Performance Indicator Matrix (PIM) Tables: WHEAT CRP

Contents

Table A- CRP Level: Contribution to 2022 CGIAR Targets

CGIAR Target	Target contribution	Unit of target	Amount Needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	Synergies with other CRP's/ Platforms (click Ctrl for multiple selection)
100 million more farm households have adopted improved varieties, breeds or trees, and / or improved management practices	17.5	million farm households	34,900,000	32	26	42	0	A4NH, DCLAS, FTA, Livestock, Maize, Rice, RTB
30 million people, of which 50% are women, assisted to exit poverty	5.7	million people	43,600,000	32	26	42	0	PIM
Improve the rate of yield increase for major food staples from current <1% to 1.2-1.5% per year	1.4	%	39,200,000	32	26	42	0	CCAFS, Genebanks, Genetic Gain platform, WLE
30 million more people, of which 50% are women, meeting minimum dietary energy requirements	10	million people	39,300,000	32	26	42	0	A4NH, PIM
10% reduction in women of reproductive age who are consuming less than the adequate number of food groups	10	%	26,000,000	32	26	42	0	A4NH
5% increase in water and nutrient (inorganic, biological) use efficiency in agro-ecosystems, including through recycling and reuse	5	%	52,000,000	32	26	42	0	CCAFS, WLE

Reduce agriculturally-related greenhouse gas emissions by 0.2 Gt CO2-e yr-1 (5%) compared with business-as-usual scenario in 2022	0.0012	Gt CO2e/yr	30,500,000	32	26	42	0	CCAFS, Livestock, PIM
2.5 million ha of forest saved from deforestation	0.175	millions of ha	13,000,000	32	26	42	0	CCAFS, FTA
		Total	278,500,000					

Quantitative contribution to countries

CGIAR Target: 100 million more farm households have adopted improved varieties, breeds or trees, and / or improved management practices

CGIAR Target countries	Other Country	Target contribution in country
Bangladesh	_	340000
India	_	8000000
Ethiopia	_	2000000
Kenya	_	15000
Rwanda	_	20000
Tanzania	_	10000
Zambia	_	5000
OTHER	Morocco	400000
OTHER	Pakistan	500000
OTHER	Iran, Islamic Republic of	300000
OTHER	Uzbekistan	20000
OTHER	Kazakhstan	30000
OTHER	Mexico	30000

REST OF THE WORLD	_	5500000

CGIAR Target: 30 million people, of which 50% are women, assisted to exit poverty

CGIAR Target countries	Other Country	Target contribution in country
Bangladesh	_	100000
India	_	2000000
Nepal	_	99000
Ethiopia	_	1000000
OTHER	Morocco	100000
OTHER	Pakistan	250000
OTHER	Mexico	1000
REST OF THE WORLD	_	2150000

CGIAR Target: Improve the rate of yield increase for major food staples from current <1% to 1.2-1.5% per year

CGIAR Target countries	Other Country	Target contribution in country
Bangladesh	_	1.4
Ethiopia	_	1.4
India	_	1.4
Kenya	_	1.4
Nigeria	_	1.4
Nepal	_	1.4

Rwanda	_	1.4
Tanzania	_	1.4
REST OF THE WORLD	_	1.4

CGIAR Target: 30 million more people, of which 50% are women, meeting minimum dietary energy requirements

CGIAR Target countries	Other Country	Target contribution in country
Bangladesh	_	1500000
India	_	3600000
Nepal	_	800000
Ethiopia	_	2000000
OTHER	Morocco	60000
OTHER	Pakistan	1000000
OTHER	Iran, Islamic Republic of	340000
REST OF THE WORLD	_	700000

CGIAR Target: 10% reduction in women of reproductive age who are consuming less than the adequate number of food groups

CGIAR Target countries	Other Country	Target contribution in country
Nepal	_	80000
Bangladesh	_	85000
India	_	1200000
Ethiopia	_	430000

OTHER	Morocco	100000
OTHER	Pakistan	100000
OTHER	Mexico	5000
REST OF THE WORLD	_	1000000

CGIAR Target: 5% increase in water and nutrient (inorganic, biological) use efficiency in agro-ecosystems, including through recycling and reuse

CGIAR Target countries	Other Country	Target contribution in country
Bangladesh	_	100000
India	_	1500000
Nepal	_	100000
Ethiopia	_	200000
OTHER	Morocco	500000
OTHER	Pakistan	250000
OTHER	Iran, Islamic Republic of	500000
REST OF THE WORLD	_	1800000

CGIAR Target: Reduce agriculturally-related greenhouse gas emissions by 0.2 Gt CO2-e yr-1 (5%) compared with business-as-usual scenario in 2022

CGIAR Target countries	Other Country	Target contribution in country
Bangladesh	_	0.00005
India	_	0.00017
Nepal	_	0.00007

Ethiopia	_	0.00087
Kenya	_	0.00311
Rwanda	_	0.00055
OTHER	Morocco	0.00218
OTHER	Kazakhstan	0.00088
OTHER	Mexico	0.00034
REST OF THE WORLD	_	0.00378

CGIAR Target: 2.5 million ha of forest saved from deforestation

CGIAR Target countries	Other Country	Target contribution in country
Bangladesh	_	0
Ethiopia	_	0
Tanzania	_	0
OTHER	Iran, Islamic Republic of	0
REST OF THE WORLD	_	0

FP1 Inclusive and profitable wheat opportunities

PIM Table B: Flagship level: outcomes by windows of funding

2022 outcome description	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)

Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies (ToC 1.10)	17,159,997	52	20	28	0	8,923,198	3,431,999	4,804,799	0
Last mile provider (extension partners, farmer organization, community-based organizations, private sector) increased access and promotion of technologies to farmers (ToC 1.9)	3,677,142	52	20	28	0	1,912,114	735,428	1,029,600	0
National and regional policy makers improved policy-making and increased investment based on evidence (ToC 1.8)	3,677,142	52	20	28	0	1,912,114	735,428	1,029,600	0
	24,514,281					12,747,426	4,902,856	6,863,999	0

PIM Table C: Flagship level: investments by sub-IDO's

Sub-IDO	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)
More efficient use of inputs	9,805,712	52	20	28	0	5,098,970	1,961,142	2,745,599	0
Improved capacity of women and young people to participate in decision-making	7,354,284	52	20	28	0	3,824,228	1,470,857	2,059,200	0
Increased capacity of beneficiaries to adopt research outputs	7,354,285	52	20	28	0	3,824,228	1,470,857	2,059,200	0
	24,514,281					12,747,426	4,902,856	6,863,999	0

PIM Table D: Flagship level: annual milestones table

Year	Milestone description	Means of verifying	For which outcomes
2018	Rapid value chain assessments with proper gender lens conducted to identify opportunities and bottlenecks in WHEAT	Perform, review annual portfolio analysis Supporting publications (foresight ex ante impact pathways value chains) publicized	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2019	Beneficiaries in 3 WHEAT target regions, plus 6 target countries exposed to more appropriate innovations through better targeting	Perform, review annual portfolio analysis Supporting publications (foresight ex ante impact pathways value chains) publicized	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2020	Benchmarking information of wheat value chain collected in selected countries to support identified of priorities and effective interventions	Perform, review annual portfolio analysis Supporting publications (foresight ex ante impact pathways value chains) publicized	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2021	Beneficiaries' increased innovation adoption and associated factors credibly documented in plus 6 WHEAT target countries	Perform, review annual portfolio analysis Supporting publications (foresight ex ante impact pathways value chains) publicized	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2022	Farm to fork value chain analyses in both established and emerging wheat producers to assess implication for WHEAT priorities	Perform, review annual portfolio analysis Supporting publications (foresight ex ante impact pathways value chains) publicized	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2017	Gender / social inclusion lenses will be applied to 2 to 4 WHEAT innovation pipelines and assessments	Reports, global recognized women empowerment indicators, case studies	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies

Year	Milestone description	Means of verifying	For which outcomes
2019	Measure of women's empowerment quantified based on global recognized indicators (baseline)	Reports, global recognized women empowerment indicators, case studies	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2021	Study of the implementation of gender mainstreaming in WHEAT and its impact on inclusivity and equity	Reports, global recognized women empowerment indicators, case studies	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2022	Gender / social inclusion lenses will be routinely applied to major WHEAT innovation pipelines and assessments	Reports, global recognized women empowerment indicators, case studies	FP1-1 Farmers have greater awareness and access to, and increased adoption and adaptation of improved technologies
2017	Ex-ante impact assessments identify potential opportunities, threats and game changes for WHEAT to support outcomes 1.1, 1.2, 1.3	Supporting publications: Reports, policy briefs, dissemination documentation	FP1-2 Last mile provider (extension partners, farmer organization, community-based organizations, private sector) increased access and promotion of technologies to farmers
2018	targeting incorporates competition for land and spatial dimensions of soil & water degradation	Supporting publications: Reports, policy briefs, dissemination documentation	FP1-2 Last mile provider (extension partners, farmer organization, community-based organizations, private sector) increased access and promotion of technologies to farmers
2019	Ex-ante impact assessments assess how major drivers like climate change and rural transformation will alter WHEAT in the developing world to support outcomes 1.1, 1.2, 1.3	Supporting publications: Reports, policy briefs, dissemination documentation	FP1-2 Last mile provider (extension partners, farmer organization, community-based organizations, private sector) increased access and promotion of technologies to farmers

Year	Milestone description	Means of verifying	For which outcomes
2020	Climate change and other dynamics integral to foresight research, showing how they transform agri, rural landscapes	Supporting publications: Reports, policy briefs, dissemination documentation	FP1-2 Last mile provider (extension partners, farmer organization, community-based organizations, private sector) increased access and promotion of technologies to farmers
2021	value chain research identifies new entrepreneurial, job opportunities, options to address (post)-harvest losses	Supporting publications: Reports, policy briefs, dissemination documentation	FP1-2 Last mile provider (extension partners, farmer organization, community-based organizations, private sector) increased access and promotion of technologies to farmers
2022	Ex-ante impact assessments assess future preferences of wheat producers and consumers and implications for wheat innovation to support outcomes 1.9 and 1.10	Supporting publications: Reports, policy briefs, dissemination documentation	FP1-2 Last mile provider (extension partners, farmer organization, community-based organizations, private sector) increased access and promotion of technologies to farmers
2017	Adoption and impact studies on technologies- rolling plan based on progress of technologies along the theory of change	Reports, policy briefs, dissemination documentation	FP1-3 National and regional policy makers improved policy-making and increased investment based on evidence
2018	Adoption and impact studies on technologies- rolling plan based on progress of technologies along the theory of change	Reports, policy briefs, dissemination documentation	FP1-3 National and regional policy makers improved policy-making and increased investment based on evidence
2019	Adoption and impact studies on technologies- rolling plan based on progress of technologies along the theory of change	Reports, policy briefs, dissemination documentation	FP1-3 National and regional policy makers improved policy-making and increased investment based on evidence

Year	Milestone description	Means of verifying	For which outcomes
2020	Adoption and impact studies on technologies- rolling plan based on progress of technologies along the theory of change	Reports, policy briefs, dissemination documentation	FP1-3 National and regional policy makers improved policy-making and increased investment based on evidence
2021	Adoption and impact studies on technologies- rolling plan based on progress of technologies along the theory of change	Reports, policy briefs, dissemination documentation	FP1-3 National and regional policy makers improved policy-making and increased investment based on evidence
2022	Adoption and impact studies on technologies- rolling plan based on progress of technologies along the theory of change	Reports, policy briefs, dissemination documentation	FP1-3 National and regional policy makers improved policy-making and increased investment based on evidence

FP2 Novel diversity and tools for improving genetic gains and breeding efficiency

PIM Table B: Flagship level: outcomes by windows of funding

2022 outcome description	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)
Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products (ToC 2.4)	20,612,500	35	19	46	0	7,214,375	3,916,375	9,481,750	0

Breeders develop improved varieties more efficiently thorugh greater access and use of documented germplams and tools (ToC 2.5)	10,306,300	35	19	46	0	3,607,205	1,958,197	4,740,898	0
Crop researchers world-wide and across disciplines access more novel germplams and tools (ToC 2.2)	20,612,335	35	19	46	0	7,214,317	3,916,344	9,481,674	0
	51,531,135					18,035,897	9,790,916	23,704,322	0

PIM Table C: Flagship level: investments by sub-IDO's

Sub-IDO	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)
Enhanced genetic gains	20,612,500	35	19	46	0	7,214,375	3,916,375	9,481,750	0
Increased conservation and use of genetic resources	20,612,500	35	19	46	0	7,214,375	3,916,375	9,481,750	0
Enhanced institutional capacity of partner research orgnaizations	10,306,135	35	19	46	0	3,607,147	1,958,166	4,740,822	0
	51,531,135					18,035,897	9,790,916	23,704,322	0

PIM Table D: Flagship level: annual milestones table

Year	Milestone description	Means of verifying	For which outcomes
2017	improved precision of GS models using high thruput phenotyping data	see FP3	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2019	Increased accuracy of predictive G&E and multi-trait models of use for breeders	see FP3	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2020	Prediction accuracy of GS-HTPTS is 0.4	see FP3	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2021	GS models with environmental co-variates 10% more accurate than without	see FP3	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2018	Greater number (compared to 2016) of breeder-ready markers/high-value haplotypes for prioritized traits identified and validated (under FP2) and deployed in CGIAR breeding programs (FP3)	Marker deployment tracking tool use tracking	FP2-2 Breeders develop improved varieties more efficiently thorugh greater access and use of documented germplams and tools
2019	FP2-developed tools and methods that enable more efficient management of breeding programs used by all WHEAT breeders	Marker deployment tracking tool use tracking	FP2-2 Breeders develop improved varieties more efficiently thorugh greater access and use of documented germplams and tools

Year	Milestone description	Means of verifying	For which outcomes
2021	Greater number (compared to 2016) of breeder-ready markers/high-value haplotypes for prioritized traits identified and validated (under FP2) and deployed in non-CGIAR breeding programs (FP3 partners)	Marker deployment tracking tool use tracking	FP2-2 Breeders develop improved varieties more efficiently thorugh greater access and use of documented germplams and tools
2022	FP2-developed tools and methods that enable more efficient management of breeding programs used by 20 % of national partner breeders	Marker deployment tracking tool use tracking	FP2-2 Breeders develop improved varieties more efficiently thorugh greater access and use of documented germplams and tools
2018	New alleles for heat and drought, other climate change-related traits identified and moved into breeding pipeline	Diversity Allele distributed via new varieties (genetic studies) % legally and physically available accessions in the CIMMYT, ICARDA wheat banks	FP2-3 Crop researchers world-wide and across disciplines access more novel germplams and tools
2019	international multi-location testing of new allelic combinations provides best bets	Diversity Allele distributed via new varieties (genetic studies) % legally and physically available accessions in the CIMMYT, ICARDA wheat banks	FP2-3 Crop researchers world-wide and across disciplines access more novel germplams and tools
2020	Comprehensive characterization of genebank accessions incl geospatial, adaptive distribution	Diversity Allele distributed via new varieties (genetic studies) % legally and physically available accessions in the CIMMYT, ICARDA wheat banks	FP2-3 Crop researchers world-wide and across disciplines access more novel germplams and tools
2021	in-situ conservation successfully implemented with 3-5NARS in major centers of diversity	Diversity Allele distributed via new varieties (genetic studies) % legally and physically available accessions in the CIMMYT, ICARDA wheat banks	FP2-3 Crop researchers world-wide and across disciplines access more novel germplams and tools

Year	Milestone description	Means of verifying	For which outcomes
2022	molecular characterization used by more CGIAR and non-CGIAR breeders to investigate uncharacterized germplasm	Diversity Allele distributed via new varieties (genetic studies) % legally and physically available accessions in the CIMMYT, ICARDA wheat banks	FP2-3 Crop researchers world-wide and across disciplines access more novel germplams and tools
2017	Shared low cost high throughput SNP-genotyping platform for low density markers (1-200) for CG centers and partners	Database usage/user monitoring (e.g. platforms available/used, open access databases, reports) Change # of markers used by non-WHEAT scientists	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2018	More partners use IWYP Platform for precision phenotyping	Database usage/user monitoring (e.g. platforms available/used, open access databases, reports) Change # of markers used by non-WHEAT scientists	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2019	enhanced researchers access to accessions (easier, more targeted across different criteria)	Database usage/user monitoring (e.g. platforms available/used, open access databases, reports) Change # of markers used by non-WHEAT scientists	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2020	Integration of gender and youth-based preference data for germplasm into breeding management informatics systems	Database usage/user monitoring (e.g. platforms available/used, open access databases, reports) Change # of markers used by non-WHEAT scientists	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2021	Global phenotyping data curated and made available to global community through integrative system	Database usage/user monitoring (e.g. platforms available/used, open access databases, reports) Change # of markers used by non-WHEAT scientists	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products
2022	More interoperable data in more data sets exchanged, used by researchers, using efficient procedures	Database usage/user monitoring (e.g. platforms available/used, open access databases, reports) Change # of markers used by non-WHEAT scientists	FP2-1 Crop researchers worldwide increased use of novel germplasm and tools for validation, refinement and development of products

FP3 Better varieties reach farmers faster

PIM Table B: Flagship level: outcomes by windows of funding

2022 outcome description	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)
National regulators of crop variety release improved enabling environment to speeding-up release of improved varieties and national partners increased improved variety release (ToC 3.5, 3.6)	16,850,037	43	8	49	0	7,245,516	1,348,003	8,256,518	0
Extension partners (all types) increased access and promotion of adoption of improved varieties to farmers, and increased investment in emerging private sector Farmer organizations increased access and promotion of adoption of improved varieties to farmers (ToC 3.7, 3.8)	16,850,037	43	8	49	0	7,245,516	1,348,003	8,256,518	0
Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources (ToC 3.3)	28,083,454	43	8	49	0	12,075,885	2,246,676	13,760,892	0
Non-and -subsistence farmers adopted improved varieties (ToC 3.12)	11,233,383	43	8	49	0	4,830,355	898,671	5,504,358	0

Partner breeding teams increased multidisciplinary and multi-institutional collaboration (merge with: 3.3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources) (ToC 3.2)	11,233,383	43	8	49	0	4,830,355	898,671	5,504,358	0
Farmer organizations increased access and promotion of adoption of improved varieties to farmers (gender and other social identities as customer attributes in relation to seed diffusion interventions, including varietal promotion and replacement) (ToC 3.8)	11,233,383	43	8	49	0	4,830,355	898,671	5,504,358	0
Partner breeding teams improved exchange and utilization of germplasm and data	16,850,152	43	8	49	0	7,245,565	1,348,012	8,256,574	0
	112,333,829					48,303,546	8,986,706	55,043,576	0

PIM Table C: Flagship level: investments by sub-IDO's

Sub-IDO	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)
Reduced production risk	33,720,155	43	8	49	0	14,499,667	2,697,612	16,522,876	0

Reduced pre and post harvest losses, incl. climate change	22,466,764	43	8	49	0	9,660,709	1,797,341	11,008,714	0
Enhanced genetic gains	22,446,764	43	8	49	0	9,652,109	1,795,741	10,998,914	0
Enhanced capacity to deal with climatic risks and extremes	16,850,073	43	8	49	0	7,245,531	1,348,006	8,256,536	0
Technologies that reduce women's labor and energy expenditure developed and disseminated	16,850,073	43	8	49	0	7,245,531	1,348,006	8,256,536	0
	112,333,829					48,303,546	8,986,706	55,043,576	0

PIM Table D: Flagship level: annual milestones table

Year	Milestone description	Means of verifying	For which outcomes
2018	National regulators of variety release and seed supply provide enabling environment to speed up release of improved varieties and farmers' access to quality seed, in 2-3 target countries	policy change tracking	FP3-1 National regulators of crop variety release improved enabling environment to speeding-up release of improved varieties (merge with 3.5 National partners increased improved variety release)
2019	national variety release process 1-3 years shorter in 2-4 WHEAT target countries	policy change tracking	FP3-1 National regulators of crop variety release improved enabling environment to speeding-up release of improved varieties (merge with 3.5 National partners increased improved variety release)

Year	Milestone description	Means of verifying	For which outcomes
2022	national variety release process 1-3 years shorter in a further 2-3 WHEAT target countries	policy change tracking	FP3-1 National regulators of crop variety release improved enabling environment to speeding-up release of improved varieties (merge with 3.5 National partners increased improved variety release)
2017	New options, approaches piloted to fast track release of varieties, accelerated seed multiplication and dissemination	change in sustainable farmer access to improved seeds farmer uptake of seeds (vs own) Number of farmers with access to quality seeds / change in degree of commercialisation of seed sector (public, private) / change in scaling-up of new technologies and practices through Agricultural Innovation Platforms, innovation hubs	FP3-2 Extension partners (universities, national /state / provincial governments) increased access and promotion of adoption of improved varieties to farmers, and increased investment in emerging private sector circumstances (merge with: 3.8 Farmer organizations increased access and promotion of adoption of improved varieties to farmers)
2018	improved, documented understanding of specific wheat seed systems (farmer's seed commercial behavior, seed demand and marketing, economics of seed production) / 2-3 NARES identified performance gaps, capacity development needs, to identify, realize relevant cap dev interventions at apt levels	change in sustainable farmer access to improved seeds farmer uptake of seeds (vs own) Number of farmers with access to quality seeds / change in degree of commercialisation of seed sector (public, private) / change in scaling-up of new technologies and practices through Agricultural Innovation Platforms, innovation hubs	FP3-2 Extension partners (universities, national /state / provincial governments) increased access and promotion of adoption of improved varieties to farmers, and increased investment in emerging private sector circumstances (merge with: 3.8 Farmer organizations increased access and promotion of adoption of improved varieties to farmers)

Year	Milestone description	Means of verifying	For which outcomes
2020	sustainable functional seed units for early generation seed multiplication established with plus 2-3 NARS (public, private sector)	change in sustainable farmer access to improved seeds farmer uptake of seeds (vs own) Number of farmers with access to quality seeds / change in degree of commercialisation of seed sector (public, private) / change in scaling-up of new technologies and practices through Agricultural Innovation Platforms, innovation hubs	FP3-2 Extension partners (universities, national /state / provincial governments) increased access and promotion of adoption of improved varieties to farmers, and increased investment in emerging private sector circumstances (merge with: 3.8 Farmer organizations increased access and promotion of adoption of improved varieties to farmers)
2021	Based on learning from pilots, seed sector/ extension partners (all types) increase access to and farmer adoption of improved varieties	change in sustainable farmer access to improved seeds farmer uptake of seeds (vs own) Number of farmers with access to quality seeds / change in degree of commercialisation of seed sector (public, private) / change in scaling-up of new technologies and practices through Agricultural Innovation Platforms, innovation hubs	FP3-2 Extension partners (universities, national /state / provincial governments) increased access and promotion of adoption of improved varieties to farmers, and increased investment in emerging private sector circumstances (merge with: 3.8 Farmer organizations increased access and promotion of adoption of improved varieties to farmers)

Year	Milestone description	Means of verifying	For which outcomes
2022	sustainable functional seed units for early generation seed multiplication established with plus 2-3 NARS (public, private sector)	change in sustainable farmer access to improved seeds farmer uptake of seeds (vs own) Number of farmers with access to quality seeds / change in degree of commercialisation of seed sector (public, private) / change in scaling-up of new technologies and practices through Agricultural Innovation Platforms, innovation hubs	FP3-2 Extension partners (universities, national /state / provincial governments) increased access and promotion of adoption of improved varieties to farmers, and increased investment in emerging private sector circumstances (merge with: 3.8 Farmer organizations increased access and promotion of adoption of improved varieties to farmers)
2017	public or private sector seed producer investment increased in 2-3 target countries, compared to 2016	Performance of superior resistant germplasm in multi-location/year disease/pest trials	FP3-3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources
2019	broad genetic-based germplasm resistant/ tolerant to pests, diseases predicted to become worse with climate change	Performance of superior resistant germplasm in multi-location/year disease/pest trials	FP3-3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources
2020	variety adoption increases protection from post-harvest losses (e.g. mycotoxins, other) in 2-3 sites (incl value chain FP1, FP4)	Performance of superior resistant germplasm in multi-location/year disease/pest trials	FP3-3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources
2021	adoption of shorter duration varieties increases cropping intensity & diversification in 3-6 target countries/sites	Performance of superior resistant germplasm in multi-location/year disease/pest trials	FP3-3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources

Year	Milestone description	Means of verifying	For which outcomes
2022	public or private sector seed producer investment increased in further 2-3 target countries, compared to 2016	Performance of superior resistant germplasm in multi-location/year disease/pest trials	FP3-3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources
2018	greater farmer adoption of released varieties (based on CGIAR research) in specific WHEAT target countries, compared to 1994-2014 average	relase and adoption data, via national focal point network, documented in wheatatlas.org	FP3-4 Non-and -subsistence farmers adopted improved varieties
2019	sustainable seed system optimised in 2-3 countries (pilots, with scaling-out potential)	relase and adoption data, via national focal point network, documented in wheatatlas.org	FP3-4 Non-and -subsistence farmers adopted improved varieties
2020	nitrogen-use efficient varieties adopted, reducing water pollution in 3-6 target countries/sites	relase and adoption data, via national focal point network, documented in wheatatlas.org	FP3-4 Non-and -subsistence farmers adopted improved varieties
2021	faster replacement rate (farmers use same variety fewer years before replacing) in specific WHEAT target countries	relase and adoption data, via national focal point network, documented in wheatatlas.org	FP3-4 Non-and -subsistence farmers adopted improved varieties
2022	greater farmer adoption of released varieties (based on CGIAR research) in specific WHEAT target countries, compared to 1994-2014 average	relase and adoption data, via national focal point network, documented in wheatatlas.org	FP3-4 Non-and -subsistence farmers adopted improved varieties

Year	Milestone description	Means of verifying	For which outcomes
2017	All molecular markers linked to traits of agronomic importance converted onto SNP-based platforms. SNP-based low and high density genotyping hubs established	Effects of markers and genes linked to target traits in diverse genetic backgrounds rates of genetic gain by incorporating and combining new alleles (genetic studies) change in cultivar replacement rates change in income attributable to yield gain/stability, quality traits	FP3-5 Partner breeding teams improved exchange and utilization of germplasm and data
2019	fully operational, integrated network of 15 precision phenotyping platforms, germplasm exchange between NARS platforms	Effects of markers and genes linked to target traits in diverse genetic backgrounds rates of genetic gain by incorporating and combining new alleles (genetic studies) change in cultivar replacement rates change in income attributable to yield gain/stability, quality traits	FP3-5 Partner breeding teams improved exchange and utilization of germplasm and data
2020	SNP-based markers transferred to sequence based markers for genomics-assisted breeding	Effects of markers and genes linked to target traits in diverse genetic backgrounds rates of genetic gain by incorporating and combining new alleles (genetic studies) change in cultivar replacement rates change in income attributable to yield gain/stability, quality traits	FP3-5 Partner breeding teams improved exchange and utilization of germplasm and data

Year	Milestone description	Means of verifying	For which outcomes
2021	increased on-farm genetic diversity of farmer-adopted varieties in 3 key target regions	Effects of markers and genes linked to target traits in diverse genetic backgrounds rates of genetic gain by incorporating and combining new alleles (genetic studies) change in cultivar replacement rates change in income attributable to yield gain/stability, quality traits	FP3-5 Partner breeding teams improved exchange and utilization of germplasm and data
2022	increased cultivar replacement rates in 2-3 key target regions	Effects of markers and genes linked to target traits in diverse genetic backgrounds rates of genetic gain by incorporating and combining new alleles (genetic studies) change in cultivar replacement rates change in income attributable to yield gain/stability, quality traits	FP3-5 Partner breeding teams improved exchange and utilization of germplasm and data
2017	Initiate Global Pests & Diseases Observatory with user inputs, to monitor, assess races/biotypes of key diseases and pests	no of cooperators (data contributors) and users	FP3-6 Partner breeding teams increased multidisciplinary and multi-institutional collaboration (merge with: 3.3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources)

Year	Milestone description	Means of verifying	For which outcomes
2018	sustainable seed system optimised in 2-3 countries (pilots, with scaling-out potential)	no of cooperators (data contributors) and users	FP3-6 Partner breeding teams increased multidisciplinary and multi-institutional collaboration (merge with: 3.3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources)
2019	pest, disease-resistant varieties adopted and less chemicals used in 3-6 target countries/sites	no of cooperators (data contributors) and users	FP3-6 Partner breeding teams increased multidisciplinary and multi-institutional collaboration (merge with: 3.3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources)
2020	nitrogen-use efficient varieties adopted, reducing water pollution in 3-6 target countries/sites	no of cooperators (data contributors) and users	FP3-6 Partner breeding teams increased multidisciplinary and multi-institutional collaboration (merge with: 3.3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources)
2022	functional Global Pests & Diseases Observatory with user partners (geographies tbd)	no of cooperators (data contributors) and users	FP3-6 Partner breeding teams increased multidisciplinary and multi-institutional collaboration (merge with: 3.3 Partner breeding teams improved breeding processes by adopting new technologies, methodologies, genetic resources)

Year	Milestone description	Means of verifying	For which outcomes
2017	Develop wheat with enhanced healthy properties: reduce chronic diseases risk (incl high content of dietary fiber to address obesity)	With A4NH: Verify if consumption of wheat varieties with enhanced nutritional and healthy components reduces malnutrition rates, cardiovascular diseases, type 2 diabetes, cancer in CGIAR target geographies	FP3-7 Farmer organizations increased access and promotion of adoption of improved varieties to farmers (gender and other social identities as customer attributes in relation to seed diffusion interventions, including varietal promotion and replacement)
2018	Improve consumer acceptability of high flour extraction rate and whole grain flour	With A4NH: Verify if consumption of wheat varieties with enhanced nutritional and healthy components reduces malnutrition rates, cardiovascular diseases, type 2 diabetes, cancer in CGIAR target geographies	FP3-7 Farmer organizations increased access and promotion of adoption of improved varieties to farmers (gender and other social identities as customer attributes in relation to seed diffusion interventions, including varietal promotion and replacement)
2021	prebreeding lines with high iron, zinc and inulin and low phytic acid concentration, lines with high total AX and WE-AX content developed	With A4NH: Verify if consumption of wheat varieties with enhanced nutritional and healthy components reduces malnutrition rates, cardiovascular diseases, type 2 diabetes, cancer in CGIAR target geographies	FP3-7 Farmer organizations increased access and promotion of adoption of improved varieties to farmers (gender and other social identities as customer attributes in relation to seed diffusion interventions, including varietal promotion and replacement)
2022	studies conducted to understand effect of increased resistant starch on grain yield, industrial quality	With A4NH: Verify if consumption of wheat varieties with enhanced nutritional and healthy components reduces malnutrition rates, cardiovascular diseases, type 2 diabetes, cancer in CGIAR target geographies	FP3-7 Farmer organizations increased access and promotion of adoption of improved varieties to farmers (gender and other social identities as customer attributes in relation to seed diffusion interventions, including varietal promotion and replacement)

FP4 Sustainable intensification of wheat-based farming systems

PIM Table B: Flagship level: outcomes by windows of funding

2022 outcome description	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)
Donors, policy-makers (local, regional, national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products & local and regional actors (all kinds) increased promotion of SI practices and & private sector (and public sector) increased provision of services to smallholder farmers has increased their ability to adopt SI practices and products (ToC 4.6, 4.3, 4.2)	36,350,000	11	55	34	0	3,998,500	19,992,500	12,359,000	0

Actors in SI increased participation in feedback loops via monitoring, evaluation and sharing of lessons learned & increased consideration and integration of gender and social inclusion into policies, processes and practices, so that more smallholder farmers adopt and adapt SI practices and products (ToC 4.7, 4.8, 4.10)	27,270,000	11	55	34	0	2,999,700	14,998,500	9,271,800	0
Smallholder farmers increased their capacity to adopt and adapt SI practices and products (associated with crosscutting sub-IDO) whilst private sector (and public sector) increased provision of services to smallholder farmers, to increase their ability to adopt SI practices and products, so that overall, local and regional actors increased promotion of SI practices and products (ToC 4.9, 4.6, 4.3)	18,180,000	11	55	34	0	1,999,800	9,999,000	6,181,200	0

Private sector (and public sector) increased provision of services to smallholder farmers to increase their ability to adopt SI practices and products & NARS increased use of participatory approach in system research, enhanced capacity and knowledge to create awareness and develop improved technologies (ToC 4.6, 4.4)	9,090,000	11	55	34	0	999,900	4,999,500	3,090,600	0
	90,890,000					9,997,900	49,989,500	30,902,600	0

PIM Table C: Flagship level: investments by sub-IDO's

Sub-IDO	Amount needed ($)	W1+W2 (%)	W3 (%)	Bilateral (%)	Other (%)	W1+W2 (Amount)	W3 (Amount)	Bilateral (Amount)	Other (Amount)
More efficient use of inputs	18,180,000	11	55	34	0	1,999,800	9,999,000	6,181,200	0
Closed yield gaps through improved agronomic and animal husbandry practices	18,180,000	11	55	34	0	1,999,800	9,999,000	6,181,200	0
Agricultural systems diversified and intensified in ways that protect soils and water	18,180,000	11	55	34	0	1,999,800	9,999,000	6,181,200	0
Enhanced capacity to deal with climatic risks and extremes	18,180,000	11	55	34	0	1,999,800	9,999,000	6,181,200	0
Increased capacity of beneficiaries to adopt research outputs	9,085,000	11	55	34	0	999,350	4,996,750	3,088,900	0

Enhanced institutional capacity of partner research orgnaizations	9,085,000	11	55	34	0	999,350	4,996,750	3,088,900	0
	90,890,000					9,997,900	49,989,500	30,902,600	0

PIM Table D: Flagship level: annual milestones table

Year	Milestone description	Means of verifying	For which outcomes
2017	Increase resource use efficiencies (irrigation water, N, P) while maintaining high, stable yields: NW Mexico, the Indo-Gangetic Plains	change in nutrient, water & labor use	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2018	adapt precision water mgmt practices w/ use of remote, proximal sensing info	change in nutrient, water & labor use	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products
2020	Increase resource use efficiencies (irrigation water, N, P) while maintaining high, stable yields: Horn of Africa, Southern Africa	change in nutrient, water & labor use	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2018	increased adoption of combinations of SI strategies, technologies in specific target geographies compared to 2016	CRP Commissioned External Evaluation, project/donor-driven impact studies partner self-assessments	FP4-2 Actors in SI increased participation in feedback loops via monitoring, evaluation and sharing of lessons learned & increased consideration and integration of gender and social inclusion into policies, processes and practices, so that smallholder farmers adopted and adapted SI practices and products
2019	strengthened ability to synthesize and apply available knowledge related to SI oriented research methodologies (multi-criteria assessments), management practices, technologies, machinery, in 10-15 partner orgs	CRP Commissioned External Evaluation, project/donor-driven impact studies partner self-assessments	FP4-2 Actors in SI increased participation in feedback loops via monitoring, evaluation and sharing of lessons learned & increased consideration and integration of gender and social inclusion into policies, processes and practices, so that smallholder farmers adopted and adapted SI practices and products
2020	Adaptive research improves understanding of gender, youth and adoption, adaptation and scaling-up processes, with focus on market demand as trigger of innovation	CRP Commissioned External Evaluation, project/donor-driven impact studies partner self-assessments	FP4-2 Actors in SI increased participation in feedback loops via monitoring, evaluation and sharing of lessons learned & increased consideration and integration of gender and social inclusion into policies, processes and practices, so that smallholder farmers adopted and adapted SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2021	more team work and interdisciplinary research practice in 10-15 partner organisations in specific scaling-out projects	CRP Commissioned External Evaluation, project/donor-driven impact studies partner self-assessments	FP4-2 Actors in SI increased participation in feedback loops via monitoring, evaluation and sharing of lessons learned & increased consideration and integration of gender and social inclusion into policies, processes and practices, so that smallholder farmers adopted and adapted SI practices and products
2022	increased adoption of combinations of SI strategies, technologies in specific target geographies with poverty reduction impact compared to 2019	CRP Commissioned External Evaluation, project/donor-driven impact studies partner self-assessments	FP4-2 Actors in SI increased participation in feedback loops via monitoring, evaluation and sharing of lessons learned & increased consideration and integration of gender and social inclusion into policies, processes and practices, so that smallholder farmers adopted and adapted SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2017	better understand smallholder farming systems diversity and trajectories (which drive adoption) and feedback between farming systems and their operating landscapes	Farm/System scale: System health (nutrient cycling, biodiversity, biomass) Landscape scale: Land-use change Soil loss/ degradation Soil health (AFSIS) Net productivity (vegetation, biomass) Ecosystem services (biodiversity, water) Documentation review, Survey of private sector CRP Commissioned External Evaluation	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products
2018	Smart mechanization lessons learnt routinely applied in other FP4 projects	Farm/System scale: System health (nutrient cycling, biodiversity, biomass) Landscape scale: Land-use change Soil loss/ degradation Soil health (AFSIS) Net productivity (vegetation, biomass) Ecosystem services (biodiversity, water) Documentation review, Survey of private sector CRP Commissioned External Evaluation	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2019	extension of crop mgmt practices that arrest soil degradation	Farm/System scale: System health (nutrient cycling, biodiversity, biomass) Landscape scale: Land-use change Soil loss/ degradation Soil health (AFSIS) Net productivity (vegetation, biomass) Ecosystem services (biodiversity, water) Documentation review, Survey of private sector CRP Commissioned External Evaluation	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products
2020	Decision support-, mechanization and other tools, processes improve target groups' ability to seize opp's and avoid losses	Farm/System scale: System health (nutrient cycling, biodiversity, biomass) Landscape scale: Land-use change Soil loss/ degradation Soil health (AFSIS) Net productivity (vegetation, biomass) Ecosystem services (biodiversity, water) Documentation review, Survey of private sector CRP Commissioned External Evaluation	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2022	Intensified, diversified farming systems developed, with increased systems intensity, reduces pressure on land	Farm/System scale: System health (nutrient cycling, biodiversity, biomass) Landscape scale: Land-use change Soil loss/ degradation Soil health (AFSIS) Net productivity (vegetation, biomass) Ecosystem services (biodiversity, water) Documentation review, Survey of private sector CRP Commissioned External Evaluation	FP4-1 Donors, policy-makers (local, regional and national), advocacy NGOs and private sector increased investment and improved enabling environment for adoption of SI practices and products, whilst local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and & Private sector (and public sector) increased provision of services to smallholder farmers increased their ability to adopt SI practices and products
2017	water-saving benefits of farmers using most water-efficient cultivars and optimum agronomy and irrigation systems validated for 2 WHEAT target regions	change in: Food sufficiency & security - Income & Assets - Investment & ROI of (system) technology	FP4-3 Smallholder farmers increased their capacity to adopt and adapt SI practices and products (associated with crosscutting sub-IDO), based on private sector (and public sector) increased provision of services to smallholder farmers to increased their ability to adopt SI practices and products & and local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2018	optimisation of cropping systems support adaptation to climate change validated in specific WHEAT target geographies	change in: Food sufficiency & security - Income & Assets - Investment & ROI of (system) technology	FP4-3 Smallholder farmers increased their capacity to adopt and adapt SI practices and products (associated with crosscutting sub-IDO), based on private sector (and public sector) increased provision of services to smallholder farmers to increased their ability to adopt SI practices and products & and local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and products
2019	Farmers in 2 WHEAT (irrigated) target regions, using most water-efficient cultivars and optimum agronomy and irrigation systems, achieve water use efficiency of ca 450 l/ kg grain can be achieved (50% water saving over 2015)	change in: Food sufficiency & security - Income & Assets - Investment & ROI of (system) technology	FP4-3 Smallholder farmers increased their capacity to adopt and adapt SI practices and products (associated with crosscutting sub-IDO), based on private sector (and public sector) increased provision of services to smallholder farmers to increased their ability to adopt SI practices and products & and local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2021	More resilient farms and landscapes with doubled NUE reduce GHG emissions in 2-4 WHEAT target geographies	change in: Food sufficiency & security - Income & Assets - Investment & ROI of (system) technology	FP4-3 Smallholder farmers increased their capacity to adopt and adapt SI practices and products (associated with crosscutting sub-IDO), based on private sector (and public sector) increased provision of services to smallholder farmers to increased their ability to adopt SI practices and products & and local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and products
2022	Farmers in a further 2-3 WHEAT (irrigated) target regions, using most water-efficient cultivars and optimum agronomy and irrigation systems, achieve water use efficiency of ca 450 l/ kg grain can be achieved (50% water saving over 2015)	change in: Food sufficiency & security - Income & Assets - Investment & ROI of (system) technology	FP4-3 Smallholder farmers increased their capacity to adopt and adapt SI practices and products (associated with crosscutting sub-IDO), based on private sector (and public sector) increased provision of services to smallholder farmers to increased their ability to adopt SI practices and products & and local and regional actors (NGOs, farmer groups, extension agents, private sector) increased promotion of SI practices and products

Year	Milestone description	Means of verifying	For which outcomes
2017	build skills necessary to monitor soil, crop parameters (to evaluate crop management practices)	CRP Commissioned External Evaluation farmer organizations & innovation platforms: Change in degree of linkages to (private, public sector) input suppliers & output buyers	FP4-4 Private sector (and public sector) increased provision of services to smallholder farmers to increase their ability to adopt SI practices and products, supported by NARS increased use of participatory approach in system research, enhanced capacity and knowledge to create awareness and develop improved technologies
2018	better understand scaling up processes in multi-actor innovation networks, to ensure sustainability of institutional mechanisms, structures	CRP Commissioned External Evaluation farmer organizations & innovation platforms: Change in degree of linkages to (private, public sector) input suppliers & output buyers	FP4-4 Private sector (and public sector) increased provision of services to smallholder farmers to increase their ability to adopt SI practices and products, supported by NARS increased use of participatory approach in system research, enhanced capacity and knowledge to create awareness and develop improved technologies
2019	improved skills and capacities necessary to manage innovation, extension networks	CRP Commissioned External Evaluation farmer organizations & innovation platforms: Change in degree of linkages to (private, public sector) input suppliers & output buyers	FP4-4 Private sector (and public sector) increased provision of services to smallholder farmers to increase their ability to adopt SI practices and products, supported by NARS increased use of participatory approach in system research, enhanced capacity and knowledge to create awareness and develop improved technologies

Year	Milestone description	Means of verifying	For which outcomes
2020	Improved understanding of complex interaction between the enabling environment and business propositions for ICT services for scaling up, social networking	CRP Commissioned External Evaluation farmer organizations & innovation platforms: Change in degree of linkages to (private, public sector) input suppliers & output buyers	FP4-4 Private sector (and public sector) increased provision of services to smallholder farmers to increase their ability to adopt SI practices and products, supported by NARS increased use of participatory approach in system research, enhanced capacity and knowledge to create awareness and develop improved technologies