



ESO engagement in Equity, Diversity and Inclusion

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The European Southern Observatory (ESO) is the pre-eminent intergovernmental science and technology organisation in astronomy. Its mission is to design, build and operate the most advanced observatories on the ground, and to foster international collaboration for astronomy.

ESO operates three unique world-class observing sites in the Atacama Desert region of Chile (La Silla, Paranal and Chajnantor) and is currently building at Armazones the Extremely Large Telescope, which with its 39-metre primary mirror will be the largest ground-based telescope ever built.

The work carried out at ESO leads to invaluable scientific and technological progress and contributes to social and environmental sustainability, as well as to peaceful scientific cooperation, in line with several of the United Nations (UN) Sustainable Development Goals.



LEVEL 1 – Organizational Culture

Gender equality, and particularly the advancement of women in science, has been a priority at ESO since the kick-start project "Status of women at ESO" (Primas 2007¹), that found female employees accounting for only 18% of the total staff members. In 2023, the fraction of female employees had reached 26,1%, but we aim at more!

Following a data-driven and goal-oriented approach, ESO has developed an Action Plan to improve equality overall and to make the working environment more inclusive. Three high-level strategic priorities were chosen – which are now part of ESO's core values – each with its defined targets, strategies and future actions.

PRIORITIES	Targets	Strategies in place	Future plans
Diversity	<ul style="list-style-type: none"> Increase overall number of women to reach 30% by 2030. Increase % of women in technical, engineering and decision-making positions. Increase efforts to support other diversity dimensions (e.g., disabilities, age, LGBTQ+). 	<ul style="list-style-type: none"> New hiring guidelines are being implemented, e.g.: Revised job ads to promote applications from diverse audiences; Participation in career fairs focusing on underrepresented groups; Diverse selection boards trained on unconscious biases; Mandatory diversity mapping for hiring unit. 	<ul style="list-style-type: none"> Ensure full accessibility at every stage of the hiring process (e.g., especially for candidates with disabilities). Evaluate current and best practices to identify talents.
Equity	<ul style="list-style-type: none"> Understand and close incrementally: Salary gaps; Advancement and career progression disparities affecting some groups of individuals. 	<ul style="list-style-type: none"> Gather data on starting pay and career advancement based on gender. Select an external consultant to help with the data analysis and to recommend future actions. Develop leadership and mentoring programmes for women. 	<ul style="list-style-type: none"> Tackle salary/advancement disparities in other dimensions (not only gender). Develop ways to support diverse staff and in particular women towards higher level positions.
Inclusion	<ul style="list-style-type: none"> Review and enhance work-life balance policies to enable staff to work more effectively. Improve psychologically safety. Understand the needs of staff with disabilities, including hidden disabilities, and provide reasonable accommodation. Promote the awareness and understanding of cultural differences among ESO staff. 	<ul style="list-style-type: none"> Flexible work arrangements and family-friendly policies (including secured access to daycare). Trained a group of Respectful Workplace Advisors to support staff and further promote ESO Respectful Workplace policy. Availability of ombudsman services. Existence of Code of Conducts for meetings, conferences and observatory sites. 	<ul style="list-style-type: none"> Promote an inclusive environment for people with disabilities, via: Awareness talks; Appointing and training a group of Disability Contact Persons to provide informal and confidential advice to staff with disabilities and recommendations for reasonable accommodation of their needs; Assessing the physical accessibility of ESO buildings and sites.

LEVEL 2 – Collaborative Partnerships

Outside of ESO, the organisation has established several connections, collaborating with other organizations and networks to promote gender diversity:

- Observer on the Horizon 2020 GENERA (Gender Equality Network in Physics in the European Research Area) project [2015 – 2018];
- Co-founding member of the EIROforum Diversity & Inclusiveness Working Group [2017 – present; with ESO chairing the WG over the periods 2019-2021 and 2024-2025]
- Member of the GENERA Network² [2019 – present];
- Collaborative partnership with UN Women³ Chile [2020-present] – see Level3 section for more details.

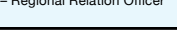
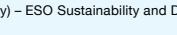
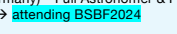
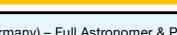
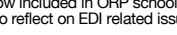
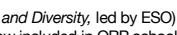
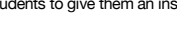
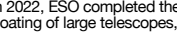
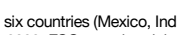
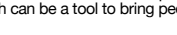
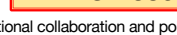
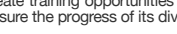
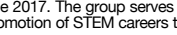
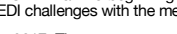
Moreover, individual staff members are involved in working groups promoting gender equity and diversity, including:

- Working Group of Women in Astronomy at the International Astronomical Union (IAU);
- Society of Women Engineers;
- Women in Big Science Business Forum (WBSBF).

Actions highlights

- The participation to the H2020 GENERA project resulted in the co-organization (with CERN and NordForsk) of a Gender in Physics Day workshop at CERN at the beginning of 2017, that brought on stage representatives of all 8 EIROforum intergovernmental organizations (CERN, EMBL, ESA, ESO, ESF, Eurofusion, European XFEL, ILL) who shared their EDI challenges with the members of GENERA.
- The success of the event resulted in CERN and ESO to initiate a dedicated Working Group within the EIROforum network, which has been active since 2017. The group serves as a platform to exchange best practices, to share resources, such as events and materials; to monitor and compare EIROforum gender disaggregated statistics; and to enable the promotion of STEM careers to under-represented groups, as demonstrated by the initiatives and events organised together in celebration of special UN International Days.
- The partnership with UN Women aims at combining forces to promote science and engineering careers among young girls in Chile, as well as to create training opportunities for disadvantaged women who have struggled to finish their formal education. In addition, ESO makes use of the *Women Empowerment Principles* as guideposts to structure and measure the progress of its diversity and inclusion actions.

→ ESO will continue to invest time and effort into these collaborations, because they represent important learning and exchange platforms.



ESO contributions to society are manifold, ranging from science discoveries and engineering developments to international collaboration and policy, talent development and education and outreach. With EDI among its Core Values, ESO firmly believes that astronomical education and research can be a tool to bring people of different backgrounds together in collaborations, especially empowering and inspiring women around the world.

EDI-related activities with societal impact

Second Chance Programme (Tu Oportunidad): this is a UN Women worldwide initiative which has been launched in six countries (Mexico, India, Australia, Cameroon, Jordan, and Chile) and whose objective is to economically empower women who have not completed their formal education. In 2022, ESO completed the first 14-weeks training of 7 women at Paranal Observatory, in key astronomical technology skills, such as coating of large telescope mirrors. The coating of large telescopes, a process that provides a new reflective layer to a mirror, is a complex process that offered to the trainees to acquire knowledge of maths, physics, coating technology, handling of industrial chemicals, operation of cranes, and skills to operate in laboratories and clean areas.

LIQCAU⁵: members of ESO staff based in Chile have partaken in the programme *LIQCAU: + Mujeres en Ingeniería*, a mentoring project led by the Universities of Antofagasta, to inspire and support women enrolled in engineering curricula.

Girls' Day (Germany): ESO continues to participate to the annual Girls' Day, opening its doors to female high-school students to give them an insight into scientific and technological professions and to encourage more of them to choose careers in STEM fields.

Training of early career scientists: a fruitful collaboration between Joint Action 1.4 (*Accessibility, Equal Opportunities and Diversity*, led by ESO) and Joint Action 4 (*Training*), within the H2020 Opticon RadioNet Pilot (ORP) project, has resulted in the development of a career training module, now included in ORP schools and which embed EDI principles. These special sessions have received positive feedback and offer an opportunity to the young generations to reflect on EDI related issues and to prepare them for future career challenges, with a supportive EDI perspective.

→ In collaboration with UN Women, ESO will continue to participate in projects that aim at creating a talents pipeline, thus increasing the capacity building of different areas in Chile. The next initiative is a training programme for students in technical schools close to ESO Paranal Observatory. The first school selected is in Tal-Tal, a small coastal city, 110km south of Cerro Paranal.

REFERENCES

- <https://eso.org/sci/publications/messenger/archive/no.128-jun07/messenger-no128-67-71.pdf>
- <https://www.genera-network.eu>
- <https://www.unwomen.org/en>
- <https://lac.unwomen.org/es/digitalca/publicaciones/2021/09/programa-tu-oportunidad>
- <https://heuma.cl/lanzamiento-proyecto-liqcau-mujeres-en-ingenieria/>



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