Integrative techno-economic analysis of power-to-x (P2X)

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With increasing portion of renewable energy, the proper use of surplus electricity inevitably generated from renewable energy sources is of interest. Recently, power-to-x (P2X) has gained a lot of attention as an efficient method to produce valuable products such as H2, methane, methanol, to name a few by using the surplus electricity. Therefore, we here report preliminary and integrative techno-economic analysis of power-to-x particularly focusing on water electrolysis and methanation and provide critical insights for this new technology. In addition, current domestic and international status of this P2X technology is briefly reviewed.