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The opportunities and challenges of Green Hydrogen from Africa and Iceland to decarbonize the industries

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Green hydrogen has been identified as a key energy carrier to decarbonize the main emission sectors. In the industry sectors hydrogen can be used as a reducing agent in the metallurgy, in the transportation sector hydrogen can be used as a fuel and in the energy sector hydrogen can be used as an energy storage option. However, the production of hydrogen is energy intensive and can only lead to a reduction of greenhouse gas emissions if the primary energy source is renewable, carbon-free, and has a low ecological footprint. Wind, geothermal, solar and hydropower have been identified as key sources for sustainable and green hydrogen production, especially if excess energy is used for the hydrogen production. Unfortunately, large scale renewable energy production is frequently located at distant location from main consumers. We assess the challenges and opportunities of two remote production hot spots for sustainable and green hydrogen, namely Iceland and northern Africa. We will present different methods, ranging from energy modelling, life cycle assessment, to stakeholder analysis to present a holistic picture of sustainable green hydrogen production. Based on our preliminary results, we conclude that Iceland as well as northern Africa have the potential to produce sustainable and green hydrogen.