The Greenhouse Project

Rising to Food Security and Climate Challenges

ReNuAL II

The IAEA seeks extrabudgetary funding to replace ageing greenhouses shared by three of its nuclear applications (NA) laboratories. The 12 NA laboratories help deliver on the IAEA's mandate to share with Member States the benefits of peaceful nuclear technologies through training, services, and applied research in food and agriculture, human health and environmental resource management.

The greenhouses are essential to the work of the Plant Breeding and Genetics Laboratory, the Soil and Water Management & Crop Nutrition Laboratory, and the Food Safety and Control Laboratory. These three laboratories help Member States breed drought, pest and disease-resistant crop varieties, sustainably manage environmental resources, and ensure food security in the face of a changing climate.

The IAEA's existing greenhouses are over 30 years old and approaching the end of their service life. The need for frequent repairs and maintenance puts at risk important resources and disrupts year-round operations essential to research and development.

Modern Features and Technologies

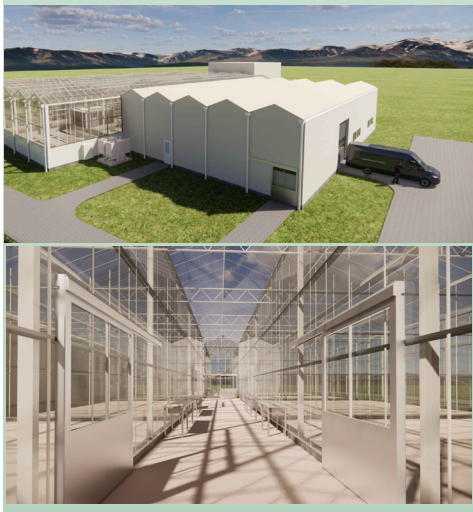
The planned greenhouses are not the simple glasshouses of yesteryear. Modern features will enable the labs to simulate climatic conditions almost anywhere, better serving our diverse Member States. These include:

- Eight new modules with precise climate control and fertigation systems to simulate specific local growing environments;
- Precise lighting controls for accelerated plant breeding;
- Dedicated modules for research on soils from different continents;
- A dedicated phytopathology module meeting international standards for for R&D and diagnostics on plant diseases and on biological control measures;
- A separate radioisotope module with independent climate controls and growth area;
- Clustered growth chambers to maximize use of shared common areas;
- Improved operational, energy, and water use efficiencies.

Greater Impact

Added space and new technologies included in the planned greenhouses will enable the IAEA to strengthen support to Member States in achieving the Sustainable Development Goals (SDGs) and meeting socioeconomic development needs through:

- *Expanded research and development on climate change resilience in crop production*
- *New approaches to soil management and to plant pest/disease resistance*
- *Increased training and services*



Architect's rendering of the planned Greenhouses

Greenhouse Project Budget

Total Estimated Cost: €6 million; Remaining balance needed: €3.4 million (as of 14 February 2023)

For more information, please contact *NA-Labs@iaea.org* or visit:
https://www.iaea.org/about/organizational-structure/department-of-nuclear-sciences-and-applications/seibersdorf-laboratories/renual

Strengthening Climate Resilience, Food Security and Environmental Management

The IAEA, in line with its 'Atoms for Peace and Development' mandate, supports Member States in using nuclear techniques and technologies to address at least 9 of the 17 United Nations Sustainable Development Goals (SDGs). The new greenhouses will strengthen the IAEA's support and training for Member States in addressing SDGs relating to climate change resilience, food security and environmental management.

The **Soil and Water Management & Crop Nutrition Laboratory (SWMCNL)** works to improve the resource use efficiency of crops and to protect soil and water resources for sustainable and climate-smart agriculture. Additionally, the SWMCNL helps strengthen Member States' preparedness and response to nuclear or radiological emergencies affecting food and agriculture. The SWMCNL complements these services with technical support and training courses, allowing Member States to develop strategies for sustainable agriculture that minimize land degradation while at the same time adapting to climate change.

The **Plant Breeding and Genetics Laboratory (PBGL)** implements research and training activities for the improvement and climate-change adaptation of crops using plant mutation breeding and associated biotechnologies. Centered on research in the lab, greenhouse and field, the Laboratory develops or adapts protocols for induction of novel genetic diversity in different plant species, selection for multiple traits, and acceleration of variety development. New greenhouses are central to the PBGL's research and training activities, enabling 24/7, year-round experimentation towards the development of new and improved crop varieties with increased and stable yields under climate change and with better nutritional value.

The **Food Safety and Control Laboratory (FSCL)** improves food safety and quality for Member States around the world by enhancing food monitoring systems to identify contaminants, tracing the origin of food, and verifying its composition. Ensuring the authenticity, traceability and integrity of the food supply chain is becoming increasingly important to provide confidence needed to support trade in agricultural products. The FSCL transfers these techniques to national laboratories and regulatory authorities in Member States to help build and strengthen their food safety control systems.

ReNuAL – Building for Science

The IAEA has made significant progress in modernizing facilities of its Nuclear Applications laboratories in Seibersdorf, Austria, which date from the 1960s.

The ReNuAL initiative has delivered new facilities for 5 of the 8 laboratories, including two new laboratory buildings and a medical linear accelerator facility.

Greenhouse replacement is part of the final project phase, ReNuAL2. The greenhouse project is the last major element requiring additional funding. The other two elements of ReNuAL2 – construction of a new building for the three remaining laboratories and renovation of the Dosimetry Laboratory – are already funded.

ReNuAL2 contributors are recognized on a permanent donor display in the building.

Top: Existing laboratory greenhouses,
Bottom: Donor display honoring ReNuAL2 contributions