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## Commercial AWE Systems – a White Paper for the AWE Sector

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A major milestone in the commercialization of Airborne Wind Energy (AWE) has been achieved in 2021 when the first commercial systems in the 80 to 200 kW range have become available [1]. At least one other company is likely to sell its system by 2023, whereas several others are planning to go to market by 2024.

While most critical technical challenges have been mastered (such as automatic energy harvesting, reliable sensors), remaining challenges are systematically increased reliability and especially policy and regulatory aspects. This White Paper – commissioned by Airborne Wind Europe and carried out by BVG Associates – will inform about the status of AWE industry and explain the commercially available AWE systems in more detail regarding costs and performance. Furthermore, current and future markets and existing barriers for upscaling will be analysed. At this stage, AWE companies mainly target remote and island off-grid markets where AWE can already today compete with diesel generated electricity. To successfully enter the highly competitive and regulated European and other electricity markets, this paper will analyse actual and possible policy support schemes and resources in different countries and regions, and discuss recommendations to reach AWE's full potential like other renewable energy technologies in the past. The paper will be based on a review of the latest developments in the AWE sec-

tor, combined with interviews with leading OEMs and experts, and include quantitative and qualitative elements regarding costs and performance. Recently published papers and reports on the topic will be clustered and summarized (e.g. NREL 2021)<sup>2</sup>. Commercialization-relevant findings of on-going activities in projects like Interreg MegaAWE or the work packages within the IEA Task 48 on AWE3 will be supplemented with insights from real-life business cases. The paper addresses suppliers in the wind and aeronautics sector who can help the further development of AWE systems by supporting AWE OEMs in improving their system performance, reliability and up-scaling. Furthermore, the paper will help increase awareness of wind project developers to include AWE in their portfolios, looking for adequate sites and business opportunities, e.g. for self-consumption or repowering. Finally, the paper addresses policy makers on how to facilitate AWE deployment, e.g. by including AWE in regulation, defining adequate support schemes and providing R&D finance.

### References:

[1] *Skysails: Wind power 2.0: Revolutionary airborne wind energy system to provide green power to the Republic of Mauritius*, News Item, 2020. <https://skysails-power.com/kite-power-for-mauritius/>

[2] NREL: *Airborne Wind Energy, Technical Report NREL/TP-5000-79992*, 2021. <https://www.nrel.gov/docs/fy21osti/79992.pdf>

[3] IEA Wind Task 48. <https://iea-wind.org/task48>