

Supplementary Materials – Tables

Increasing ambition in Nationally Determined Contributions through agriculture and food systems innovation

Evidence, foundational analysis, and recommendations for NDCs

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Supplementary tables

Table S 1. Statistics of NDC reviewed.

		Number	Percent
NDCs reviewed		167	100%
NDCs with keywords related to agriculture and food systems innovation	LIC	24	
	LMIC	51	
	UMIC	46	
	HIC	30	
	Total	151	90%

Table S 2. Number of countries mentioning keywords related to 7 innovation categories in their NDCs. Values are reported as absolute values (top) and as percent (%) of total countries within a country income group (bottom).

Innovation category	Number of countries with keyword mentions				
	LIC	LMIC	UMIC	HIC	Total
R&D systems	21	42	32	17	112
Information systems	19	44	30	14	107
On-farm production	24	48	45	27	144
Post-harvest handling	12	21	10	7	50
Markets	18	34	22	10	84
Finance	15	31	19	16	81
Policy	18	32	31	22	103
Innovation category	Percent of countries with keyword mentions				
	LIC	LMIC	UMIC	HIC	Total
R&D systems	88%	82%	70%	57%	74%
Information systems	79%	86%	65%	47%	71%
On-farm production	100%	94%	98%	90%	95%
Post-harvest handling	50%	41%	22%	23%	33%
Markets	75%	67%	48%	33%	56%
Finance	63%	61%	41%	53%	54%
Policy	75%	63%	67%	73%	68%

Table S 3. Average number of keywords (unique count) related to agricultural and food systems innovation per NDC by country groups (source data for Figure 1 and Figure 3 of the report).

Innovation category	Average number of keywords mentioned				
	LIC	LMIC	UMIC	HIC	All countries
R&D systems	56	104	75	36	271
Information systems	55	120	64	26	265
On-farm production	367	605	390	133	1495
Post-harvest handling	21	35	15	9	80
Market	45	93	31	18	187
Finance	26	68	38	26	158
Policy	29	67	55	37	188

Table S 4. Number of countries mentioning 1 to 7 innovation categories in their NDCs, by country income group (source data for Figure 2 of the report).

Innovation categories mentioned	Number of countries				
	LIC	LMIC	UMIC	HIC	Total
1	0	2	4	3	9
2	0	4	6	7	17
3	1	7	6	3	17
4	6	4	8	8	26
5	6	9	12	2	29
6	7	15	7	4	33
7	4	10	3	3	20

Table S 5. Number of mentions per keyword and their associated innovation categories, per country income group.

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
R&D systems	academia	1	1	0	1	3
R&D systems	bio-technology	0	1	0	0	1
R&D systems	biological control	0	0	1	0	1
R&D systems	breeding	11	9	9	2	31
R&D systems	genetics	0	6	2	1	9
R&D systems	gis	1	1	0	0	2
R&D systems	green technologies	0	0	1	0	1
R&D systems	knowledge	7	11	5	2	25
R&D systems	knowledge management	0	0	1	0	1
R&D systems	knowledge sharing	0	1	0	0	1
R&D systems	local validation	0	3	1	0	4
R&D systems	mechanization	1	3	3	0	7
R&D systems	modeling	0	0	2	0	2
R&D systems	organic resources	1	0	0	0	1
R&D systems	post-harvest technologies	0	0	1	0	1
R&D systems	remote sensing	1	0	0	0	1
R&D systems	research and development	13	24	13	9	59
R&D systems	science	0	3	5	3	11
R&D systems	seeds	8	12	3	1	24
R&D systems	species	0	0	0	1	1
R&D systems	technique	0	0	6	2	8
R&D systems	technology	8	24	21	12	65
R&D systems	technology transfer	0	1	0	0	1
R&D systems	university	4	4	1	2	11
Information systems	advisory services	1	3	1	1	6
Information systems	capacity building	16	28	18	7	69
Information systems	climate and weather forecast	6	16	7	1	30
Information systems	climate services	0	1	1	0	2

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
Information systems	data	4	13	8	5	30
Information systems	development	0	0	1	0	1
Information systems	digitalization	1	6	0	1	8
Information systems	early warning systems	12	26	10	4	52
Information systems	education	0	0	0	1	1
Information systems	extension services	5	10	4	0	19
Information systems	farmer support program	0	0	0	1	1
Information systems	farmers association	3	3	2	1	9
Information systems	flood risk management	0	1	0	0	1
Information systems	information systems	0	1	2	1	4
Information systems	meteorological services	0	0	2	0	2
Information systems	monitoring	1	1	1	0	3
Information systems	mrvt	0	0	1	0	1
Information systems	producer	0	0	1	0	1
Information systems	producer association	1	1	0	0	2
Information systems	professional development	0	0	0	1	1
Information systems	training	5	10	4	2	21
Information systems	transfer of technology	0	0	1	0	1
On-farm production	acquaponics	0	0	0	1	1
On-farm production	agricultural intensification	3	2	2	0	7
On-farm production	agricultural productivity	11	18	11	7	47
On-farm production	agro-biodiversity	1	0	1	0	2
On-farm production	agro-ecology	9	11	3	1	24

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
On-farm production	agro-ecosystems	0	0	1	0	1
On-farm production	agro-forestry	17	25	19	4	65
On-farm production	agro-silvopastoral systems	0	2	0	0	2
On-farm production	agrochemicals	1	2	0	0	3
On-farm production	agroclimatic zoning	0	0	1	0	1
On-farm production	alternate wetting drying	1	4	0	1	6
On-farm production	animal	10	14	6	1	31
On-farm production	animal feed	11	14	4	1	30
On-farm production	animalmulch	0	1	0	0	1
On-farm production	animals	0	3	1	1	5
On-farm production	aquaculture	0	0	0	1	1
On-farm production	biochar	0	2	2	0	4
On-farm production	biogas	7	17	7	3	34
On-farm production	carbon pools	0	1	0	1	2
On-farm production	carbon sequestration	7	9	11	7	34
On-farm production	carbon sink	0	4	4	3	11
On-farm production	cereals	0	1	1	0	2
On-farm production	circular agricultural system	0	1	0	0	1
On-farm production	climate resilient agriculture	1	0	1	0	2
On-farm production	climate smart agriculture	4	10	8	2	24
On-farm production	compost	9	14	4	2	29
On-farm production	conservation agriculture	1	2	1	0	4
On-farm production	conservation structures	0	1	0	0	1
On-farm production	cover crops	0	3	1	2	6
On-farm production	cradle-to-cradle	0	0	1	0	1
On-farm production	crop residue	8	6	1	0	15
On-farm production	crop rotations	5	2	4	2	13
On-farm production	crop yields	1	2	0	0	3
On-farm production	cropland	0	0	2	1	3
On-farm production	cropping	3	5	2	0	10
On-farm production	crops	18	30	24	8	80
On-farm production	cultivars	0	2	1	0	3
On-farm production	direct seeding	0	0	1	0	1

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
On-farm production	drought-resistant crops	1	0	0	0	1
On-farm production	ecological agriculture	0	0	1	0	1
On-farm production	ecological regulation	0	0	1	0	1
On-farm production	energy	0	0	1	0	1
On-farm production	enteric fermentation	5	4	6	2	17
On-farm production	erosion	6	13	8	3	30
On-farm production	fertilizers	12	28	17	8	65
On-farm production	fodder	0	0	1	0	1
On-farm production	grains	0	0	1	0	1
On-farm production	grasslands	4	3	6	4	17
On-farm production	grazing	5	3	5	3	16
On-farm production	green manure	0	1	0	0	1
On-farm production	green water	0	1	0	0	1
On-farm production	herbicides	1	0	0	0	1
On-farm production	improved feed	1	0	0	0	1
On-farm production	integrated farming systems	6	7	4	1	18
On-farm production	integrated water resource management	0	0	1	0	1
On-farm production	intensification	1	1	2	0	4
On-farm production	intensive farming	0	1	0	0	1
On-farm production	inter-cropping	0	4	0	0	4
On-farm production	irrigation	20	28	20	8	76
On-farm production	livestock	22	42	29	6	99
On-farm production	maize	2	2	0	0	4
On-farm production	management practices	0	0	0	1	1
On-farm production	manure	10	14	6	2	32
On-farm production	methane capture systems	0	0	0	1	1
On-farm production	mulching	0	2	2	0	4
On-farm production	multi-cropping	2	0	1	0	3
On-farm production	nitrification inhibitor	0	1	0	0	1
On-farm production	organic agriculture	0	1	1	0	2
On-farm production	organic farming	0	4	2	1	7
On-farm production	organic inputs	4	5	8	0	17

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
On-farm production	pastures	8	13	9	3	33
On-farm production	pesticides	1	3	5	0	9
On-farm production	pests and diseases	13	19	12	3	47
On-farm production	plant nutrition	1	0	0	0	1
On-farm production	plantations	1	0	1	0	2
On-farm production	planting	5	7	3	2	17
On-farm production	precision agriculture	0	1	2	0	3
On-farm production	productive processes	0	0	1	0	1
On-farm production	profitability	0	3	1	1	5
On-farm production	pulse	0	2	0	0	2
On-farm production	pulses	1	1	0	0	2
On-farm production	rangelands	6	13	1	1	21
On-farm production	regeneration	0	1	0	0	1
On-farm production	regenerative agriculture	0	1	1	0	2
On-farm production	rehabilitation	13	19	11	2	45
On-farm production	renewable energy	1	1	1	0	3
On-farm production	restoration	10	21	12	5	48
On-farm production	rice	10	16	7	3	36
On-farm production	rice intensification	0	1	0	0	1
On-farm production	risk management	6	14	5	3	28
On-farm production	rotational grazing	0	0	1	0	1
On-farm production	salinization	1	8	4	0	13
On-farm production	savannah	2	5	1	0	8
On-farm production	self-sufficiency	0	1	0	0	1
On-farm production	silvopastoral systems	4	5	8	2	19
On-farm production	small-scale agriculture	1	0	0	0	1
On-farm production	soil and nutrient management	10	10	6	0	26
On-farm production	soil biodiversity	0	0	1	0	1
On-farm production	soil carbon	1	5	7	6	19
On-farm production	soil compaction	0	0	1	0	1
On-farm production	soil conservation	0	2	2	0	4
On-farm production	soil cover	0	1	0	0	1
On-farm production	soil organic matter	0	0	1	0	1

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
On-farm production	solar dryers	1	0	0	0	1
On-farm production	solar energy	10	14	7	4	35
On-farm production	solar water heater	0	1	0	0	1
On-farm production	sowing	1	0	0	1	2
On-farm production	soy	0	0	1	0	1
On-farm production	sustainable land management	1	0	1	0	2
On-farm production	sustainable management	1	0	0	0	1
On-farm production	system of rice intensification	4	7	0	0	11
On-farm production	tillage	6	6	7	0	19
On-farm production	water	17	31	22	8	78
On-farm production	wheat	1	0	1	0	2
Post-harvest handling	agricultural waste	2	10	2	2	16
Post-harvest handling	agro-processing	0	2	1	0	3
Post-harvest handling	food losses	4	2	1	2	9
Post-harvest handling	food processing	0	1	0	0	1
Post-harvest handling	food reserves	1	1	0	0	2
Post-harvest handling	food storage	8	8	5	3	24
Post-harvest handling	food waste	0	0	0	1	1
Post-harvest handling	organic waste	0	0	2	1	3
Post-harvest handling	post-harvest	1	1	0	0	2
Post-harvest handling	post-harvest losses	0	0	1	0	1
Post-harvest handling	post-harvest processing	3	7	2	0	12
Post-harvest handling	processing	1	2	1	0	4
Post-harvest handling	vegetable waste	1	0	0	0	1
Post-harvest handling	waste	0	1	0	0	1

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
Market	agri-business	1	4	0	0	5
Market	agri-business management	0	0	1	0	1
Market	agro-entrepreneurship	1	2	0	0	3
Market	business model	1	1	1	0	3
Market	cold chain	0	1	0	0	1
Market	commercialization	2	5	0	0	7
Market	cooperative	1	3	0	0	4
Market	cooperatives	0	0	1	0	1
Market	demand	1	2	0	2	5
Market	entrepreneurship	1	0	1	0	2
Market	farmers cooperative	0	1	0	0	1
Market	food industries	1	0	0	0	1
Market	healthy eating	0	1	0	0	1
Market	healthy food	0	0	0	1	1
Market	inclusive	0	1	0	0	1
Market	inclusive agriculture	0	3	0	0	3
Market	infrastructure	0	0	0	1	1
Market	local market	1	2	1	0	4
Market	logistics	0	2	2	0	4
Market	Markets	0	1	0	0	1
Market	market infrastructure	3	3	0	0	6
Market	market integration	2	3	1	0	6
Market	market linkages	1	0	0	0	1
Market	marketing	0	0	1	0	1
Market	packaging	0	2	0	0	2
Market	production chains	0	0	1	0	1
Market	quality and environmental label	0	1	0	0	1
Market	roads	3	8	1	3	15
Market	small-holder farmers	4	10	3	0	17
Market	supply chains	3	2	0	1	6
Market	sustainable diet	2	0	0	0	2
Market	traceability	0	1	0	0	1
Market	transportation	5	17	9	8	39

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
Market	value chains	12	17	8	2	39
Finance	art.6	2	6	5	9	22
Finance	blended finance	0	2	0	0	2
Finance	circular economy	0	0	1	0	1
Finance	credit access	3	5	1	0	9
Finance	de-risking	1	0	0	0	1
Finance	financial	0	1	0	0	1
Finance	financial inclusion	2	1	0	2	5
Finance	financial institutions	0	1	0	0	1
Finance	financial planning	0	0	1	0	1
Finance	financing mechanisms	0	0	1	0	1
Finance	incentives	0	0	4	0	4
Finance	initiatives	0	0	1	0	1
Finance	insurance	8	14	5	2	29
Finance	investment	2	11	4	3	20
Finance	investments	0	1	1	0	2
Finance	local financial institutions	0	3	1	1	5
Finance	local initiatives	1	0	0	0	1
Finance	micro-credit	1	0	1	0	2
Finance	producer incentives	2	3	0	1	6
Finance	profitability	1	0	0	0	1
Finance	public-private	0	0	1	0	1
Finance	public-private alliance	0	0	1	0	1
Finance	public-private collaboration	0	0	0	1	1
Finance	public-private partnership	0	8	4	2	14
Finance	public-private partnerships	0	1	0	0	1
Finance	risk	0	1	2	1	4
Finance	risk instruments	0	0	0	1	1
Finance	risk reduction	1	5	0	0	6
Finance	safety nets	0	1	0	0	1
Finance	subsidies	2	4	4	3	13
Policy	land tenure	1	4	0	0	5
Policy	land use	4	12	11	12	39

Innovation category	Keyword (harmonized)	Number of mentions				
		LIC	LMIC	UMIC	HIC	Total
Policy	land-use planning	4	3	6	3	16
Policy	laws	1	0	0	0	1
Policy	legal	0	4	4	1	9
Policy	participation	2	1	0	2	5
Policy	participatory	1	3	0	2	6
Policy	planning	0	0	1	1	2
Policy	policies	5	17	15	7	44
Policy	reform	0	1	0	1	2
Policy	regulations	0	3	7	3	13
Policy	regulatory	0	4	4	1	9
Policy	technology transfer	10	13	7	4	34
Policy	tenure	1	2	0	0	3