Supplementary Information

Review of Traditional *Batik* Wastewater Treatment in Indonesia to Address Environmental and Health Hazards and Support Sustainable Practices of Micro, Small, and Medium Enterprises

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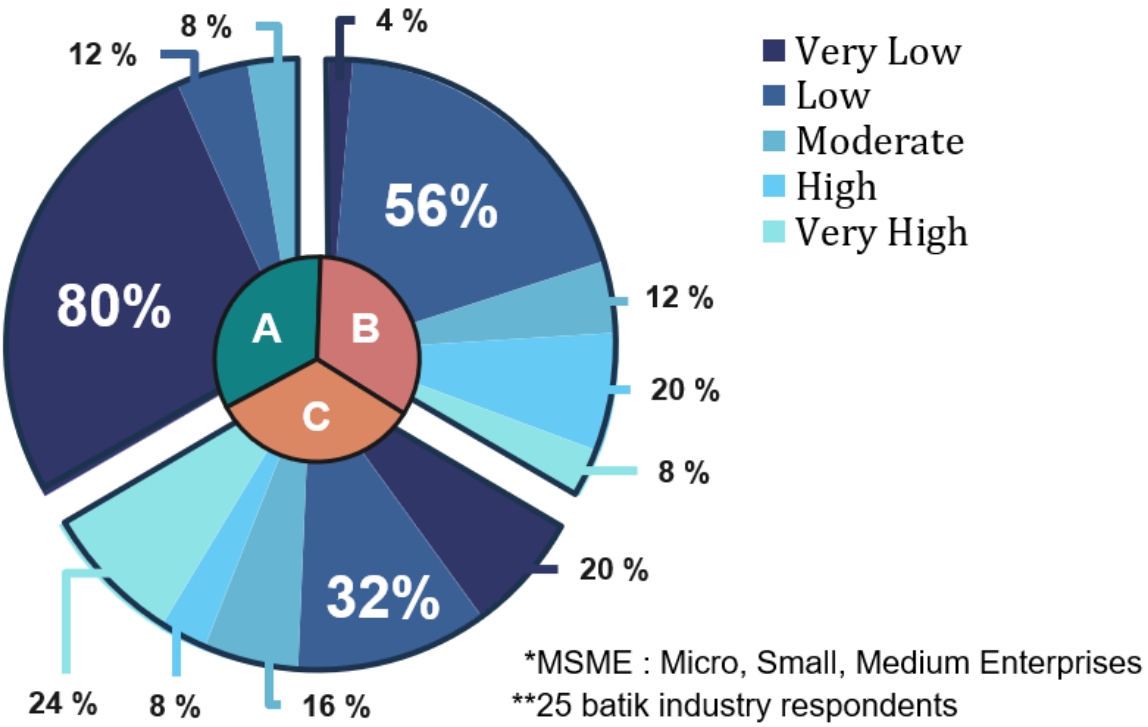


Fig. S1 SOCRATES (Stages of Change Readiness and Treatment Eagerness Scale) data for the batik industry illustrating readiness for green practices. Modified from [1] .

Fig. S2 *Batik* Production Process: (a) designing, (b) mordanting, (c) waxing, (d) dyeing, (e) wax removal, (f) fixation, and (g) drying [2–5].

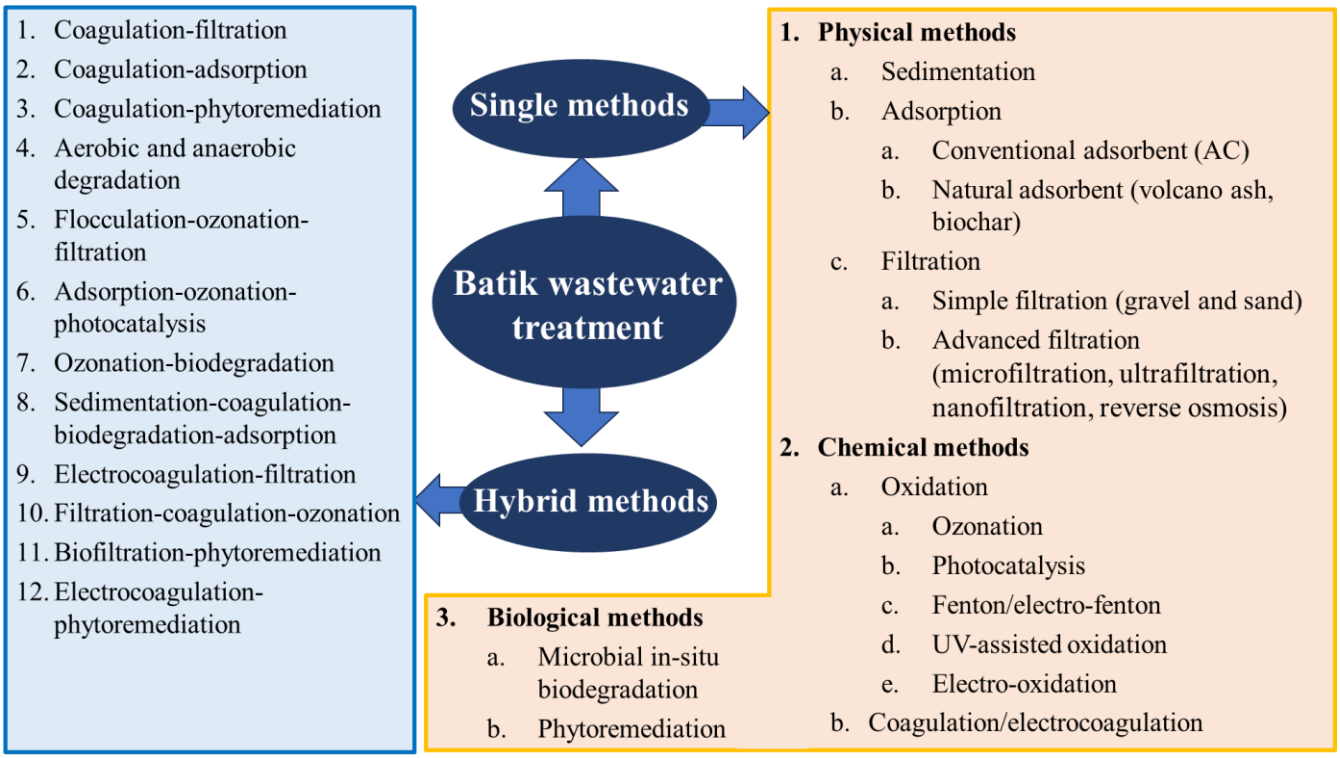


Fig. S3 Classification of various methods for batik wastewater.

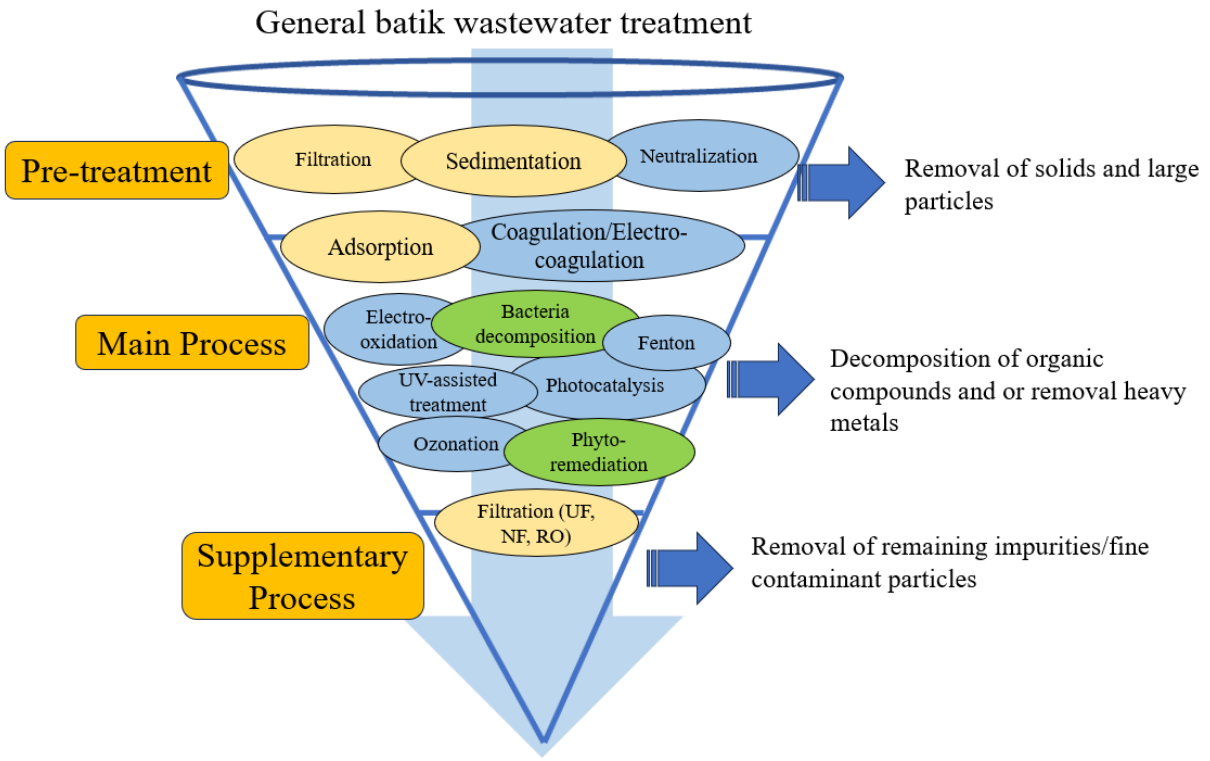


Fig. S4 General stages of *batik* wastewater treatment. Processing involves pretreatment, main treatment, and auxiliary treatment.

Table S1 Chemical Structures of dyes used in *batik* industry.

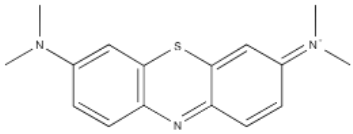
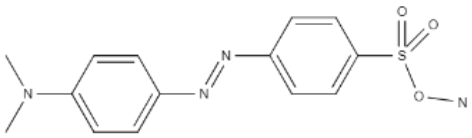
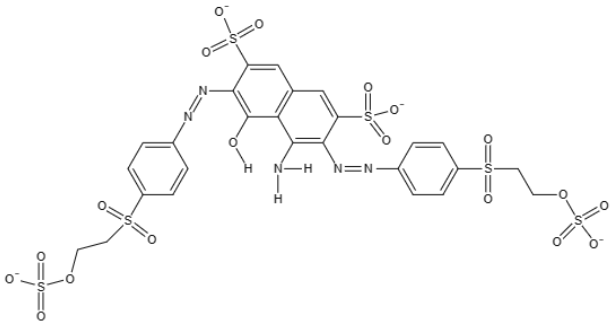
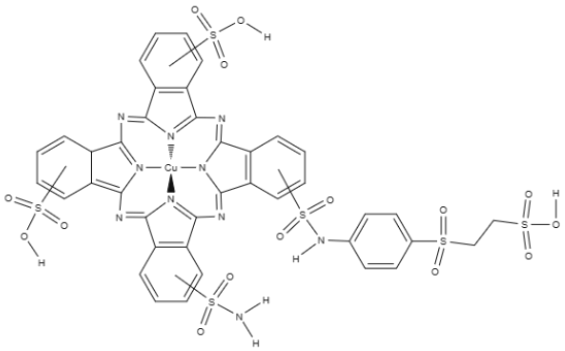
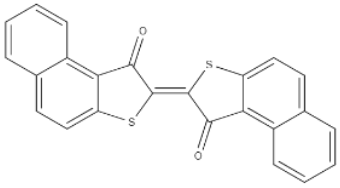
Dye	Chemical Structre	Ref
Methylene Blue λ_{max}: 665 nm		[6, 7]
Methyl Orange λ_{max}: 462 nm		[8]
Reactive Black 5 λ_{max}: 597 nm		[9]
Reactive Blue 21		[10]
Vat Brown 5 (Brown indigosol)		[10]

Table S2 Types of filtration using a membrane.

Membran type	Pore size	Trans-membran pressure	Type of pollutant for removal
Microfiltration	10 – 0.1 μm	0.2 – 5 bar	Oil, suspended particles, colloidal haze
Ultrafiltration	100 – 10 nm	1 – 10 bar	Macromolecules, protein, organic group
Nanofiltration	10 – 1 nm	5 – 10 bar	Divalent ion
Reverse Osmosis	1 – 0.1 nm	10 – 150 bar	Bacetira cell, monovalent ion

Table S3 Availability of waste management units and wastewater treatment plants (WWTPs) in several areas in Indonesia.

WWTP	Location	Capacity (m^3)	Availability		Ref
			Yes	No	
Kauman Village	*Pekalongan*, Central Java	150	✓		[11]
Jenggot Village	*Pekalongan*, Central Java	400	✓		[11]
Pringlangu Village	*Pekalongan*, Central Java	70	✓		[11]
Banyuurip Village	*Pekalongan*, Central Java	250	✓		[11]
Laweyan Village	*Solo*, Central Java	400	✓		[12]
Sewon	*Bantul*, Yogyakarta	52,000	✓		[13]
Batik Girilayu**	*Karanganyar*, Central Java	unknown		✓	[14]
Batik Ciprat Balong*	*Ponorogo*, East Java	unknown	✓		[15]
Batik Tulis Shalempang Sampang	*Sampang*, Madura	unknown		✓	[16]
Batik Manggar community**	*Blora*, Central Java	20	✓		[17]

* Collaboration with universities
** Collaboration with companies

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