SUSTAINABILITY FOR SPACE, SPACE FOR SUSTAINABILITY: linking space and SDG in Brazil

Julio Rezende (UFRN) – JulioFDRezende@hotmail.com & Davi Souza (UFRN) - daviafs15@gmail.com

Introduction: Habitat Marte

This research presents initiatives developed in Brazil dialoguing space and sustainability. The research focuses in some technologies developed in Brazilian Mars analog station HABITAT MARTE applied to space habitats (International Space Station-ISS, Moon and Mars) and supporting rural communities mainly based in areas under drought and heat waves threats.

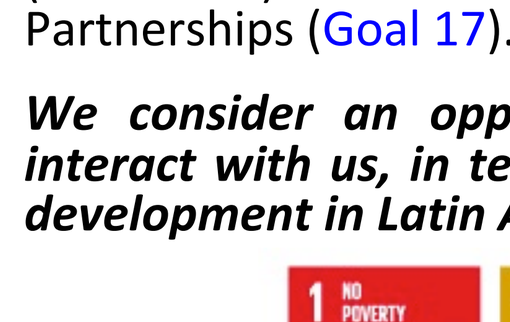
Discussion:

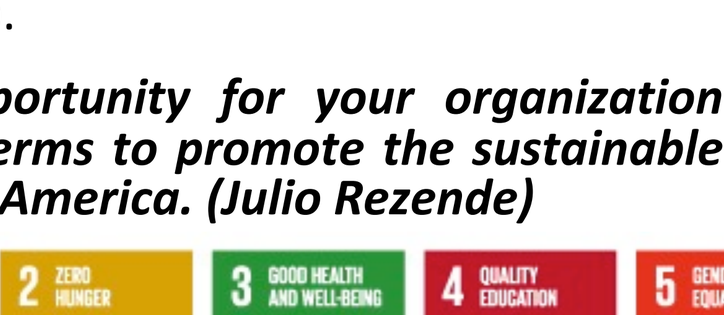
Life on Mars will necessarily emphasizes recycling. Each piece of raw materials from Earth will be extremely rare, demanding endless recycling. An emerging question is: how this perspective would be useful for us?

Food System Production

HABITAT MARTE FOOD PRODUCTION SYSTEM is based in the operation of the greenhouse BIOHABITAT, where had just been produced lettuce, basil and pepper.

Was important identify the operation of an aquaponic system based in production of Tilapia fish. Part of the food is just consumed by Mars simulated missions. The operation of Habitat Marte had collaborated to develop new skills related to agricultural techniques.





Sustainable Development Goals

All months HABITAT MARTE receive students from different schools. What We are doing is very connected with Sustainable Development Goals (SDG): We are sharing social Technologies to combat POVERTY (Goal 1), Hunger (Goal 2), delivering Quality Education (Goal 4) for developing societies and encouraging youth and Girls (Goal 5), visualize opportunities of Decent Work and Economic Growth (Goal 8) Innovation and entrepreneurship (Goal 9) and Reduction of Inequalities (Goal 10).For HABITAT MARTE is important Partnerships (Goal 17).

We consider an opportunity for your organization interact with us, in terms to promote the sustainable development in Latin America. (Julio Rezende)

Space Aqua

In the operation of BioHabitat greenhouse, sensors of automation based in Arduino had been used collaborating to avoid crop losses. IoT sensors and automation evolves engineering students and would be stimulated in other developing countries engaging them to bring results to local communities.

Challenge:

There is a challenge to develop a closed and circular system, where sewage is treated to reuse; waste is recycled; the energy is self-generated and the food is own-produced. Other current technology developed in habitat was the spacesuit.

Outreach: education for sustainable development

The Habitat Marte complex is visited by public schools and universities. The presentation of Mars analog research station collaborates to challenge students to be committed with scientific careers creating a new mindset, empowering them.

Results

The operation of greenhouse BioHabitat in Habitat Marte brings great opportunities of learning about not only agriculture, but also related with supporting technologies, as electrical engineering, nutrition and other topics.

Conclusions

Findings achieved from the operation of Habitat Marte, more related to sustainability of space habitats, collaborate to dialogue with other space scientific-technological proposals. The participation of Habitat Marte in specialized seminars can be identified as a form to reduce inequalities (SDG 10) for the research group, also collaborating to share space results developed in Brazil.

www.HabitatMarte.com