Textile Exchange Regenerative Agriculture Outcome Framework V1

A given regenerative agriculture project must have in place baselines and metrics to measure progress towards the following outcomes:	For any project or pilot considered "regenerative," a brand is expected have in place the following elements, or to work with their project developer to be sure they are in place:

										Level of Indicator		
Category	Outcome	Expectation	Ref #	Indicator	Unit	Source	Stage in Causal Pathway	Level of Application		**Basic** Basic training, no lab required	**Intermediate** Training needed, most labs can analyze	**Advanced** Specialized training, consulting, and/or lab needed
Brand Expectations Section			**3.0**									
Social and Economic Equity	Project results in a more equitable sharing of costs, risks, and benefits with farmers	Expected	3.0.1.	Project involves at least one of the following cost/risk-sharing mechanisms: -Brand covers the cost of training, additional inputs etc. up front. -Separate payment for data as a farm product; project advances and rewards farmer data sovereignty -Brand provides up front grant, low or no-interest loan, or loan guarantee to support data collection. -Brand provides guaranteed multi-year contract with allowance for yield impacts. -Textile Exchange Impact Incentives Outcome - Farmers pay < 50% of overall transition cost	Presence of cost-sharing program / USD and local currency equivalent per year	Customized indicator for this Framework	Input + Outcome	Brand Level + Farm Level [Shared]		✓		
	Project is shaped by strong multi-stakeholder process	Expected	3.0.2.a.	Strong collaborative mechanism is in place, such that the voices of stakeholder groups are represented and engaged from the beginning of project development and on an ongoing basis.	Presence or absence of collaborative mechanism that aligns with UNDP guidance.	UNDP 2021	Input	Brand Level + Farm Level [Shared]		✓		
		Expected	3.0.2.b.	Strong grievance mechanism is in place, meeting UNGP effectiveness criteria.	Presence or absence of grievance mechanism that follows UNGP criteria.	UNGP 2021	Input	Brand Level + Farm Level [Shared]		✓		
	The rights of Indigenous communities are protected	Expected if applicable	3.0.3.	Free, Prior and Informed Consent (FPIC) process in place	Outcome of FPIC process could include: 1) consent to the activity proposed; 2) consent with conditions; or 3) no consent	Accountability Framework 2019	Input + Outcome	Brand Level + Farm Level [Shared]			✓	
	Human rights, labor rights, and women's rights are protected and strengthened	Expected	3.0.4.a.	Human rights safeguards must be in place via implementation of standard / certification scheme, verified supplier program, or other third party verified means.	Presence or absence of documented safeguards.	Depends on standard	Input	Brand Level			✓	
		Recommended/ Emerging	3.0.4.b.	OECD Due Diligence Guidance for Responsible Business Conduct / Responsible Agricultural Supply Chains is implemented. At brand level: Responsible Business Conduct At farm level: Responsible Agricultural Supply Chains	Program actively integrates the OECD framework	OECD 2018	Input	Brand Level				✓
Ecological Health	Water use efficiency is increased	Expected	3.0.5.a	Brand conducts initial assessment of average water stress or risk of catchment or basin where producers operate	WWF Water Risk Filter Unit: Risk or stress score or rating depending on tool used.	WWF	Input	Landscape level: Measuring			✓	
		Recommended/ Emerging	3.0.5.b.	Science Based Targets for Freshwater: Freshwater Quantity and Quality Targets Target 1: "Company X will reduce its water withdrawal in the ___ basin to ___ ML/ year by the year ___."	ML/year or percent reduction	SBTN for Freshwater	Outcome	Brand Level				✓
	Water quality is increased	Recommended/ Emerging	3.0.6.a	Target 2: "Company X will reduce its nutrient load in the __ basin to __ kg P (or N)/year by the year __."	kg/year or percent reduction	SBTN for Freshwater	Outcome	Brand Level				✓
	Biodiversity increases (Plant, animal, microbial)	Expected	3.0.7.a.	Brand conducts initial assessment of biodiversity stress or risk of area where producers operate.	WWF Biodiversity Risk Filter, Biodiversity Intactness Index, or IBAT. Unit: Index score depending on tool used.	Depends on tool	Input	Landscape level: Measuring			✓	
		Recommended/ Emerging	3.0.7.b.i.	Science Based Targets for Land: Target 1: No Conversion of Natural Ecosystems	a. Hectares of natural ecosystems converted on land owned, controlled or managed by the company's direct operations after the baseline year 2020. b. Hectares of natural ecosystems converted on production units or in sourcing areas known to be in the company's supply chain after the baseline year 2020.	SBTN for Land	Outcome	Brand Level				✓
		Recommended/ Emerging	3.0.7.b.ii.	Target 2: Land Footprint Reduction	a. Hectares of working land under direct operational or sourcing footprint. b. Hectares of working land needed to produce a commodity unit.	SBTN for Land	Outcome	Brand Level				✓
		Recommended/ Emerging	3.0.7.b.iii.	Target 3: Landscape Engagement	Various	SBTN for Land	Outcome	Brand Level				✓
	GHG emissions are reduced	Expected	3.0.8.a	Greenhouse gas emissions targets that are inclusive of Scope 3 emissions	Metric tons of CO_2e	GHG Protocol	Outcome	Brand Level				✓
		Recommended/ Emerging	3.0.8.b	Company accounts for land sector emissions and removals	Metric tons of CO_2e	GHG Protocol LSR	Outcome	Brand Level				✓
Animal Welfare	Good health and welfare	Expected if applicable	3.0.9	Animal welfare safeguards via implementation of standard or other third-party verified means are in place	Presence or absence of documented safeguards	AWIN	Input	Brand Level			✓	

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Farm-Level Indicators			**3.1.**								
Social and Economic Equity	Project results in a more equitable sharing of costs, risks, and benefits with farmers	Basket of Metrics: Select 1 or more payment option(s) from list	3.1.1.	Project involves at least one of the following cost/risk-sharing mechanisms: -Brand covers the cost of training, additional inputs etc. up front. -Separate payment for data as a farm product; project advances and rewards farmer data sovereignty -Brand provides up front grant, low or no-interest loan, or loan guarantee to support data collection. -Brand provides guaranteed multi-year contract with allowance for yield impacts. -Textile Exchange Impact Incentives Outcome - Farmers pay < 50% of overall transition cost	Presence of cost-sharing program / USD and local currency equivalent per year	Customized indicator for this Framework	Input + Outcome	Brand Level + Farm Level [Shared]	✓		
	Project is shaped by strong multi-stakeholder process	Basket of Metrics: Recommend 2 or more	3.1.2.a.	Strong collaborative mechanism is in place, such that the voices of stakeholder groups are represented and engaged from the beginning of project development and on an ongoing basis.	Presence or absence of collaborative mechanism that aligns with UNDP guidance	UNDP 2021	Input	Brand Level + Farm Level [Shared]	✓		
			3.1.2.b.	Strong grievance mechanism is in place, meeting UNGP effectiveness criteria.	Presence or absence of grievance mechanism that follows UNGP criteria	UNGP 2021	Input	Brand Level + Farm Level [Shared]	✓		
			3.1.2.c.	Farmers are supported to track and see improvement in at least one additional outcome that they have identified as a priority (can be from any of the major outcome areas)	TBD based on farmer input	TBD based on farmer input	Input + Outcome	Farm Level with Brand support	Depends on indicator	Depends on indicator	
	The rights of Indigenous communities are protected	Required if applicable	3.1.3.	Free, Prior, and Informed Consent (FPIC) process in place; outcome documented	Outcomes could include: 1) consent to the activity proposed; 2) consent with conditions; or 3) no consent	Accountability Framework 2019	Input + Outcome	Brand Level + Farm Level [Shared]		✓	
	Human rights, labor rights, and women's rights are protected and strengthened	Basket of Metrics: Recommend 1	3.1.4.a.	Delta Framework Composite Indicator for Women's Empowerment	Women's Empowerment Score [Scale of 1-10]	Delta Framework	Outcome	Farm Level with Brand support		✓	
			3.1.4.b.	IFPRI Women's Empowerment in Agriculture Index (WEAI)	A number ranging from zero to one, where higher values indicate greater empowerment.	IFPRI	Outcome	Farm Level with Brand support		✓	
	Farmer livelihoods improve	Basket of Metrics: Recommend 2 or more	3.1.5.a.	Increase in presence of secure land tenure or land ownership arrangements (or secure mobility for pastoralists).	Presence of absence of secure land title, land tenure agreement, Indigenous Land Management policy, or Indigenous land use agreement (ILUA)	Calo 2020; FAO TAPE / Mottet et al. 2020	Outcome	Farm Level		✓	
			3.1.5.b.	Gross Margin from crop / product production	USD per ha of each crop or product that contributes to the farm's aggregate profit	Delta Framework	Outcome	Farm Level		✓	
			3.1.5.c.	Productivity / farm output value by hectare (all crops, not just main crop)	Aggregate of (quantity x value) for each crop/product, calculated in local currency, divided by number of hectares	FAO TAPE	Outcome	Farm Level		✓	
			3.1.5.d.	Reduction in average input costs per hectare	USD per ha	Mottet et al. 2020	Input	Farm Level	✓		
			3.1.5.e.	Living income Indicator: Gap between the median actual household income and the Living Income Benchmark	Local currency unit & USD equivalent per year	Living Income Community of Practice	Outcome	Farm Level: Actual Income Project Level: Benchmark			✓
			3.1.5.f.	Living wage Indicator: Gap between prevailing wages and the living wage benchmark for a given country / industry.	Local currency unit & USD equivalent per year	Global Living Wage Coalition	Outcome	Farm Level: Actual Wage Project Level: Benchmark			✓
			3.1.5.g.	Diversity of farm income sources	Income Diversity Index	Singh et al. 2020	Outcome	Farm Level			✓
	Farm community well-being improves	Basket of Metrics: Recommend 1 or more	3.1.6.a.	Restoration of / increase in cultural relationships and/or transfer of Traditional Ecological Knowledge (TEK)	TBD based on collaborative process with community	Terra Genesis	Outcome	Farm Level		✓	
			3.1.6.b.	Increase in generational transfer of farms and farming enterprises and professionalization of agriculture for young people	TBD based on collaborative process with community	Terra Genesis	Outcome	Farm Level		✓	
			3.1.6.c.	Increase in farm worker opportunities for education, self-improvement, leadership training, advancement opportunities, etc.	TBD based on collaborative process with community	Reviewer comments	Outcome	Farm Level		✓	
		Basket of Metrics: Recommend 3 or more indicators,	3.2.1.a.	Soil pH	Negative log10 of the activity of hydrogen ions (H+). (Range of 0-14; most soils fall in range of 3-9; ideal range for plant growth 6.0-7.5)	GLOSOLAN	Input	Farm Level	✓		
			3.2.1.b.	Soil texture	Relative percentages of sand, silt, and clay particles	USDA NRCS	Input	Farm Level	✓		
			3.2.1.c.i.	Soil Health Institute suite of 3 indicators: 1) Soil organic carbon concentration (Chemical)	Grams of C (g) per kilogram (kg) of soil on an oven-dry basis	Soil Health Institute	Outcome	Farm Level			✓
			3.2.1.c.ii.	2) Carbon mineralization potential (Cmin) (Biological)	Milligram CO_2-C per kilogram of dry soil per 24 hours.	Soil Health Institute	Outcome	Farm Level		✓	
			3.2.1.c.iii	3) Aggregate stability (Physical)	Percent water-stable at 10 min – SLAKES test using smartphone	Soil Health Institute	Outcome	Farm Level	✓		

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Ecological Health	Soil health is improved	including at least 1 Chemical, Physical, and Biological from upper Soil Health Section	3.2.1.d.i.	Color, odor, and organic matter (Chemical)	Score from 1-5: 1= Pale, chemical odor, and no presence of humus 3 = Light brown color, odorless, and some presence of humus 5 = Dark brown, fresh odor, and abundant humus	FAO TAPE / Adapted from Nicholls, et al. 2004	Outcome	Farm Level	✓		
			3.2.1.d.ii.	Soil structure (Physical)	Score from 1-5: 1 = Loose, powdery soil without visible aggregates 3 = Few aggregates that break with little pressure 5 = Well-formed aggregates – difficult to break	FAO TAPE / Adapted from Nicholls, et al. 2004	Outcome	Farm Level	✓		
			3.2.1.d.iii.	Presence of invertebrates (Biological)	Score from 1-5: 1 = No signs of invertebrate presence or activity 3 = A few earthworms and arthropods present 5 = Abundant presence of invertebrate organisms	FAO TAPE / Adapted from Nicholls, et al. 2004	Outcome	Farm Level	✓		
	Soil carbon stock is increased		3.2.1.e.	Bulk density [Indicator for soil carbon stock only, not overall soil health] (Physical)	Dry weight of soil in a given volume, g/cm3	Walter et al. 2016	Outcome	Farm Level			✓
			3.2.1.f.	Soil organic carbon content [stock] (Physical)	Tons of carbon / ha	QP2B	Outcome	Farm Level			✓
	Water use efficiency is increased	Basket of Metrics: Recommend 1 or more	3.2.2.a.	Infiltration rate	Mm per hour	Lankford and Orr 2022	Outcome	Farm Level	✓		
			3.2.2.b.	Readily available soil moisture (RAM)	Mm or between -10 and -200 kPa water tension	Lankford and Orr 2022	Outcome	Farm Level		✓	
			3.2.2.c.i.	3. Irrigation water management 3.1 Water extracted for irrigation (blue water)	ML[Megaliter] per hectare of harvested land [ML/ha]	Delta Framework	Outcome	Farm Level		✓	
			3.2.2.c.ii.	3.2 Irrigation efficiency	Ratio of water actually required for irrigation over water extracted for irrigation [%]	Delta Framework	Outcome	Farm Level		✓	
			3.2.2.c.iii.	3.3 Water productivity (WP)	Yield (kilograms of cotton lint or Green Bean Equivalent (GBE)) per cubic metre of water consumed per hectare of harvested land [kg/m3/ha]	Delta Framework	Outcome	Farm Level		✓	
			3.2.2.d.	Freshwater quantity: Freshwater withdrawals from surface water bodies and groundwater*	Ml per year or percent reduction from current rate	SBTN for Freshwater	Outcome	Brand Level + Farm Level			✓
	Water pollution is reduced	Basket of Metrics: Recommend 1 or more	3.2.3.a.	Freshwater quality: Load of nitrogen (N) and phosphorus (P) to surface water bodies*	Kg per year or percent reduction from current rate	SBTN for Freshwater	Outcome	Brand Level + Farm Level			✓
			3.2.3.b.	Riparian zone health indicator	TBD based on elements selected	CGIAR	Outcome	Farm Level			
	Biodiversity increases (Plant, animal)	Basket of Metrics: Select at least 1 each for Plant, Animal; Recommend 2 or more. Microbial area is emerging.	3.2.4.a.	Record of indicator species	Presence/absence/# of indicator species. Indicator species selection should be based on local knowledge backed by literature guidance.	Siddig et al. 2016	Outcome	Farm Level		✓	
			3.2.4.b.	Agricultural Biodiversity Indicator	Uses modified Gini-Simpson Index of Diversity: $1-D = 1-\Sigma p_i^2$	Mottet et al. 2020	Outcome	Farm Level		✓	
			3.2.4.c.	Ecological Health Index	Index of 15 separate indicators for rangeland health	Xu et al. 2019	Output	Farm Level		✓	
			3.2.4.d.	Hill Diversity Index	Hill diversity value "D"	Roswell et al. 2021	Outcome	Farm Level			✓
			3.2.4.e.	Percentage of natural / restored habitats	% per km2	QP2B	Output	Farm Level		✓	
	Biodiversity increases (Plant)		3.2.4.f.	On-farm area planted in trees/perennnials	Ha or % of farm area	Terra Genesis	Output	Farm Level	✓		
			3.2.4.g.	Tree sapling regeneration rate	Saplings per ha	Diaz et al. 2022	Outcome	Farm Level		✓	
	Biodiversity increases (Microbial)		3.2.4.h.	Soil microbial diversity	TBD based on emerging indicators	Soil Health Institute and others	Outcome	Farm Level			✓
	Synthetic inputs are reduced	Basket of Metrics: Recommend 2 or more	3.2.5.a.	Reduction in use of Highly Hazardous Pesticides (HHPs)	Kg active ingredient (a.i.) of Highly Hazardous Pesticides (HHPs) applied per ha of harvested land	Delta Framework	Output	Farm Level		✓	
			3.2.5.b.	Pesticide usage – Environmental Impact Quotient (EIQ)	EIQ Formula	QP2B / Cornell Univ.	Outcome	Farm Level		✓	
			3.2.5.c.	Fertilizer usage: Nitrogen Use Efficiency (NUE) (Specific indices below)	NUE	QP2B	Outcome	Farm Level			✓
			3.2.5.c.i.	NUE_{yield}	NUE_{yield} = N Uptake Efficiency x N Utilization Efficiency	Congreves et al. 2021					✓
			3.2.5.c.ii.	NUE of a system (sNUE)	Yield N / (Yield N + N Loss)	Congreves et al. 2021					✓
			3.2.5.d.	Ratio of non-synthetic inputs to synthetic inputs	Ratio of non-synthetic inputs (compost, etc.) to purchased synthetic inputs. Can be applied to either nutrient sources or pest control methods.	Reviewer comments	Outcome	Farm Level		✓	
	GHG emissions are reduced	Basket of Metrics: Recommend 1 or more	3.2.6.a.	Greenhouse gas emissions per unit of production	Kg CO_2e per kg of main crop or total production	Delta Framework	Outcome	Farm Level		✓	
			3.2.6.b.	Carbon dioxide removals (guidance still in review)	tCO_2e	GHG Protocol LSR	Outcome	Brand Level + Farm Level			✓

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Animal Welfare	Sufficient and varied nutrition		3.3.1.	Body Condition Score	1-5 on the BCS scale	AWIN Welfare	Outcome	Farm Level	✓		
	Comfort and expression of normal behavior		3.3.2.	Thermal comfort: Access to shade and shelter	Presence or absence	AWIN Welfare	Input	Farm Level	✓		
	Good health and welfare	Basket of Metrics: If applicable, select 1 or more from each Animal Welfare outcome	3.3.3.a.	Mortality rate	Reduction in % over time	AWIN Welfare	Outcome	Farm Level	✓		
			3.3.3.b.	Lameness	Reduction in % over time	AWIN Welfare	Outcome	Farm Level	✓		
			3.3.3.c.	Reduction in use of medications and antibiotics (while maintaining reductions in mortality rate and lameness)	Amount used per # of animals, and reduction over time as long as mortality does not increase	AWIN Welfare	Outcome	Farm Level	✓		
	Positive mental state		3.3.4.a.	Familiar Human Approach Test	Closest human approach before flight response, in meters	AWIN Welfare	Outcome	Farm Level	✓		
			3.3.4.b.	Measures of vocalization at time of handling	Duration, rate, frequency, or other characteristic of vocalization, depending on species	Laurijs et al. 2021	Outcome	Farm Level	✓		

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