News press

30 YEARS AFTER THE GULF WAR
ROBONOVA 2.0 IS ON A MISSION FOR SOIL RESTORATION

Thirty years after the Gulf War, ROBONOVA 2.0, the revolutionary biotechnological system for the study of contaminated souls developed by the Italian company DND Biotech, will be stationed in Kuwait to define a treatment protocol for deeply contaminated extensive areas of the Kuwaiti territory in the North and South of the Country.

Within an international procurement, with an investment of more than 200 million dollars provided by the World Bank for the restoration of the Kuwaiti soil, the Finnish company Lamor, together with the Kuwaiti company KAK, general contractor of the project, has chosen DND Biotech Robonova 2.0 for the Bio Treatment Optimization Study. The project is about the treatment of six million cubic meters of soil contaminated by petroleum hydrocarbons, for a total work duration of 5 years.

The Gulf War, that everyone remembers as the *desert storm* of the coalition forces against the occupation by Saddam Hussein and for being the first war broadcasted live on TV, has left behind vast contaminated areas in Kuwait.

Territories in the Country that were subjected to extensive bombing and countless oil wells fires are still heavily contaminated with hydrocarbons. An additional and significant damage to the soil was created at the time by the extinguishing of the fires with seawater, which led to the formation of saline sediments on vast areas, deteriorating even more the fragile ecosystem.

Among the main objectives of the Kuwaiti project, on which the team of DND Biotech will work to achieve with Robonova 2.0, there is (i) the remediation of the contaminated soil with a suitable approach to meet the goals of the Sustainable Development of the 2030 Agenda, (ii) the guarantee that there will not be future harmful impacts on the surrounding soil, air and environment, and (iii) the integration of green and sustainable remediation approaches.

Robonova 2.0, the mobile laboratory placed in a container and able to travel and operate anywhere in the world, in its first international mission will work on soils contaminated by petroleum in high concentrations and damaged by saline sediments.

The remediation project is focused also on the stringent needs of Kuwait to deal with climate change and to created dietary independence. DND Biotech, which has made the study of damaged soil its *mission*, will work on this environmental restoration project only with bio-based methods that will be needed in order to recover the vitality and biodiversity of the contaminated and damaged Kuwaiti territories and, where possible, to create green areas.

DND Biotech with Robonova 2.0 is called upon to respond on the needs for re-vegetation of areas and to balance climate change to create sustainable projects for the immediate future. The project consists of many phases, starting with the essential de-bombing, to search for unexploded devices in the areas

subject to the remediation, after which it will be possible to proceed with sampling, chemical, physical and biological characterization of the soils, metagenomic analysis and bioremediation verification, before proceeding with the inoculation of the microorganisms needed to revitalize the areas.

Robonova 2.0, duly prepared for Kuwaiti work with a special set-up of diagnostic and operational tools, in order to provide the recipe for remediation of Kuwaiti areas will carry out a series of technical and scientific processes such as laboratory tests, engineering and estimation calculations. With the arrival of the first samples in Italy from Kuwait these days, the company is entering the operational phase that will end in February 2023, enabling the general contractor to complete the entire project in the next four years.

The station of RoboNova 2.0, a mobile version of the original pilot plant, is provided with all the equipment useful for accurate and precise in situ and on-site work that allows the identification and isolation of the microorganisms responsible for contaminant degradation, the definition the microbiome's response to the decontamination processes, the engineering of the remediation processes, the testing of the detoxification capacity, and ultimately the restitution of clean and fertile soil.

The solutions that DND Biotech proposes through RoboNova 2.0 are site-specific and provide significant optimization of environmental remediation time and cost, and the improvement in the quantity and quality of agricultural production with a considerable increase in biodiversity and crop improvement.
The technical soil-omic station RoboNova 2.0 was created to ensure sustainable bioremediation, and its versatility allows it to intervene in a wide variety of contexts and to optimize the quality and speed of remediation or reclamation projects in damaged areas.

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