of experts from developing countries to participate in the campaign.

(c) **Kenya:** Capacity-building on data management and instrument calibration. Funds requested: \$49,985;

(d) **Oman:** Measurement of the diurnal and seasonal variation of ozone towards improving knowledge on ozone trend estimates: case study of Oman. Funds requested: \$50,000;

(e) **Togo:** Construction and equipping of a laboratory for continuous measurement of the stratospheric ozone layer and atmospheric ozone. Funds requested: \$40,000;

2017

(f) **Comoros:** Project on the establishment of an ozone observatory in Comoros. Funds requested: \$72,823.¹²

(g) **Kyrgyzstan:** Technical support, information exchange for atmospheric monitoring at the shore of the high mountain lake, Issyk-Kul (42.60° N, 77.00° E, 1,650 metres above sea level). Funds requested: \$48,000.

Total funds requested for the above projects: \$360,632.

22. The Advisory Committee provided feedback to all the parties that submitted proposals in 2016 and requested further clarification from some of them (namely Belarus, Ecuador, Oman and Togo). To date, responses have been received from three parties (Belarus, Ecuador and Togo) and are pending further consideration by the committee. The two proposals received in 2017, listed as (f) and (g) above, will be considered by the committee at its next meeting, to be held prior to the eleventh meeting of the Conference of the Parties to the Vienna Convention. All proposers have been informed that their projects will be evaluated by the Advisory Committee but the decision for funding will depend on the availability of resources.

D. Main points related to the availability of funds

23. On the basis of the information provided in sections B and C above, the key messages relating to the status of the Trust Fund and the activities under its purview may be summarized as follows:

(a) The total income of the Trust Fund from 2003 to 30 September 2017 (14 years and 9 months), taking into account contributions by 11 parties, a pledge received by one party in September 2017, interest and the exchange gain, was \$355,381;

(b) The total disbursement from the Trust Fund for completed activities for the same period was \$167,081, comprising expenditures for nine activities. Six of the completed activities involved calibration and intercomparison of Brewer or Dobson instruments from 15 developing countries and countries with economies in transition, while the remaining three comprised a data archiving workshop, a Dobson training course and the relocation of a Dobson instrument involving 21 such countries. Altogether, 31 developed and developing countries and countries with economies in transition have participated in activities supported by the Trust Fund;

(c) Four additional activities listed for priority funding at the ninth meeting of the Ozone Research Managers totalling \$140,000 have been approved for funding by the Advisory Committee and are expected to be implemented in 2017 and 2018. They comprise three Dobson intercomparison campaigns, one covering Northern and another covering Southern Africa and one in Latin America and the Caribbean, a Brewer training course and the relocation of a Dobson instrument;

(d) One activity in one of the eight new project proposals submitted in 2016 and 2017 has been approved for funding by the Advisory Committee for a sum of \$20,000. The project concerns an ozonesonde intercomparison campaign involving the participation of several experts from developing countries. The approved funding will be used to cover the experts' travel expenses;

(e) When the total disbursement for completed activities (\$167,081) and the total funds allocated to the five above-mentioned approved activities (\$160,000) are deducted from the total income of the Trust Fund (\$355,381), the balance available to support activities is \$28,300;

(f) The total amount requested for the remaining seven new project proposals submitted in 2016 and 2017 is \$360,632, pending finalization of the Advisory Committee's critical review.

¹² Comoros indicated that the cost of implementation of the activities included in its project proposal is 60,585 euros. The US dollar equivalent is based on the United Nations operational rate of exchange of 1.202 as at September 2017.

24. Given the very limited resources, the Trust Fund's operation and performance may be regarded as modest in financial terms. However, the activities undertaken over time have been important and effective, yielding positive results for the continuation and enhancement of global systematic observation. Although it has been possible to support all the activities that were prioritized for funding by the Ozone Research Managers at their ninth meeting, the balance available in the Trust Fund is not sufficient to cover the costs associated with the project proposals submitted in 2016 and 2017, nor any proposals that may be submitted in the future. The Conference of the Parties may wish to consider this situation and take any appropriate decisions.

E. Long-term strategy and short-term plan of action for the Trust Fund

25. As set out above, in line with its mandate set out in decision X/3, the Advisory Committee has developed a long-term strategy and a short-term plan of action for the Trust Fund in the light of its overarching goals, which were reaffirmed by the Ozone Research Managers at their tenth meeting.

26. In its long-term strategy for the Trust Fund, set out in the annex to the present note, the committee has highlighted the importance of a strengthened, sustained Trust Fund in monitoring the state of the ozone layer and ensuring that it is healing as expected. It has further expressed concern about the current state of the monitoring system and identified a number of actions that could be undertaken to improve the system in the following three major areas:

(a) Identification of gaps and needs in monitoring and research and development of a plan for resource mobilization;

(b) Exploration of the use of new instrumentation and fostering of cooperation with and support by relevant programmes and institutions;

(c) Establishment of ground rules for applications for Trust Fund resources.

27. With regard to the preparation of a short-term plan of action, the committee has identified the following actions:

(a) Preparation of a document that identifies existing gaps and needs in the fields of research and systematic observations to serve as a basis for further action;

(b) Appointment of a subgroup of the Advisory Committee, consisting of one WMO representative and two committee members, to document the achievements of the Trust Fund in research and systematic observations to date;

(c) Identification of potential sources of funding, other than the voluntary contributions made by parties;

(d) Provision of feedback on proposals received, and partial funding of one of the activities in the proposals submitted in 2016.

28. As noted in section C above, the committee has already provided feedback on most of the project proposals received to date and decided to fund one activity included in one of those. The last element of the short-term plan of action has therefore already largely been implemented. The remaining elements relate to the actions listed under the first element of the long-term strategy.

F. The way forward

29. At the present meeting, the Conference of the Parties to the Vienna Convention is expected to consider the status of the Trust Fund and the work of the Advisory Committee, including its long-term strategy and short-term plan of action for the Trust Fund, and adopt a decision on the way forward, taking into consideration that a decision will also have to be made on whether or not to extend the life of the Trust Fund beyond 2019.

Annex

Long-term strategy for the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention for the Protection of the Ozone Layer

A. Importance of the General Trust Fund for Research and Systematic Observations Relevant to the Vienna Convention for the Protection of the Ozone Layer

1. The General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention for the Protection of the Ozone Layer (the "Trust Fund") was established to enhance the acquisition of needed stratospheric observations, to foster ozone layer research and development in parties operating under paragraph 1 of Article 5 (Article 5 parties) and countries with economies in transition, and to build scientific capacity in those countries. Supported activities have always been carried out in close collaboration with scientists in parties not operating under paragraph 1 of Article 5 (non-Article 5 parties) and have enabled the acquisition of data from the geographical locations of Article 5 parties in addition to the enhancement of the ozone layer science in Article 5 parties.
2. Most of the activities implemented to date have focused on developing the scientific capabilities of Article 5 parties and countries with economies in transition to measure ozone layer levels from well-placed instrumented sites in those countries and ensure that the measurements are of the highest possible quality, via intercalibrations and workshops. Information from those activities has helped the ground-based ozone column measurements that are one of the two pillars of stratospheric ozone measurement, the other being satellite measurements.
3. With only a very limited amount of funding (approximately \$340,000) since its inception in 2003, the Trust Fund has facilitated the following:
 - (a) Calibration and intercomparison of ozone measurement instruments (Dobson and Brewer) from 15 countries;
 - (b) Training courses and workshops for 21 Article 5 countries and countries with economies in transition;
 - (c) Relocation of Dobson spectrometers (the anchor for satellite validation) in one country.
4. Despite the work accomplished under the Trust Fund, current observations from the geographical regions where Article 5 parties are located, including in the tropics, are inadequate. The importance of this shortage is heightened by the fact that the recovery of the ozone layer is greatly affected by the changing climate and the tropical regions play a significant role in climate change and ozone layer recovery.
5. In addition to the global action undertaken by all 197 parties to the Montreal Protocol to address ozone layer depletion, scientists continue to highlight the importance of closely monitoring changes in the ozone layer and decreases in ozone-depleting substances, to ensure that the ozone layer is healing as expected through the actions taken under the Montreal Protocol.
6. In the light of the above, there is a great need to support and enhance the contributions of Article 5 parties and countries with economies in transition to ozone layer science and observations. Calibrations, intercomparisons and relocations of monitoring instruments, as well as capacity-building activities, are vital. Such activities not only improve global data availability, and hence research results, but also enable Article 5 parties and countries with economies in transition to participate in ozone layer science as equal partners with non-Article 5 parties in shepherding the ozone layer to its recovery.

B. Benefits of a strengthened Trust Fund

7. The beneficiaries of the Trust Fund are not only the emerging scientific workforce of Article 5 parties and countries with economies in transition, but also all scientists and policymakers, who will be in a better position to monitor the results of their actions. Expected benefits include the following:
 - (a) Increased capacity and capability in the fields of systematic observations and research in Article 5 parties and countries with economies in transition and better integration of scientists from those countries into the global scientific community;

- (b) Better science-based decision-making at both the international and national levels because of the engagement of scientists from both non-Article 5 and Article 5 parties;
- (c) Better information for various international scientific activities, such as the World Meteorological Organization Global Atmospheric Watch Programme;
- (d) Ground-based cross-validation of satellite data-measuring trends in ozone layer properties.

C. Main elements of the long-term strategy

8. The ozone monitoring system rests on two main pillars: satellite measurements for global coverage and ground-based measurements for long-term stability, as well as for cross-validation of successive satellite missions. Based on the findings of the Ozone Research Managers at their tenth meeting and the goals of the Trust Fund, there is a need for long-term data on ozone levels, temperatures and composition (especially in terms of ozone-depleting and related substances) of the ozone layer. Unfortunately, ground-based ozone observations are decreasing and indeed some stations are closing, even in non-Article 5 countries. This shows that the ozone monitoring system is becoming fragile, and might even collapse if too many monitoring stations disappear.
9. Ground-based stations measuring ozone and related parameters are of great value, not only for monitoring the ozone layer during the crucial period of its recovery from the effects of ozone-depleting substances, but also for information on climate and air quality.
10. Furthermore, ultraviolet-related monitoring and research has not been as well represented as ozone measurements in the activities supported by the modest funds expended under the Trust Fund.
11. Monitoring the ozone layer and ultraviolet radiation are long time-scale activities. It is therefore important that any activity that provides a relevant data stream should also be a long time-scale, sustainable activity. To ensure the value of long-term high-quality data, it is essential that much attention should be paid to the calibration of instruments and the training of operators.
12. Based on the above observations, the Advisory Committee suggests the following plan towards the establishment of a long-term strategy for the Trust Fund covering three main areas of action:

First area: identification of gaps and needs in monitoring and research and development of a plan for resource mobilization

- Carrying out a critical review of the progress made under the Trust Fund to date to measure the cost-effectiveness of the programme: evaluate what was gained for the resources spent, and examine how much data and information have been submitted to the World Ozone and Ultraviolet Radiation Data Centre and related official/international data storage sites.
- Developing scenarios that envision different levels of functional ground-based observations of the stratosphere (ozone, temperature and composition): explore the full spectrum of possibilities without consideration of resources needed and establish priority activities.
- Identifying gaps in the global research efforts by comparing them with what is needed, based on the findings and recommendations of the Ozone Research Managers at their tenth meeting.
- Developing a plan for acquiring Trust Fund resources from non-Article 5 parties and exploring possibilities of acquiring resources from sources other than parties' voluntary contributions, including contributions from satellite/space agencies, scientific, research and philanthropic institutions, United Nations entities and international financial institutions and the private sector.

Second area: exploration of the use of new instrumentation and fostering of cooperation with and support by relevant programmes and institutions

- Exploring the use of new instrumentation for total ozone monitoring¹³ with side-by-side operation of instruments for a period of at least two years to progressively replace the ageing Dobson instruments: transitioning to new instruments could be cost-effective and lead to remote diagnosis and rectification of measurement systems, use for air pollution monitoring and deployment of more instruments.

¹³ For example, modern charge-coupled device (CCD) based instruments, mini-SAOZ (Système D'Analyse par Observations Zénithales) or Multi Axis Differential Optical Absorption Spectroscopy (MAX-DOAS) for total content and profile.

- Fostering relations with the scientific community, especially the International Ozone Commission, Stratospheric Processes and their Role in Climate, and the International Global Atmospheric Chemistry Project, to build capacity and the infusion of knowledge.
- Exploring the possibility of obtaining support for enhancing the synergy between the various networks, such as Global Atmosphere Watch, the Network for the Detection of Atmospheric Composition Change and the Global Climate Observing System Reference Upper-Air Network.
- Working with the climate and ozone layer community to declare that stratospheric ozone should be identified as a primary “essential climate variable”.¹⁴ This could be done in cooperation with the International Ozone Commission.

Third area: establishment of ground rules for applications for Trust Fund resources

- Ground rules to govern applications for support by the Trust Fund could include the following:
 - (a) Requesting proposers to submit only activities that address gaps identified by the Advisory Committee, based on the recommendations of the Ozone Research Managers;
 - (b) Requesting proposers to make in-kind contributions (for example, to invest 30-40 per cent of the cost of the project) as a cost-share on the project;
 - (c) Requiring that proposers show how their activities would be maintained beyond the time of utilization of Trust Fund resources (that is, to view the Trust Fund as a startup package only, not as long-term support);
 - (d) Requiring proposers to leverage the proposed activity on existing activities within their country and region;
 - (e) Requesting proposers to show how the activity builds on previous activities, if any.

¹⁴ The concept of essential climate variables was developed by the Global Climate Observing System, set up under the auspices of United Nations entities and the International Council for Science, to help ensure the availability of systematic observations of climate and quantify the success of environmental and climate policies. For more information on essential climate variables, see: http://unfccc.int/files/science/workstreams/systematic_observation/application/pdf/gcos_ip_10oct2016.pdf.