

	Tool	GHG	Production system, land use value chain	Scale (Farm or Landscape)	Application (regional, AE2, global)	Measurement equipment?	Measuring where? (above, below, interface)	Models employed?	Expertise to carry it out?	Confidence	Cost implication	Strengths	Weaknesses	Application in Developing Country Context	
Inventory	Cool Farm Tool	CO2, CH4, N2O	Many	Farm Scale (primarily, but systems can be aggregated)	Global (site specific)	Simple weights and measures	Of inputs, yield, land area, and soil characteristics	Bawman model, IFA data, EPA data, etc.	None to answer questions, 4 hours training for full tool expertise and analysis	Of general direction and hotspots: high; of exact emissions factor accuracy: none	none for the tool, possibly some for consulting and analysis (optional)	Relatively easy to use, quick, free, decent traction, open source, configurable, useful	Tool OR utility?	yes, also developed (same tool)	
	Vi Agroforestry (ABMS, SALM)	CO2, N2O, CH4	Land use/livestock	farm, farmer-group	Local-regional	GPS, survey sheets	inputs-outputs, mainly biomass	RothC	Modeling expertise, survey PRA expertise	input variables Tier 2/3, model output 75% (or 15%? Hard to read number)	Add cost monitoring ABMS farmers; part of project implementation costs	monitoring multiple benefits	GHG interactions not considered	Yes: Kenya, Uganda, China	
	Farm GHG model	CH4, CO2, N2O	Dairy farms, arable farms, other livestock	farm (and prechain emissions)	regional (developed for Europe)			C&N flow emission factors and process based	research expertise and agronomy	Tier 2/3 allows uncertainty estimate	medium-large in defining input and management	Based on mass balances	Demanding on defining farm flows	not yet	
	EX-ACT	CO2, CH4, N2O	Many: AFOLU (LULUCF)	Several ha -> a lot of ha; regional/country	global	?	changes in C, N2O and CH4; 5 compartments (IPCC)	NGHG methods IPCC and others	To read: university student level (using Excel)	Tier 1: IPCC %; Tier 2: better	none for the tool (already available)	simple/Excel no macro; Free/4 languages; support team/transparent; redirect design of the project	No yield accounting; no tier 3	mostly	
	Carbon Benefits Project GEF	CO2, CH4, N2O	AFOLU	Multi-scale	Global	depends on project capacity	depends, but most likely biomass and soil C	IPCC Tier 1&2, Century	Simple -> detailed -> modeling; non-expert -> expert	Uncertainty estimated (*should* be able to reduce with more detailed assessment)	freely available measurement/monitoring?	Easy for non-GHG experts; free; online	quality of output relies on input data from users/applicability of IPCC Tier 1/2	currently being developed and tested with partners in developing countries	
	COMACO modeling approach	CO2, N2O	AFOLU	Landscape	Regional	simple		CO2 fix		Tier 2 when available	leverage existing infrastructure - must be low	aligns to farmer objectives; focus on adoption of practices	model might not be 100% accurate	high - SSAA	
	Plan Vivo	CO2, CH4, N2O	Agroforestry, reforestation, regeneration, conservation (+)	farm -> landscape	all developing countries	simple	usually ABG; potential for BGB and soil	CO2 fix and others (not prescribed)	Aim to be carried out with minimal external expertise	Less emphasis than other approaches (more emphasis on limiting risk of non-adoption)	Emphasis on minimizing transaction costs	ex-ante crediting (not compulsory)	ex-ante crediting	yes 7 countries	
	Biogeochemical process models (DNDC, DAYCENT, etc.)	CH4, N2O, CO2	AFOLU	both	field to regional to global				moderate + (depends on defaults)	good to best (depends on calibration)		crop yields and mechanistic and management levers	significant data requirements	yes, but data limited	
	Canada "Holos"	C, CO2 (fossil fuel), N2O, CH4	AFOLU	farm	cold temperate (Canada, Norway)				Tier 2	Farmer, extension worker	? Focus to identify mitigation options	free	N flows balanced, transparent, simple	Tier 2	Adapting for Latin America
	USDA	CO2, N2O, CH4	Cropland, forestry, grazing lands, managed wetlands, LUC	farm scale	USA				various - being recommended by expert panels						
Australia (Carbon Farming Initiative)	CO2, N2O, CH4	AFOLU	Farm, landscape	Australia wide	Models; empirical data; field	above and below	State of the art determined by technical experts and peer reviewed at national level	Research expertise	Tier 2 and better	high	Any activity accepted if it has a method. Enacted in law	high transaction costs; top-down; ideological driven (e.g. permanence); voluntary market prices	no, could learn lessons from		
LCA	CO2, CH4, N2O	value chain to farm gate		global, regional, local			various models	Ms Sc	Depends on data	Data intensive	Ideas for mitigation options	Data intensive	At regional scale		
Data	TEP Soil Carbon & GHG Measurement	Carbon (measured), N2O, CH4, NO (modeled)	Grassland, agricultural land, wetland focus on degraded)	Farm and Landscape	Regional	Automated/conventional soil sampling	below ground/remote sensing	yes	yes	high (note of disagreement)	medium				
	CDM Rice Paddy	CH4, N2O	Agri	Farm and Landscape	AE2	Closed chamber technique, go	Above	EF upscaling	high	high/medium	high/medium	Evaluation of management strategies			
	Carbon Benefits Project Remote sensing and modeling	Co2e	Agroforestry and forest	Farm to Landscape	Global	Above ground	Remotely sensed and ground data	RS and field measures, integrative models	High	High	Variable - based on scale of analysis				
	GHG Fluxes (soil surface)	N2O, CH4, CO2, NO	All	Field	At higher scales only with models	GC, IRGA, photoacoustic, tunable diode laser chemiluminescence	Interface soil-atmosphere	conceptual models	very high	moderate at small scales	not appropriate on projects	fun for scientists! (measurement based)	site specific		
	Micro-met							A lot	very high				replication missing		
	GHG emissions from multicrop farm systems for dryland agriculture - India	N2O, CH4, CO2, NO	Multi cropping dryland	Small scale farm (aggregated)	South Asia dryland - 4 AE2s (7 AE2s)	Local GCs sampling, local soil, weather data monitoring	All	yes and new deployed	high	moderate, moving to high	low/med over scale	participant involvement, good science, flexible	scale		