



ESO Statement under Agenda Item 3, General Exchange of Views.

Statement by Dr. Andrew Williams on behalf of the European Organisation for Astronomical Research in the Southern Hemisphere (ESO) to the 60th Session of the Scientific and Technical Subcommittee of United Nations Committee on the Peaceful Uses of Outer Space.

Mr Chair, Distinguished Delegates,

It is a great honour to deliver this statement on behalf of the European Organisation for Astronomical Research in the Southern Hemisphere, known as ESO.

Mr Chair,

I'm pleased to report to the Committee that with the support of our 16 Member States under the framework of our intergovernmental treaty, our Host State Chile, and Australia—our strategic partner, ESO's astronomy programmes are on a strong footing, despite the challenges of the pandemic and the difficult ongoing economic situation. Some programmatic highlights from the past year include signing an agreement with the Australian government to allow Australian institutes to participate in ESO's technology development projects and achieving a key milestone in our strategic sustainability plan—the inauguration of the Paranal-Armazones photovoltaic plant in July 2022, which is now the largest solar complex in Chile supplying renewable energy to an astronomical observatory. The plant has over 18,000 solar panels that can generate 9 megawatts of electric power, enough to fully power ESO's facilities at the Paranal observatory, thus avoiding the emission of 1,700 tons of carbon dioxide per year.

Mr Chair,

With respect to our scientific achievements, ESO continues to be the world's most productive astronomical observatory, providing a range of world leading facilities to the global astronomy community. In the past year, ESO's telescopes have studied the atmospheres of exoplanets—those planets around other stars in our galaxy—and discovered an unusual and unexpected presence of Barium in the atmospheres of two planets, raising questions about our understanding of exoplanets and their chemistry. ESO's Very Large Telescope was also used to discover a third exoplanet around Proxima Centauri – the star closest to our own. Astronomers have now confirmed over 5,000 exoplanets. The forthcoming generation of large ground-based telescopes, in combination with current space-based facilities like the

NASA/ESA/CSA JWST, will have the capabilities to analyse the atmospheres of these planets in detail and search for signs of life.

One of the most critical facilities in this search will be ESO's Extremely Large Telescope, or ELT, which will be the first of the giant 30m-class optical observatories to come online. The construction of the ELT is underway, with over 90% of the contractual value of this Billion-Euro-class project making progress in industry. With a primary mirror of 39m in diameter, the ELT will be the world's largest optical and infrared telescope at its first light at the end of this decade.

We are continuing to support and develop the Atacama Large Millimetre / Sub-Millimetre Array, or ALMA, which is an international partnership amongst Europe, represented by ESO, North America, and East Asia, in cooperation with the Republic of Chile. ALMA is to date the world's largest astronomical cooperation and has enabled many amazing science discoveries due to its powerful capabilities. ALMA was a critical facility to the Event Horizon Telescope project—a multi-year international collaboration which linked together eleven radio observatories across the planet to form a single "Earth-sized" virtual telescope. In May 2022, the project revealed an unprecedented scientific result: visual confirmation that there is indeed a supermassive blackhole at the centre of our own galaxy, and its size is as predicted by Einstein's theory of General Relativity.

Mr Chair,

Astronomy plays a vital role in space exploration, science, and planetary defence. It also promotes interest in scientific and technical studies and careers and helps build national capacity for space capabilities. The increasing number of artificial space objects, however, particularly satellite constellations in low earth orbit, poses challenges to astronomy research as it affects the ability to conduct fundamental science. ESO, along with other organizations such as IAU and SKAO, and several Member States, is endorsing a proposal to establish an Expert Group under this Committee, in order to ensure that COPUOS gains ownership of this important space governance challenge to safeguard global access to knowledge of our Universe.

Mr Chair, Distinguished Delegates, thank you for your kind attention.