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Committee on the Peaceful Uses of Outer Space
Scientific and Technical Subcommittee
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Report on the United Nations/Austria World Space Forum 2022 “Sustainability in Space for sustainability on Earth”

(Online, 13–15 December 2022)

I. Introduction

1. The Office for Outer Space Affairs of the Secretariat, the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Federal Ministry for European and International Affairs (BMEIA) jointly hosted the “Sustainability in Space for sustainability on Earth” from 13 to 15 December 2022 as a virtual meeting.

2. The World Space Forum 2022 provided an opportunity for Space community representatives to discuss current and future activities with a focus on the landmark “Space2030” Agenda: space as a driver of sustainable development and its implementation plan.

3. Due to the Covid-19 pandemic, the forum was held online, instead of Vienna, Austria. The event was co-organised by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Federal Ministry for European and International Affairs (BMEIA).

4. The present report describes the background, objectives and programme of the Forum, as well as provides a summary of the sessions and concludes with observations and recommendations.

II. Background and objectives

5. Launched in Vienna in November 2019 (see report A/AC.105/1219), the World Space Forum is an event series hosted by the United Nations that is built on the recommendations generated at four High-Level Forums held from 2015 to 2018. The sequence of Forums demonstrated the growing interest of an increasing number of actors in discussing the future of Space and international cooperation along the pillars of Space economy, Space society, Space accessibility and Space diplomacy.

6. Through the World Space Forum, the United Nations aims to leverage innovative solutions and technological developments to realise the Sustainable

Development Goals (SDGs). Attention is increasingly placed on the unique potential of Space technologies in this endeavour. Building on the outcomes of UNISPACE+50 and taking advantage of the momentum it generated, the Forum sought to ensure that the current exchanges fully capture the political, legal and capacity building elements of international cooperation in Space for climate action.

7. As agreed in the United Nations/United Arab Emirates High-level Forum (see report A/AC.105/1165) held in 2017, the Forum, newly launched in 2019 as World Space Forum, continued to serve as a driver for exchange to promote dialogue between governments, international organizations, industry, the private sector, academia and civil society, to connect the four pillars of UNISPACE+50 and "Space2030".

8. "Space2030" Agenda: space as a driver of sustainable development and its implementation plan is a comprehensive and strategic document charting the way to enhance the contribution of Space and its applications to sustainable development and the realization of other global agendas, namely climate change and disaster risk reduction, the Office for Outer Space Affairs will continue to promote the usage and application of space technology in all fora.

9. The second "SDG Summit" – the High-level Political Forum on Sustainable Development under the auspices of the General Assembly will be convened in September 2023 during the General Assembly high-level week in New York. The Summit will mark the mid-point in the implementation of the 2030 Agenda and the Sustainable Development Goals (SDGs).

10. At the Summit, the Heads of State and Government will comprehensively review progress in the implementation of the 2030 Agenda and the Sustainable Development Goals and provide political guidance for the way forward. This will also include examination of new science-based solutions, including advanced tools with transformative power and innovative solutions for accelerating the full implementation of the Sustainable Development Goals in the remaining years towards 2030.

11. As Space technology can directly and indirectly accompany the common efforts in virtually every sector and every area of the current efforts in implementing the objectives and targes as set out in the 2030 Agenda and the Sustainable Development Goals, this present World Space Forum 2022 sought to raise awareness on the benefits of space applications for everyone, everywhere and aimed to:

- Put "Space2030" agenda in the centre as a guiding document to enhance space-derived economic benefits and strengthen the role of the space sector as a major driver for sustainable development.
- Connect "Space2030" Agenda and its implementation plan with the results, recommendations and discussions of the World Space Fora 2019, 2020 and 2021.
- Raise awareness on the "Space2030" Agenda in conjunction with the planned Sustainable Development Goals Summit in 2023.
- Highlight how Space technology can facilitate the implementation of the SDGs.
- Present new space technologies that enable progress and drive cooperation and partnership in space.
- Bring space actors together to exchange best practices and explore ways to jointly address challenges to humanity and sustainable development issues.

12. In the implementation of the "Space2030" Agenda it is envisioned that each Member State will implement the "Space2030" Agenda on a voluntary basis. In that regard the WSF2022 provided a platform for Member States to actively undertake bilateral, multilateral, regional and broader international space cooperation in various forms, including capacity-building, the sharing of information and infrastructure and

the development of joint projects, and, as appropriate, to integrate space cooperation with economic and development.

III. Attendance

13. The Forum was held virtually and brought together participants from national, regional and international public and private organizations and institutions, including decision-makers from government agencies, high-ranking officials from regional and international agencies, representatives and experts from the United Nations agencies, experts from the Space community, experts from the academic communities and policymakers, experts from international centres of excellence, researchers involved in the use of Space technologies, representatives of the private sector in the Space and non-Space fields, and civil society leaders.

14. A total of 1034 individual participants, 42.0 per cent of whom were women, 56.1 per cent were men, 0.6 per cent were non-binary and 1.3 per cent "preferred not to say", registered to attend the forum and were granted access to the web-based communication platform.

15. Of those participants, several were members of the diplomatic community, including representatives of permanent missions to the United Nations at Vienna. Representatives from Space agencies at various levels were also present, including, the Algerian Space Agency (ASAL), the Argentina National Space Activities Commission (CONAE), the Australian Space Agency (ASA), the Austrian Research Promotion Agency (FFG), the Azerbaijan National Aerospace Agency (Azercosmos), the Bolivian Space Agency (ABE), the Brazilian Space Agency (AEB), the Canadian Space Agency (CSA), the China National Space Administration (CNSA), the Egyptian Space Agency (EGSA), the Ethiopian Space Science and Technology Institute (ESSTI), the European Space Agency (ESA), the French Space Agency (CNES), the Geo-Informatics and Space Technology Development Agency Thailand (GISTDA), the German Aerospace Center (DLR), the Ghana Space Science and Technology Institute (GSSTI), the Indian Space Research Organisation (ISRO), the Iranian Space Agency (ISA), the Israeli Space Agency (ISA), the Italian Space Agency (ASI), the Japanese Space Agency (JAXA), the Kenya Space Agency (KSA), the Mexican Space Agency (AEM), the Mohammed Bin Rashid Space Centre (MBRSC), the National Aeronautics and Space Agency of the United States of America (NASA), the National Commission for Aerospace Research and Development, Peru (CONIDA), the National Institute for Space Research, Brazil (INPE), the National Institute of Aeronautics and Space of Indonesia (LAPAN), the National Space Research and Development Agency (NASRDA), the National Space Science Agency, Bahrain (NSSA), the Netherlands Space Office (NSO), the Paraguayan Space Agency (AEP), the Portuguese Space Agency (PT Space), the Rwanda Space Agency (RSA), the Saudi Space Commission (SSC), the South African National Space Agency (SANSA), the Swedish National Space Agency (SNSA), the Turkish Space Agency, the United Kingdom Space Agency (UKSA) and the Zimbabwe National Geospatial and Space Agency (ZINGSA).

16. The following 114 Member States were represented: Afghanistan, Algeria, Angola, Argentina, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Bhutan, Bolivia (Plurinational State of), Botswana, Brazil, Bulgaria, Cameroon, Canada, Chile, China, Colombia, Costa Rica, Côte D'Ivoire, Croatia, Cuba, Czechia, Democratic Republic of the Congo, Denmark, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Finland, France, Gambia (Republic of The), Germany, Ghana, Malta, Greece, Guatemala, Honduras, Hungary, Iceland, India, Indonesia, Iran (Islamic Republic of), Israel, Italy, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Lao People's Democratic Republic, Latvia, Lebanon, Lesotho, Libya, Luxembourg, Malawi, Malaysia, Maldives, Mali, Mauritius, Mexico, Monaco, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Rwanda, Saudi Arabia, Senegal,

Serbia, Sierra Leone, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Switzerland, Sudan, Sweden, Syrian Arab Republic, United Republic of Tanzania, Thailand, Trinidad and Tobago, Tunisia, Türkiye, United Kingdom of Great Britain and Northern Ireland, Ukraine, United Arab Emirates, United States of America, Venezuela (Bolivarian Republic of) and Zimbabwe.

17. Representatives of the following United Nations entities were also present at the Forum: Comprehensive Nuclear-Test-Ban Treaty Organization, Food and Agriculture Organization of the United Nations, International Atomic Energy Agency, International Telecommunication Union, United Nations Economic and Social Commission for Asia and the Pacific, United Nations Environment Programme, United Nations Industrial Development Organization, United Nations Office on Drugs and Crime, United Nations Satellite Centre, World Health Organization, United Nations Office for Disarmament Affairs and United Nations Office for Outer Space Affairs.

IV. Programme

18. The programme of the Forum was co-developed by the Office for Outer Space Affairs and the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) and the Federal Ministry for European and International Affairs (BMEIA).

19. The Forum opened with a high-level segment with introductory remarks from the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology of Austria, the Permanent Representative of the Republic of Austria to the United Nations in Vienna and the Acting Director of the Office for Outer Space Affairs. The opening session concluded with a keynote message delivered on behalf of the Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation & Technology focussing on the developments at COP27.

20. The Forum also heard contributions from the Chair of the Committee on the Peaceful Uses of Outer Space, the Chair of the Scientific and Technical Subcommittee as well as the Space and Global Health Platform Network Coordinator.

21. The expert exchanges in the following days focussed on “Sustainability in Space for sustainability on Earth” putting the “Space2030” Agenda in the centre of discussions. The agenda which has a strong focus on partnerships and cooperation among Member States, United Nations entities, intergovernmental and non-governmental organizations, industry and private sector entities and will guide the work of the Committee and its subcommittees, supported by the Office for Outer Space Affairs as unique platforms for international cooperation in the exploration and use of outer space for peaceful purposes.

22. The Closing Session of the WSF2022 heard a summary of the most important points raised during the panels and concluding remarks from the chair of the Committee on the Peaceful Uses of Outer Space, a representative from Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation & Technology as well as the Acting Director of the Office for Outer Space Affairs.

23. The video recordings of each session and all presentations can be accessed through the website of the Office for Outer Space Affairs (www.unoosa.org).

V. Summary of the Forum programme

24. Session I with the title “Leave no one behind” focussed on the way Space assets have transformed the way we live and how outer space systems are vital for understanding and solving global problems. Considering that space-based services and technologies are key drivers in addressing the Sustainable Development Goals it the importance of the promotion of inclusiveness and equality in the space sector was

highlighted. The session, furthermore, addressed the vital role of the United Nations Office for Outer Space Affairs to facilitate access to space and highlighted the importance of the inclusion of all actors in the development of a sustainable, future-oriented and strong space sector.

25. This session allowed to specifically focus on the overarching objectives 1, 2 and 3 of the "Space2030" Agenda and highlighted the integration of the space sector with other sectors such as energy, education as well as the management of resources and strengthen the contribution of space technologies and their applications in global efforts to better support the achievement of the Sustainable Development Goals (SDGs). Furthermore, the session promoted access to the use of space technologies for all as well as to enhance global access to data and broadband technologies.

26. Space technologies and their applications can enhance food-systems, increase connectivity as well as facilitate energy transition and improve education which can be considered as key acceleration areas for the achievement of the 17 Sustainable Development Goals. Therefore, this session specifically focussed on activities to increase access to space and connectivity as well as presented on energy and food related projects.

27. Session II entitled "Protect our planet" addressed the need to be prepared for a drastically different environment considering the increasing impacts on the society of climate changes and its effects. This session presented how space-based technologies play a significant role in targeted climate action and trigger policies to achieve the long-term goals of the Paris Agreement. Building on the World Space Forum 2021, where the importance for an increased awareness raising and strengthened outreach on the vitality of Space technology specifically for climate adaptation and resilience efforts was stressed this session focussed on the enhancement in the understanding and consequent utilization of the benefits of space technology, and also highlighted the unique role of the Office for Outer Space Affairs in that regard.

28. This session focussed on the overarching objectives 1 and 2 of the "Space2030" Agenda in order to harness the potential of space to improve the quality of life and to promote the integration of the space sector into mechanisms for the implementation of the Sustainable Development Goals (SDGs) with a special focus on advancing the role of space technologies in highlighting, analysing and addressing climate change.

29. The so-called triple planetary crisis, which refers to the three main interlinked issues of climate change, pollution and biodiversity loss, was put in the centre and addressed how these challenges can potentially be addressed with the support of space technology. Participants presented on lessons learned in the practical application of space tools to address the triple planetary crisis and shared experience in partnership development and cooperation in the domain around space, climate change and action.

30. In Session III with the title "Be prepared" the focus was on prevention in all its aspects and how these efforts can be improved with more innovation, more inclusion and more foresight. As remotely sensed data provides information for systems and models which can predict disasters and provide early warnings and space technologies also enable us to better anticipate and respond to different risks its inalienability for our collective preparedness efforts were discussed. To make maximum use of space applications for sustainable development the inclusion of technology developments and innovative approaches and solutions for prevention activities was highlighted and discussed at the World Space Forum 2022.

31. This session focussed on the overarching objective 2 of the "Space2030" Agenda with a special focus on the promotion of space-based technologies in all phases of the disaster management cycle and to strengthen the use of space technologies and their applications to support the development of socially and environmentally sustainable human settlements and infrastructure.

32. Despite the increasing efforts to prevent climate change and its impacts the international community needs to be prepared for a drastically different climate and environment in the future. Participants in this session presented how space technology

can support the need to adapt economies, infrastructure and services to account for the impact of climate change and also facilitate increased adaptation efforts in developing countries.

33. Session IV focussed on “Space in the United Nations” and highlighted the implementation plan of the “Space2030” Agenda which contains the proposal that Committee and its subcommittees and the Office for Outer Space Affairs should continue to fulfil their respective mandates and to cooperate and coordinate with other relevant entities within the UN system, including through UN-Space. The UN-Space Session therefore looked at the synergies in the work of the Committee and its subsidiary bodies and UN entities, focussing, in particular, on advancing the work under the Space and Global Health Platform and Network, established by the STSC at the 59th session in 2022. The Session furthermore promoted dialogue on the interdisciplinary and cross-sectoral space-related matter and identify synergies for greater international cooperation in the peaceful exploration and use of outer space and in the utilization of space science and technology for sustainable development.

34. Session IV focussed on “Space in the United Nations” and was jointly organized with UN-Space, the formal inter-agency mechanism for cooperation in and coordination of space-related activities within the United Nations system. Recalling that the implementation plan of the Space2030 Agenda contains the agreement that that Committee and its subsidiary bodies and the Office for Outer Space Affairs should continue to fulfil their respective mandates and to cooperate and coordinate with other relevant entities within the United Nations system, including through UN-Space, the Session therefore looked at the synergies in the work of the Committee and its subcommittees and United Nations entities, focussing, in particular, on advancing the work under the Space and Global Health Platform and Network, established by the Scientific and Technical at its 59th session in 2022.

35. Participants of the Forum welcomed the adoption by General Assembly of its resolution 77/120 on Space and Global Health, which contained specific recommendations on the use of space technology, applications, practices and initiatives in support of global health, as well as resolution 77/121 on International cooperation in the peaceful uses of outer space, which noted with satisfaction the establishment of the Space and Global Health Platform, based in Geneva, to promote effective collaboration on space and global health issues among Member States and United Nations system entities, and welcomed the establishment of the Space and Global Health Network.

36. The Session facilitated dialogue on strengthening space-related cooperation among different stakeholders in support of global health, and discussed the need to increase contributions of space science, technology and applications to enhance space life sciences and digital health technologies, such as telehealth, telemedicine and tele-epidemiology, for the prevention and control of diseases, promotion of health, and the advancement of medical research and health practices.

37. The discussions on “Boost partnerships” in Session V addressed one of the core objectives of the “Space2030” Agenda to take further steps for the United Nations system to become more inclusive. Considering the increasing role and influence of the private sector, civil society and its centrality to achieving so many of the actions outlined in the “Space2030” Agenda the importance on partnerships for capacity building have also been taken into account at the World Space Forum.

38. This session focussed on the overarching objectives 1, 3 and 4 of the “Space2030” Agenda with a dedicated focus on improving access to space for all and ensure that all countries can benefit from space science and technology applications and space-based data, as well as to enhancing capacity-building, education and training in space science and applications.

39. Session V allowed to highlight opportunities for impact in improving access to Earth observation-related data and strengthening the capacity of users to apply data and knowledge to decision making. Presenters shared relevant capacity building

experiences and addressed structural approaches and new platforms to foster data access as well as related training and other capacity building with the focus of the discussions centred on strategies for scaling up and maximizing the reach of these activities.

40. Session VI entitled “Use Space Sustainably” discussed the era of renewed exploration and use of outer space, with active programmes to return humans to the Moon and beyond and the planned launch of mega-constellations of thousands of new satellites. Considering that global investment on space activities is increasing rapidly, projecting an irreversible dependence on space application, Space science, policy and technical experts have called the attention to the fact that humanity’s continuous access to space is threatened, if the exponential and unsustainable proliferation of space activities continue. Ensuring that all humanity can continue to use outer space for peaceful purposes and socioeconomic benefit now and in the long term requires international cooperation, discussion, and agreements designed to ensure peaceful, safe and sustainable use of outer space.

41. This session focussed on the overarching objectives 1 and 4 of the “Space2030” Agenda with a dedicated focus on building partnerships and strengthen international cooperation in the peaceful uses of outer space and the global governance of outer space activities to ensure the long-term sustainability of outer space activities and the preservation of the outer space environment for peaceful uses.

42. Session VI allowed discussions on national and international mechanisms for effective actions by governmental and non-governmental actors to strengthen collaboration and the development of effective tools and instruments to achieve the goal of sustainable use of space for peaceful purposes and the benefit of all humankind. Participants to the session presented on possible steps and actions to sustain long-term sustainable use of outer space activities as all as discussed actions to facilitate sustainable use of space and to secure long-term benefits of space for all so that all countries can benefit socioeconomically from space science and technology applications.

43. In addition to the presentation session the World Space Forum 2022 saw two discussion rounds being organized at the end of each day to discuss how to best leverage the “Space2030 Agenda” at large to position Space within the “SDG Summit” proceedings and to raise awareness on the importance of Space to achieve the Sustainable Development Goals.

VI. Observations and recommendations

Overarching objective 1: Enhance space-derived economic benefits and strengthen the role of the space sector as a major driver of sustainable development

44. Presenters at the World Space Forum highlighted that awareness raising with tangible and concrete facts is key to generate an increasing mindfulness on the importance of Space in our daily life. Furthermore, the need for more examples and compelling applications was stressed.

45. As such, a study with the purpose of assessing the socioeconomic impact of investment of space was referenced. This national study revealed that there is return on investment of 1.36 in the upstream and 2.41 in the downstream for every Euro invested in the Space sector. The participant recommended further similar studies to assess the benefits and impacts for the end users as well as suggested similar national studies.

46. The importance of international catalysts in order to reduce the burden of coordination efforts with different stakeholders in individual, national implementation agency was mentioned by one participant to the World Space Forum.

47. The second “SDG Summit” – the High-level Political Forum on Sustainable Development under the auspices of the General Assembly was recommended as an outstanding occasion at which Member States can take stock of what has been achieved under the “Space2030 Agenda”, as an unanimously recognised General Assembly resolution, and highlight the importance of the role of Space for sustainable development.

Overarching objective 2: Harness the potential of space to solve everyday challenges and leverage space-related innovation to improve the quality of life

48. Participants to the Forum stressed that more space data is currently generated as actually can be process. While this data has also become more accessible for the end user in the past years there is still a lack interoperability between the different data. Furthermore, there was a strong call to increase capacity development, especially in developing countries, in order to increase the use of space data for sustainable development use.

49. In that regard it was highlighted that strengthened and increased capacity of a larger and more diverse stakeholder community can eventually lead to a greater impact and increased use of space-related innovation to improve the quality of life. Space education and capacity building on all levels including the general public, developers as well as among policy and decision makers was mentioned as a key driver to increase the understanding and acceptance of the importance of geospatial information.

50. The participants to the Forum stressed the importance of a growing collaboration and strong partnerships beyond the space sector with the objective to reduce silos and increase a broader industry participation and contribution. In that regard, the importance to address the user need and that space applications would need to be specifically tailored for the user requirements with a clear understanding where these tools can be helpful was highlighted.

51. Participants to the Forum noted with satisfaction that the UN-Space Session was the first concrete step in the implementation of General Assembly resolutions 77/120 and 77/121 and encouraged greater participation of health and space community in the work of the Space and Global Health Network with the objective of increasing the use and application of space science and technology in the global health domain as a means of promoting equitable, affordable and universal access to health for all.

Overarching objective 3: Improve access to space for all and ensure that all countries can benefit socioeconomically from space science and technology applications and space-based data, information and products, thereby supporting the achievement of the Sustainable Development Goals

52. It was noted that access to adequate financing and funding is key for an increased use and application of space technology for development. The “Space2030 agenda” was referenced as an important fundraising document to support national efforts for an increased national budget in space science and research. In that regard, participants highlighted the importance to connect financing needs to concrete policy documents.

53. The “Space2030 Agenda” was commended for its efforts to highlight that space is a catalyst for sustainable development. In this connection the participants emphasised the importance of the broadest possible inclusion in the space sector and that efforts on diversity in space are an absolute must for the achievements of the objectives included in the “Space2030 Agenda”.

54. Participants to the Forum stressed the consideration of inclusion of increasing space-based services and applications in the post-2030 Agenda and the importance to initiate the process already today as the different processes appear to start the preparation of the time beyond 2030.

Overarching objective 4: Build partnerships and strengthen international cooperation in the peaceful uses of outer space and in the global governance of outer space activities

55. The reference of the Guidelines for the Long-term Sustainability of Outer Space Activities in the Secretary-General's report "Our Common Agenda" was mentioned in the discussions at the World Space Forum and the strong support of Italy for any follow up action on the "Common Agenda", as well as in preparation of the "Summit of the Future" and the implementation of the "Space2030 Agenda".

56. In that regard, the important roles of the Committee on the Peaceful Uses of Outer Space as a platform and the Office for Outer Space Affairs as a facilitator, especially for developing countries, to connect international stakeholders and provide entry opportunities was highlighted as an important way to foster international collaboration and cooperation.

57. Participants of the World Space Forum were reminded about the Office for Outer Space Affairs open call, under the "Awareness-raising and capacity-building related to the implementation of the LTS Guidelines" Project which is supported by the United Kingdom Space Agency, to gather and highlight operational case studies on how the Guidelines for the Long-Term Sustainability Outer Space Activities (LTS Guidelines) have been put into practice and related lessons learned.

VII. Conclusions

58. The United Nations/Austria World Space Forum "Sustainability in Space for sustainability on Earth" provided an opportunity to raise awareness on the "Space2030" Agenda in conjunction with the planned Sustainable Development Goals Summit in 2023 and to put the agenda in the centre as a guiding document to enhance space-derived economic benefits and strengthen the role of the space sector as a major driver for sustainable development.

59. In that regard, the World Space Forum provided an outstanding platform for stakeholders to discuss current and future activities under "Sustainability in Space for sustainability on Earth". Furthermore, the World Space Forum, facilitated the exchange of best practices and cooperation among all relevant stakeholders in support of the Sustainable Development Goal and in preparation of the Sustainable Development Goals Summit in 2023.

60. The World Space Forum brought together experts and policymakers from regional, national and local institutions, private organizations, academic institutions, non-governmental organizations and international organizations to allow for an inclusive, diverse and multilateral dialogue on "Sustainability in Space for sustainability on Earth".

61. In closing, Austria announced its continued support for the World Space Forum and that the World Space Forum 2023 will again take place in Vienna in cooperation with Austria.