

MARS: A GATEWAY TO THE SOLAR SYSTEM

Bulk Exports:

Volatiles Gas & Liquids

Hydrogen (H₂), oxygen (O₂), nitrogen (N₂), argon (Ar), carbon (C) as Water (H₂O), Methane (CH₄), Ammonia (NH₃), CO, Dry Ice (CO₂)

Frozen or compressed to liquid, in **graphite tanks**.

Carbon (C), as graphite structures, hydrocarbon polymers, CNT



Fuel (CH₄, CO, LOX) for spacecraft returning to Earth, to asteroids, or cycling.

Needs: All humans and other life need water and certain gases.

The inner solar system (except for Earth) has shortages of water (H₂O), nitrogen (N₂), nitrates, and carbon (CO₂).

Uses: food, fertilizer, protein, carbohydrates, other food, breathing.

Surprisingly, **methane** (CH₄) & **ammonia** (NH₃) are especially useful.

Used on Luna (Earth's Moon), asteroid mining camps, cycling craft & any human settlements.

NH₃ to make fertilizer to grow food, breathable.

CH₄ oxidized with Lunar or asteroid oxygen -> CO₂ + H₂O for plants. CH₄ is feed stock for plastic / polymers.

SRI NEWSLETTER – March 23rd 2021

by Space Renaissance News

Today's highlight: **Bruce MacKenzie, founder of the Mars Foundation.**

<https://www.youtube.com/watch?v=S57G71SURYc&t=3955s>

Bruce gave us a detailed view of what will be the economical and industrial development in the solar system, in a broad and strategical concept: Mars, a gateway to the Solar System. How will a future trade and export take place on Mars, to facilitate the civilization expansion into the Solar System. Lot of works will focus on Phobos and Deimos, the Mars's moons. A space elevator between Mars and Phobos will be key. Thousands of independent space settlements will allow to study and understand how ecosystems work, how water, food, wastes cycles can be better combined and integrated, and such a knowledge will have a fallout back on Earth too. Several favorable conditions suggest to start with Mars, to open the solar system to humanity and life: water, carbon, nutrients, raw materials. Trading among different space settlements is key. Mars infrastructures will include: greenhouses, manufacturing, materials processing, residential areas, ice road, desert trek, farm communities, truck stops, polymer production, fuel production. Key productions to start: polymers and fiber glass. Cargo transportation from Mars surface to the moons and orbital facilities with e.g. space elevators, magnetic guns, regolith rockets. Mars can produce finished goods, food, and bulk materials (gas, ice, liquids, fuel, fertilizers), delivered to Mars orbit, and then to other destinations. Floating towns in Venus atmosphere is another possible location for settlers communities. For a period of time, Mars will be the "bread-basket" of the Solar System.

Here's the whole **Webinar on Mars, the Asteroid Belt and Beyond:** <https://youtu.be/S57G71SURYc>

Also see the other speeches of the Webinar, that will be proposed in the newsletters to come.

Jerry Stone: Island 0, an evolution of the famous Gerard O'Neill project Island 1.

<https://www.youtube.com/watch?v=S57G71SURYc&t=300s>

Susan Ip-Jewell, on the Mars-Moon Astronautics Academy & Research Science, the institute she founded and is directing. <https://www.youtube.com/watch?v=S57G71SURYc&t=1370s>

Daniel Cottitta, CEO of United Frontiers, on sea launch facilities. <https://www.youtube.com/watch?v=S57G71SURYc&t=2744s>

Shaun Moss, on Mars and best promising celestial bodies for possible human settlement, behind Mars. <https://www.youtube.com/watch?v=S57G71SURYc&t=5461s>

Isaac Arthur, on nuclear aneutronic fusion, key to settle the external solar system and beyond <https://www.youtube.com/watch?v=S57G71SURYc&t=6788s>

Adriano Autino, on global expansion, as a continuous global spherical process.

– <https://www.youtube.com/watch?v=S57G71SURYc&t=76s>– <https://www.youtube.com/watch?v=S57G71SURYc&t=8540s>

–<https://www.youtube.com/watch?v=S57G71SURYc&t=10650s>

Also, consider that everything we are making is thanks to the generosity of our Members. So do not hesitate: **Join the Space Renaissance Crew!**

<https://spacerenaissance.space/membership/international-membership-registration/>

Follow the 2021 Space Renaissance Webinar Series

<https://2021.spacerenaissance.space/index.php/web-conferences-during-the-pre-congressual-period/>

Participate to the 2021 Space Renaissance Congress

You're warmly invited to participate to the [2021 Space Renaissance Congress](#): see the [Call for Papers](#), and [possibly upload an abstract of yours!](#)

2021 Space Renaissance - "The Civilian Space Development"

3rd SRI World Congress

Pre-Congress period, since October 2020 to June 2021 is in progress.

The **SRI 3rd World Congress "The Civilian Space Development"** Congress conclusive events will take place June 26th – 30th 2021.

[Check the Congress website](#)

[Register to the Congress](#)

[Submit an abstract](#) to the [Call for Papers](#)

[Join the 2021 Space Renaissance Webinar Series](#)

[Join us as a Member](#)

Visit the Space Renaissance websites:

<https://spacerenaissance.space/>

<https://academy.spacerenaissance.space/>

<https://spacerenaissance.com/>

<https://2021.spacerenaissance.space/>

#2021spacerenaissance #spacerenaissance #civilianspaceprotocol