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Electronic Supplementary Information

Analysis of Biofuels Production from Sugar Based on Three Criteria: Thermodynamics, Bioenergetics, and Product Separation

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Table S1. The data used for the calculation in Figure 6.

Biofuel	Status	η	$\eta_{P/S}^{The}$	$A_{X/S}$	η_S	Note
Ethanol	Theoretical	**0.971**	1	NA	NA	
	Current	**0.721**	0.96	0.1	0.141	12% ethanol
	Future	**0.809**	0.99	0.02	0.141	12% ethanol
Butanol	Theoretical	**0.953**	1	0	0	
	Current	**0.451**	0.7	0.12	0.232	2% butanol
	Future	**0.781**	0.95	0.02	0.12	5% butanol
FEE	Theoretical	**0.904**	1	BA	NA	
	Current (i)	**0.092**	0.7	0.5	0.71	intra lipids (45%) based on algal separation
	Current (s)	**0.310**	0.7	0.5	0.02	liquid/liquid separation
	Future (s)	**0.644**	0.9	0.2	0.01	liquid/liquid separation
Hydrogen	Theoretical	**1.220**	1	NA	NA	
	Current	**1.012**	0.95	0.1	0.03	CO2/H2 separation
	Future	**1.208**	1	0.001	0.00845	No separation for fuel cells