

THE ECOLOGICAL AND ENERGETIC TRANSITION, A LEVER OF DIVERSIFICATION FOR SPACEPORTS

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Abstract: Settled in the Amazon area, French Guiana is a wild and green territory covered by a tremendous biological, animal and plant diversity. Its exceptional demography is an incredible lever of economic growth and is accompanied by an energy demand always increasing, representing a major challenge to face for politics and local French Guiana representatives.

The Europe's Spaceport in Kourou – French Guiana (CSG), covers 700 square kilometres comprises the Launch Range, two operational launch complexes with Ariane 5 & VEGA with another under development for Ariane 6, and propellant manufacturing plants. Together they draw up to 15% of the country's energy supplies. About half of the power of the based is used to cool buildings while energy-intensive solid & liquid propellant processes take up most of the rest. The yearly electricity bill is several millions with a direct/indirect CO₂ emission higher than 120 000 tCO₂eq/year (mainly due to the "grey" electrons from the national grid).

To cut cost, to limit the industrialist's exposition to the increase of fossil prices, to relieve the national electricity grid and reduce the European Spaceport overall carbon footprint, European Space Agency with France's CNES space agency have set-up an ambitious low carbon trajectory roadmap consisting in introducing renewable energy (photovoltaic farms & biomass plants in co-generation) intending to provide 90% of the electricity consumed at the base by end- 2026. The transition will as well green the industrial processes involving fossil material, such as Hydrogen production, by swapping from a methanol reforming process to a water electrolysis process feed by renewable energy; enabling as well to develop territorial usages such as fuel cells or H₂ coaches for the citizens. On achieving this, Europe's Spaceport would be well in advance of COP21 objectives and the European Green Deal aiming to decrease greenhouse gas emissions by 55% by the end of 2030 compared to 1990 levels.

ESA, CNES and industrial operators are creating a new chapter in the history of the Europe's Spaceport. Together they are using renewable energy as a key component in Launcher's competitiveness while serving the local community and ultimately French Guiana as a whole.

