

Appendix A.3: Wheel visualization

Product	Primary Application Area	Development Stage	Market Size (US\$)	CAGR	Algae Specific Market (if available) (US\$)	CAGR (Algae Specific Market)	Source
Biofertilisers and Biostimulants	Agriculture	Commercial			13.64 B (2024)	9.88% (2025-2034)	https://www.sciencedirect.com/science/article/pii/S2352186425004663
			4.03 B (2024)	11.80% (2025-2032)	13.3 B (2025)	9.5% (2025-2035)	https://www.fortunebusinessinsights.com/industry-reports/biostimulants-market-100414
Biopesticides	Agriculture	Pre-competitive			748.55 M (2025)	7.51 % (2025-2030)	https://www.grandviewresearch.com/industry-analysis/biostimulants-market
			2.6 B (2022)	7.4% (2022-2030)			https://royalsocietypublishing.org/doi/pdf/10.1098/rstb.2024.0251
Biochar	Agriculture	Applied Research					https://www.precedenceresearch.com/microalgae-fertilizers-market
			7.72 B (2024)	15.2% (2024-2029)			https://www.futuremarketinsights.com/reports/microalgae-fertilizers-sector
Aquaculture Feed (Protein, Nutritional, EPA)	Animal Feed (incl. Aquaculture)	Commercial					https://www.researchandmarkets.com/report/algae-fertilizer?srsId=AfmBOoqQG7GfuMP5aE9CP_SO_A4ozUckjlvQultr8YpjpXknTv62NVx6
			72.5 B (2022)	4.4% (2023-2030)			https://cinea.ec.europa.eu/featured-projects/algaenauts-sustainable-biopesticides-based-microalgae_en
Medicated Animal Feed	Animal Feed (incl. Aquaculture)	Applied Research					https://www.algaenauts.eu/wp-content/uploads/2024/04/D5.4-Marketability-market-analysis-on-target-products.pdf
			67.5 B (2024)	6.71% (2025-2032)			https://www.marketsandmarkets.com/Market-Reports/biopesticides-267.html
Poultry Feed	Animal Feed (incl. Aquaculture)	Pilot-Stage					https://www.fortunebusinessinsights.com/industry-reports/biopesticides-market-100073
			4.01 B (2024)	5.2% (2024-2032)			https://ag.algaenergy.com/bio-control/
Cattle Feed	Animal Feed (incl. Aquaculture)	Applied Research					https://link.springer.com/article/10.1007/s10098-025-03192-y
			12.72 B (2025)	5.66% (2025-2030)			https://www.fortunebusinessinsights.com/industry-reports/biochar-market-100750
Animal Feed (overall)	Animal Feed (incl. Aquaculture)	Commercial					https://biochar-international.org/wp-content/uploads/2024/06/Global-Biochar-Market-Report-2023---Public.pdf
			205.44 B (2022)	4.6% (2022-2030)			https://link.springer.com/article/10.1007/s11356-021-14989-x
Pet Feed	Animal Feed (incl. Aquaculture)	Commercial					https://www.fortunebusinessinsights.com/industry-reports/microalgae-based-aquafeed-market-100494
			103.3 B (2023)	4.4% (2023-2030)			https://www.grandviewresearch.com/industry-analysis/aquafeed-and-aquaculture-additive-market
Biodiesel	Biofuels	Pilot-Stage					https://www.fortunebusinessinsights.com/industry-reports/aquafeed-market-100698
			32.09 B (2021)	10% (2022-2030)			https://www.futuremarketinsights.com/reports/algae-based-animal-feed-market
Biofuels (Overall)	Biofuels	Pre-competitive					https://www.gminsights.com/industry-analysis/algae-based-animal-feed-market
			160.56 B (2024)	6.8% (2023-2028)			https://www.sciencedirect.com/science/article/pii/S0048969722047553
Biogas	Biofuels	Applied Research					https://www.fortunebusinessinsights.com/medicated-feed-additives-market-113276
			140.89 B (2025)	4.46% (2025 -2032)			https://www.mordorintelligence.com/industry-reports/medicated-feed-additives-market
Bioethanol	Biofuels	Pilot-Stage					https://www.frontiersin.org/journals/veterinary-science/articles/10.3389/fvets.2024.1382163/pdf
			65.53 B (2023)	4.2% (2024-2030)			https://www.sciencedirect.com/science/article/pii/S221192642400345X
Biocrude oil	Biofuels	Pilot-Stage					https://www.grandviewresearch.com/horizon/outlook/poultry-feed-market-size/global
			n/a	n/a			https://www.futuremarketinsights.com/reports/algae-based-animal-feed-market
Biohydrogen (green Hydrogen)	Biofuels	Applied Research					https://www.futuremarketinsights.com/reports/cattle-feed-market
			7.98 B (2024)	38.5% (2025-2030)			https://www.gminsights.com/industry-analysis/algae-based-animal-feed-market
Bioplastics (PLA, PHA and others) precursors	Biomaterials	Pilot-Stage					https://www.grandviewresearch.com/industry-analysis/animal-feed-market-report
			15.57 B (2024)	19.5% (2025-2030)			https://www.futuremarketinsights.com/reports/algae-based-animal-feed-market
Hydrogels	Biomaterials	Applied Research					https://www.futuremarketinsights.com/reports/microalgae-pet-food-sector
			34.25 B (2024)	7.4% (2025-2030)			https://www.marketsandmarkets.com/Market-Reports/global-pet-food-and-care-products-market-147.html
Nanocellulose	Biomaterials	Applied Research					https://www.grandviewresearch.com/industry-analysis/pet-food-industry
			351.5 M (2022)	20.1% (2023-2030)			https://www.mdpi.com/2076-2607/11/1/34
Biodegradable films	Biomaterials	Applied Research					https://www.grandviewresearch.com/industry-analysis/biodiesel-market
			1.3 B (2024)	7.7% (2025-2034)			https://www.researchandmarkets.com/reports/5782777/biodiesel-global-market-report?utm_source=GNE&utm_medium=PressRelease&utm_code=n7j96m&utm_campaign=2041824+-+Analyzing+the+Potential+%2477.94+Billion+Biodiesel+Market%2c+2025-2029+%26+2034&utm_exec=jocampi
Protein-based adhesives	Biomaterials	Fundamental Research					https://www.grandviewresearch.com/industry-analysis/biofuel-market
			1.18 B (2024)	6.4% (2024-2033)			https://www.grandviewresearch.com/industry-analysis/biofuels-market
Activated Charcoal	Biomaterials	Applied Research					https://www.fortunebusinessinsights.com/liquid-biofuels-market-103294
			3.9 B (2024)	3.8% (2025-2033)			https://www.sciencedirect.com/science/article/pii/S0961953425005033
Graphene	Biomaterials	Applied Research					https://biointerfaceresearch.com/wp-content/uploads/2021/08/20695837123.38493882.pdf
			5.7 B (2024)	8.7% (2025-2032)			https://www.fortunebusinessinsights.com/industry-reports/biogas-market-100910
Nano Carbon	Biomaterials	Applied Research					https://www.grandviewresearch.com/industry-analysis/biogas-market
			5.83 B (2024)	27.5% (2024-2034)			https://link.springer.com/chapter/10.1007/978-3-031-85300-5_18
Hydrogel Market Size And Share Industry Report, 2030	Biomaterials	Applied Research					https://www.fortunebusinessinsights.com/industry-reports/bioethanol-market-101076
			694 M (2024)	36.5% (2025-2032)			https://www.fortunebusinessinsights.com/industry-reports/bioethanol-market-101076
Biodegradable films	Biomaterials	Applied Research					https://www.fortunebusinessinsights.com/graphene-market-102930
			195.7 M (2023)	35.1% (2024-2030)			https://www.grandviewresearch.com/industry-analysis/graphene-industry
Protein-based adhesives	Biomaterials	Fundamental Research					https://www.biotechnologyforbiofuels.biomedcentral.com/articles/10.1186/s13068-019-1465-0
			5.83 B (2024)	27.5% (2024-2034)			https://www.precedenceresearch.com/carbon-nanomaterials-market

EPS (Extracellular Polymeric Substances)	Biomaterials	Applied Research	8.5 B (2024)	5.2% (2023-2032)	n/a	n/a	https://www.mdpi.com/1996-1073/14/13/4007 https://dataintelo.com/report/global-extracellular-polymeric-substances-market
Personal Care and Cosmetics (general)	Cosmetics	Commercial	557 B (2023) 605.23 B (2025)	7.7% (2024-2030) 5.11% (2025-2030)	64.1 M (2024) 68.5 M (2025)	3.7% (2024-2031) 5.5% (2025-2035)	https://chemicalresearchinsight.com/2025/08/05/top-10-companies-in-the-microalgae-for-cosmetics-industry-2025-market-leaders-powering-clean-beauty-innovations/ https://www.futuremarketinsights.com/reports/microalgae-personal-care-and-cosmetics-sector https://www.grandviewresearch.com/industry-analysis/beauty-personal-care-products-market https://www.mordorintelligence.com/industry-reports/global-beauty-and-personal-care-products-market-industry
							https://link.springer.com/article/10.1007/s12257-021-0355-z https://www.grandviewresearch.com/industry-analysis/squalene-market
Squalene	Cosmetics	Pre-competitive	149.4 M (2023)	10.9% (2024-2030)	n/a	n/a	
Scytonemin (UV Absorbing)	Cosmetics	Applied Research	n/a	n/a	n/a	n/a	https://www.mdpi.com/1660-3397/19/3/129
Cosmetic thickeners	Cosmetics	Applied Research	3.8 B (2024)	7.5% (2024-2032)	n/a	n/a	https://link.springer.com/chapter/10.1007/978-3-030-50971-2_25 https://dataintelo.com/report/global-cosmetic-thickener-market
							https://www.mdpi.com/2079-9284/8/2/52 https://www.gminsights.com/industry-analysis/cosmetic-lipid-ingredients-market https://www.marketresearchfuture.com/reports/cosmetic-lipid-ingredient-market-33891
Lipid-based moisturizers	Cosmetics	Applied Research	10 B (2022) 3.42 B (2024)	5.5% (2023-2032) 4.02% (2025-2035)	n/a	n/a	https://www.grandviewresearch.com/industry-analysis/algae-skincare-products-market-report https://www.fortunebusinessinsights.com/skin-care-market-102544
Skin-Care Ingredients	Cosmetics	Commercial	115.65 B (2024)	6.84 % (2024-2032)	Approx. 40 M (2023)	7.2% (2024-2030)	https://onlinelibrary.wiley.com/doi/pdf/10.1111/ics.13019 https://www.grandviewresearch.com/industry-analysis/sun-care-products-market-report
Sun Care Products	Cosmetics	Commercial	12.44 B (2024)	4.2% (2025-2030)	n/a	n/a	https://link.springer.com/article/10.1007/s10811-024-03345-4 https://www.grandviewresearch.com/industry-analysis/anti-aging-products-market
Anti-aging formulations	Cosmetics	Commercial	52.44 B (2024)	7.7% (2025-2030)	n/a	n/a	
Natural cosmetic colorants	Cosmetics	Commercial	737.45 M (2023)	7.4% (2024-2030)	n/a	n/a	https://www.mdpi.com/2079-9284/9/1/10 https://www.grandviewresearch.com/industry-analysis/cosmetic-pigments-market-report
Phycocitrin	Food & Beverages	Commercial	42.3 M (2023) 5.18 M (2025)	7.2% (2024-2033) 8.1% (2024-2035)	n/a	n/a	https://link.springer.com/article/10.1007/s10811-022-02834-8 https://www.grandviewresearch.com/industry-analysis/natural-food-colors-market https://www.futuremarketinsights.com/reports/phycoerythrin-market
							https://www.fortunebusinessinsights.com/industry-reports/microalgae-food-market-100802
Pigments & Natural food colorants	Food & Beverages	Commercial	1.32 B (2022)	8.3% (2023-2030)	26 M (2025)	7.4% (2025-2035)	https://link.springer.com/chapter/10.1007/978-981-15-0169-2_3 https://www.grandviewresearch.com/industry-analysis/natural-food-colors-market https://www.futuremarketinsights.com/reports/algal-pigments-market
							https://academic.oup.com/ijfst/article/59/1/473/7808034 https://www.grandviewresearch.com/industry-analysis/algae-protein-market
Algal protein powder	Food & Beverages	Commercial	24.6 B (2024)	6.8% (2024-2034)	997.4M (2024)	4.8% (2025-2030)	https://www.gminsights.com/industry-analysis/protein-powder-market
Functional food ingredients	Food & Beverages	Commercial	73.1 B (2022)	6.6% (2023-2030)	4.24 B (2024)	7.5% (2025-2034)	https://pmc.ncbi.nlm.nih.gov/articles/PMC9818788/ https://www.insightaceanalytic.com/report/global-algae-based-ingredients-market/1461 https://www.grandviewresearch.com/industry-analysis/functional-ingredients-market
							https://www.frontiersin.org/journals/analytical-science/articles/10.3389/frans.2024.1513153/full https://www.towardschemandmaterials.com/insights/water-and-wastewater-treatment-market https://www.datamintelligence.com/research-report/algae-based-wastewater-treatment-market
Wastewater Treatment	Industrial & Chemical Products	Commercial	371 B (2025)	6.55% (2025-2034)	2.65 B (2024)	5.89% (2025-2032)	https://www.sciencedirect.com/science/article/abs/pii/S0013935124003013
Carbon Capture	Industrial & Chemical Products	Pre-competitive	4.51 B (2025)	18.18% (2025-2032)	n/a	n/a	https://www.fortunebusinessinsights.com/industry-reports/carbon-capture-and-sequestration-market-100819
Fermentation substrates	Industrial & Chemical Products	Applied Research	75 B (2023)	6.9% (2024-2030)	n/a	n/a	https://www.mdpi.com/2076-2607/10/10/2069 https://www.grandviewresearch.com/industry-analysis/fermentation-chemicals-market
Biolubricants	Industrial & Chemical Products	Applied Research	2.95 B (2024)	13.7% (2025-2030)	n/a	n/a	https://www.sciencedirect.com/science/article/pii/S004896972406916X https://www.grandviewresearch.com/industry-analysis/biolubricants-industry
Biosurfactants and emulsifiers	Industrial & Chemical Products	Applied Research	4.41 B (2023)	5.4% (2024-2032)	n/a	n/a	https://research.tees.ac.uk/en/publications/biosurfactants-and-bio-emulsifiers-from-algae-3 https://www.fortunebusinessinsights.com/biosurfactants-market-102761
Enzyme production substrates	Industrial & Chemical Products	Applied Research	13.9 B (2024)	6.6% (2025-2033)	n/a	n/a	https://link.springer.com/chapter/10.1007/978-3-031-86433-9_19 https://www.grandviewresearch.com/industry-analysis/enzymes-industry
Fluorescent dyes	Industrial & Chemical Products	Fundamental Research	377 M (2023)	5.9% (2024-2040)	n/a	n/a	https://link.springer.com/protocol/10.1007/7651_2017_101 https://www.grandviewresearch.com/industry-analysis/fluorescent-pigment-market-report
Natural textile dyes	Industrial & Chemical Products	Commercial	4.8 B (2024)	5.7% (2024-2029)	128.4 M (2024)	14.3% (2025-2033)	https://link.springer.com/article/10.1007/s40726-025-00363-9 https://www.marketsandmarkets.com/Market-Reports/natural-dyes-market-78173284.html
							https://dataintelo.com/report/algae-based-textile-dye-market
Omega-3 fatty acids	Nutrition & Dietary Supplements	Commercial	2.62 B (2023)	7.9% (2024-2030)	850 M (2024)	7.4% (2024-2032)	https://finance.yahoo.com/news/algae-omega-3-market-reach-153000081.html
Astaxanthin	Nutrition & Dietary Supplements	Commercial	1.69 B (2024)	17.47% (2025-2030)	722.7 (2024)	18.7% (2024-2030)	https://www.grandviewresearch.com/horizon/statistics/astaxanthin-market/natural/microalgae/global
Beta-carotene	Nutrition & Dietary Supplements	Commercial	1.03 B (2023) 621 M (2024)	4.3% (2024-2030)	401 M (2023) 220 M (2024)	6.7% (2024-2033)	https://www.grandviewresearch.com/industry-analysis/beta-carotene-market https://pdf.marketpublishers.com/grand/beta-carotene-market-analysis-by-source.pdf https://marketintelo.com/report/algae-beta-carotene-market
							https://www.sciencedirect.com/science/article/pii/S2352186423000937 https://www.factmr.com/report/1075/lutein-market https://www.grandviewresearch.com/industry-analysis/lutein-market-report
Lutein	Nutrition & Dietary Supplements	Commercial	357.5 M (2023) 381.1 M (2024)	5.8% (2024-2030) 6.8% (2025-2035)	n/a	n/a	
Phycocyanin	Nutrition & Dietary Supplements	Commercial			175.4 M (2023)	6.9% (2023-2040)	https://www.mdpi.com/2071-1050/17/13/5962 https://www.grandviewresearch.com/industry-analysis/phycocyanin-market-report
Fucoxanthin	Nutrition & Dietary Supplements	Commercial	219 M (2024) 209.45 M (2024)	5% (2025-2032) 5% (2025-2030)	n/a	n/a	https://virtuemarketresearch.com/report/fucoxanthin-market https://www.maximizemarketresearch.com/market-report/global-fucoxanthin-market/98879/
Phytosterols	Nutrition & Dietary Supplements	Applied Research	1.06 B (2024) 0.92 B (2024)	9.4% (2025-2030) 9.1 % (2025-2035)	n/a	n/a	https://www.futuremarketinsights.com/reports/phytosterols-market https://www.grandviewresearch.com/industry-analysis/phytosterols-market https://www.sciencedirect.com/science/article/pii/S2211926419306836
							https://www.cognitivemarketresearch.com/chlorophyllin-market-report
Chlorophyllin (Cu)	Nutrition & Dietary Supplements	Applied Research	50 M (2023) 255 M (2025)	5.1% (2023-2032) 5.7% (2025-2033)	n/a	n/a	https://dataintelo.com/report/global-chlorophyllin-market
Prebiotic dietary fibers	Nutrition & Dietary Supplements	Commercial	7.1 B (2025)	6.3% (2025-2035)	872 M (2024)	10.6% (2021-2024)	https://www.sciencedirect.com/science/article/pii/S1756464623002036 https://www.futuremarketinsights.com/reports/prebiotic-fiber-market https://dataintelo.com/report/algal-prebiotic-fibers-market

Glycerol	Nutrition & Dietary Supplements	Applied Research	5.6 B (2024)	11.9% (2025-2034)	n/a	n/a	https://biogas.ifas.ufl.edu/Internships/2011/files/kalvin.pdf https://www.gminsights.com/industry-analysis/glycerol-market-size
Peptides (e.g. Bioactive)	Nutrition & Dietary Supplements	Applied Research	117.3 B (2024)	10.77% (2025-2030)	n/a	n/a	https://www.mdpi.com/2673-6209/4/3/35 https://www.grandviewresearch.com/industry-analysis/peptide-therapeutics-market
Protein-enriched food ingredients	Nutrition & Dietary Supplements	Applied Research	52.6 B (2024)	5.6% (2025-2033)	n/a	n/a	https://www.frontiersin.org/articles/10.3389/fnut.2021.737816/full https://www.grandviewresearch.com/industry-analysis/protein-ingredients-market
Algal polysaccharides	Nutrition & Dietary Supplements	Commercial	15.2 B (2023)	5.0% (2025-2032)	1.2 B (2023)	9.0% (2023-2033)	https://www.mdpi.com/2673-4176/2/4/46 https://www.skyquestt.com/report/polysaccharides-market https://www.factmr.com/report/marine-algae-polysaccharides-market
Antioxidant additives	Nutrition & Dietary Supplements	Commercial	4.1 B (2024)	6.86% (2025-2043)	n/a	n/a	https://www.fortunebusinessinsights.com/industry-reports/food-antioxidants-market-100789
Dietary supplements	Nutrition & Dietary Supplements	Commercial	192.6 B (2024)	8.9% (2025-2033)	2.52 B (2025)	7.3% (2025-2035)	Dietary Supplements Market Size Industry Report, 2033 https://www.futuremarketinsights.com/reports/algae-based-supplement-market