Excellence in Agronomy for Sustainable Intensification and Climate Change Adaptation (EiA)

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Proposal

September 28, 2021

Note to readers: please use the hyperlinks throughout the proposal for definitions, abbreviations, partners, references, etc.

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Summary table

Initiative name	Excellence in Agronomy for Sustainable Intensification and Climate Change Adaptation
Action Area	Resilient Agrifood Systems
Geographic scope	Global
Budget	US$ 75,000,000

1. General information

- Initiative name: **Excellence in Agronomy for Sustainable Intensification and Climate Change Adaptation**
- Primary CGIAR Action Area: **Resilient Agrifood Systems**
- Proposal Lead and Deputy: **Bernard Vanlauwe (lead), Madonna Casimero (deputy)**
- Initiative Design Team (IDT) members and affiliations: The IDT consists of two teams: A team of CGIAR focal points and the interim External Advisory Board:

    - **CGIAR focal points:**
        - Anthony Whitbread (ICRISAT, Tanzania)
        - Elke Vanda me (CGIAR, Rwanda)
        - Job Kihara (CGIAR, Kenya)
        - Kazuki Saito (CGIAR, Côte d'Ivoire)
        - Leigh Winowiecki (World Agroforestry Centre, Kenya)
        - Lisa-Maria Rebelo (CGIAR, Sri Lanka)

- Medha Devare (CGIAR, France)
- Pieter Pypers (CGIAR, Kenya)
- Tesfaye Sida (CGIAR, Ethiopia)
- Vinay Nangia (CGIAR, Morocco)
- Virender Kumar (CGIAR, Philippines)

- **Interim External Advisory Board:**
  - Achim Dobermann (International Fertilizer Association (IFA), France)
  - Andrew McDonald (Cornell University, USA)
  - Christian Witt (Bill & Melinda Gates Foundation (BMGF), USA)
  - Johan Six (Swiss Federal Institute of Technology (ETH), Switzerland)
  - Katrien Descheemaeker (Wageningen University & Research (WUR), Netherlands)
  - Martin Broadley (Rothamsted Research (RR), United Kingdom)
  - Sieglinde Snapp (Michigan State University (MSU), USA)
  - Zachary Stewart (United States Agency for International Development (USAID), USA)

2. Context

2.1 Challenge statement

Smallholder farming represents over 80% of the world's farms and produces around 50% of its food supply [1;2;3]. These farming systems are often characterized by degraded soils and/or scarce nutrients and water, low and stagnating crop yields and reduced product quality and profitability [4;5], exacerbated by climate change, low resource use efficiencies, declining soil health [6;7], and gender inequalities [8;9], all related to CGIAR Impact Areas. Smallholder farmers seasonally make critical agronomic decisions regarding crop choice, planting dates, and pest, disease, weed, soil fertility and water management, often based on subpar practices and information. The Excellence in Agronomy (EiA) Initiative focuses upon improving the ability of men and women farmers to make appropriate decisions and apply new, climate-adaptive, and gender- and youth-responsive solutions.

Traditional agronomic research increases knowledge through experiments that enhance our understanding of basic processes, but with limited connection to stakeholder demand and often based on outdated approaches. The development, deployment, and uptake of interventions also remains hampered by social, economic and institutional constraints, further confounded by adherence to conventional supply-driven scaling strategies [10;11]. As such, realization of genetic gains is also hindered by suboptimal agronomic practices [12].

In response, EiA **research objectives** are (i) To determine how agronomy research and development (R&D) can leverage advances in diagnostics, data science, geospatial analysis, remote sensing, and behavioral sciences to develop widely applicable and locally-relevant gender- and youth-responsive solutions at scale and (ii) To assess the effectiveness of the Use Case model, constructed around actual demand for agronomic solutions, and implemented through a co-creation process with demand partners, the science community, and other service providers

Appropriate application of diagnostic approaches, modern agronomic and spatial data science methods, and new digital approaches can amplify agronomic advances and accelerate impact at scale through better-targeted, site-specific advisories. However, there is also need for systematic research to understand how farmers can better use these tools, backed by targeted field research to improve crop yields, profitability and quality, resource use efficiency and soil health — and make agile decisions to minimize climate-related risks.

EiA offers a new model and research culture, seizing these opportunities to deliver agronomic gain at scale [13] by facilitating efficiencies through globalized networking and aligning R&D priorities with demands from scaling partners through context-specific Use Cases. It utilizes standardized analytics and decision support approaches in partnership with non-CGIAR Advanced Research Institutes (ARIs) and builds on Use Cases involving multi-actor partnerships. EiA's priority research themes are: (i) Sustaining soil productivity and ecosystem services; (ii) Climate change adaptation; (iii) Precision

cropping system management; and (iv) Perennial crops for livelihoods and conservation. This vision is drawn from experience gained from CGIAR Research Programs (CRPs) and projects including ACAI[1], AfricaRISING, AfSIS, CIALCA, CocoaSoils, CSISA, N2Africa, and TAMASA [14;15;16;17;18;19].

Assessment of **national and regional priorities** supports productivity improvement through efficient use of land, soil, and water resources, with a focus on reversing natural resource degradation, climate adaptation, and digital service provision [**EiA_Regional Priority_report_2021**]. EiA also aligns with priorities of **key funders** [14;20], and is responding to interests from other CGIAR Initiatives and ARIs [**EiA_Interactions_Other_Initiatives_2021; EiA_Cooperation_with_ARIs**].

2.2 Measurable 3-year (end-of-Initiative) outcomes

EiA aims to deliver agronomic gain for millions of smallholder farming households (i.e., those with less than 5 ha of land) in prioritized farming systems by 2030. Uptake of agronomic solutions at scale will generate measurable impacts on livelihoods, food and nutrition security, resource use, soil health, climate resilience, and climate change mitigation, particularly among women and young farmers.

Specific **three-year outcomes** include the following:

End-of-Initiative outcome 1: By 2024, at least 20 public and private scaling/demand partners pilot gender- and youth-responsive agronomic solutions, targeting at least one million farmers through extension, social, and/or information technology networks, and use common monitoring, evaluation, learning, and impact assessment (MELIA) approaches to report on how these solutions perform against agronomic gain key performance indicators (KPIs).

End-of-Initiative outcome 2: By 2024, at least 75% of research and scaling partners use and share common, open and FAIR data, tools, and analytics to support the co-creation of locally relevant agronomic solutions, integrating climate-smart, inclusivity, and sustainability dimensions and assessing their performance using standardized protocols.

End-of-Initiative outcome 3: By 2024, scientists from at least five non-CGIAR ARIs with complementary expertise in relevant research areas, and scientists from at least ten National Agricultural Research System (NARS) partners cooperate with EiA to fill key knowledge gaps for delivering agronomic solutions at scale through at least ten strategic R&D projects.

End-of-Initiative outcome 4: By 2024, decisions made on key aspects of an expanding agronomy-at-scale research portfolio of EiA (e.g., stage-gating decisions in relation to Use Cases) are taken collectively by CGIAR agronomists and scaling partners based on common learning and objectively obtained information on, amongst others, prioritization and progress with the delivery of agronomic gain.

2.3 Learning From Prior Evaluations and Impact Assessments

EiA builds upon the **learning experiences** of CRPs [17] and agronomy-related programs (see above) as summarized in Synthesis of Learning from a Decade of CRPs [18] and in an Abt Associates report [14]. Key recommendations of this report include: (i) Use demand-driven approaches; (ii) Commit to gender equality in research prioritization; (iii) Link with broad partner networks; (iv) Use efficient approaches for data management and knowledge sharing; (v) Include feedback processes and pathways for uptake of solutions; and (vi) Develop capacity of scaling partners. These principles are firmly embedded within EiA's pathways toward the delivery of agronomic gain[14;18;20].

EiA **draws on agronomic efforts** that led to successful recommendations and climate change adaptation [18;21;22;23] based on needs assessment of client farmers and available solutions [14;22].

[1] ACAI stands for "Africa Cassava Agronomy Initiative"; AfricaRISING for "Africa Research In Sustainable Intensification for the Next Generation"; AfSIS for 'African Soil Information System"; CIALCA for "Consortium for Improving Agriculture-based Livelihoods in Central Africa"; "CocoaSoils" for "Sustainable intensification of cocoa production through the development and dissemination of Integrated Soil Fertility Management options"; CSISA for "Cereal Systems Initiative for South Asia"; N2Africa for "Putting nitrogen fixation to work for smallholder farmers in Africa; and TAMASA for "Taking Maize Agronomy to Scale in Africa".

Demand partners are central to EiA's model, connecting farmers and researchers, and increasing innovation, scalability and return-on-investment (RoI) for R&D investment, while better serving women and youth [21;23]. Technical solutions are best offered through centralized platforms to increase efficiency, cross-learning and collaboration [24]. Using decision support tools integrating feedback loops from partners, users, and M&E systems provides EiA with pathways to institutionalize agronomic solutions into national programs and regional policies [14;18;23].

While CGIAR has invested considerably in agronomy R&D over the past decades, these efforts were largely implemented through independently managed, short-duration projects with limited incentives for exchange of data and tools, cross-learning, use of standard operational procedures, etc. EiA is planned to operate through an **EiA Global Program** directly linked to **six EiA Regional Programs**, one for each CGIAR region, with the development and delivery of solutions facilitated by EiA Regional and EiA Global hosting functions that facilitate standardization of approaches, objective decision-making and stage-gating, exchange of experiences, and agronomic gain assessment.

2.4 Priority-setting

Research prioritization within EiA is informed by the SDGs and CGIAR Impact Areas, targeting the transformation of agrifood systems using improvements in agronomic gain as entry points (Section 2.1; [13]). It is developed around **specific countries x farming system combinations**; countries provide the basis for engaging scaling partners and building capacities while systems inform agenda-setting based on biophysical conditions, crops and climate risks.

The six CGIAR regions were submitted to **three filters** [**EiA_Prioritization_of_target geographies_2021**]. The first filter addressed the **"Importance" and "Urgency"** of yield gaps, underperformance, and vulnerability of agricultural systems, following the logic of Eisenhower's Prioritization Matrix. Poverty hotspots (min 30% prevalence) were prioritized, especially in areas where intensification is needed (maximum 5 ha per household) over a significant scale (at least 500,000 ha). The justification for intensification integrates paucity of land for expanding agriculture with protection of valuable natural ecosystems. Secondly, the status of **agronomic gain** within areas retained in the first step was evaluated, including nutrient use efficiency, soil health, yield gap, and yield trends. While differences in the status of specific KPIs were large between regions, variation within regions was limited, partly related to lack of high-resolution data. Thirdly, we focused on **enabling conditions** which strongly influence agronomic transformation. Thresholds were set at four hours travel time to markets, 75% rural internet access, maximum 100 conflict-related deaths per 100,000 rural people, and an ease-of-doing-business score of at least 30 [31].

The scope of agronomic R&D space is vast and priority thematic areas were identified, based on (i) demand expressed by current and future Use Cases [**EiA_Use_Case_descriptions_2021; EiA_New_Use_Cases_2021; EiA_Letters_Support_Use_Cases**], (ii) an analysis of national and regional strategic documents [**EiA_Regional Priority_report_2021; EiA_Letters_Support_NARS**], and (iii) Expert opinion from the interim External Advisory Board members of the Initiative Design Team. The following **priority research themes** were assembled: (1) *Sustaining soil productivity and ecosystem services, focusing on site-specific nutrient management, organic resource recycling and soil health*; (2) *Climate change adaptation, emphasizing risk management, micro-irrigation and water harvesting and farm system re-design*; (3) *Precision cropping and system management, prioritizing diversification, mechanization, and weed control*; and (4) *Perennials for livelihoods and conservation, focusing on diversification of tree-based mitigation, linking intensification to conservation*. These themes are supported by theme (5) *Agile agronomy at scale, addressing decision support logic, end-user orientation, gender- and youth-responsiveness, back-end data systems, and internal efficiencies*.

The **experience of CGIAR researchers** provided the final prioritization lens, matching agronomic demand with actual CGIAR capacities. Impact is achieved in areas where public and private sector demand for agronomic services is met with the capacity to mobilize and disseminate farming solutions; and where partners are best prepared to co-develop and co-invest in scalable innovations. This exercise yielded a priority set of **10 farming systems in 23 countries** across all six regions. Actual activities, however, will be driven by opportunities for scaling agronomic solutions, identified

within the retained country x farming system combinations and operationalized through Use Cases (see section 2.6). While EiA's scope is to operate globally, initial funder priorities will direct investments in sub-Saharan Africa (through pooled funding) and South-Asia (through W3 funding).

2.5 Comparative advantage

One CGIAR is ideally positioned to conduct locally relevant research that delivers solutions addressing technological and information gaps required for impact. Strong **country presence** provides understanding of agricultural challenges and opportunities. EiA leverages across an extensive partner network with strong local knowledge. CGIAR is seen as an **"honest broker"** conducting high-quality research and enhancing public goods, facilitated by its ability to match demand for science solutions with state-of-the-art science from ARIs. In the process, CGIAR facilitates beneficial relationships between the national and international science community. Some recent studies highlight impressive returns-on-investment, including a meta-analysis of over 100 CGIAR studies indicating a median estimated benefit-cost-ratio of approximately 10:1[25].

EiA combines efforts **across CGIAR**, building on their strengths and partner networks. It fosters co-learning and common approaches for greater efficiencies, accelerating the modernization of agronomy and building capacity in state-of-the-art data science and scaling approaches. It leverages the local knowledge and long-established expertise of CGIAR, projects, and partners that align with the Initiative's priority research themes. EiA's multi-stakeholder Use Cases, currently in operation through its Incubation Phase [**EiA_Use_Case_descriptions_2021**], support above statements. The capacity and culture of One CGIAR thus facilitates cooperation between ARIs, NARS, and other private and public partners. CGIAR provides access to all components underpinning agricultural development and EiA is in the process of complementing its in-house skills with expertise available through other One CGIAR Initiatives [**EiA_Interactions_Other_Initiatives_2021**].

2.6 Participatory design process

EiA's design benefitted from both a Planning Phase [**EiA_Planning_Phase_reports**] and **Incubation Phase** [**EiA_Incubation_Phase_progress_report_2020**], which started in July 2020, and includes consultative processes that solicited opinions and viewpoints across a full range of stakeholders. These processes ensure that key design elements benefit from the collective experience and insights of relevant stakeholders. The **Initiative Development Team** (IDT) is comprised of CGIAR focal points, a core Initiative team of Work Package (WP) leaders and support staff. The IDT includes members of a consultative reference group, the independent External Advisory Board (iEAB). The iEAB is composed of eminent scientists in agronomy and related disciplines, and senior managers from major donors supporting agricultural R&D. This combination provides a sound platform for objective evaluation of key Initiative design elements, especially the research agenda and how it responds to the overall Initiative impact objective. The IDT has several thematic working groups formed around key Initiative design components and research themes.

For strengthening the Initiative design, the IDT has engaged in targeted outreach activities and accessed outputs from CGIAR Action Area teams. The June 2020 Stakeholder Consultation process, organized through **Technical Advisory Group** 2 (TAG-2), engaged over 400 stakeholders including NARS stakeholders, universities, seed companies and other global partners [26]. Stakeholder feedback confirmed the importance of the five Impact Areas and identified agronomy, climate adaptation and mitigation, breeding, capacity building and extension, as well as food systems improvements as topics that CGIAR Initiatives should prioritize within their unfolding research agendas. EiA embraced these insights and further validated them by conducting surveys with representative **NARS partners** [**EiA_Survey_NARS_2021**] to fine tune the demand for agronomic intervention. These insights have contributed the development of EiA's WPs (Section 3.2).

The **Use Case model** is by its nature the product of a co-creation process. Use Cases are developed from expressed demand by private or public sector partners reliant upon agronomic solutions. Ideas are generated through systematic demand mapping and applied within target regions. The co-creation

approach is underpinned by deliberate due diligence assessments and soliciting feedback from across CGIAR before the partnership configuration within a Use Case is completed. Once agreed, the parties (CGIAR, EiA Core Team, and external scaling partners) develop a concept for a minimum viable product (MVP) and a term sheet governing the proposed interactions. When a Use Case is finally approved, it will have passed through an elaborate consultative process, thereby ensuring maximum synergistic potential is achieved [**EiA_Due_diligence_process_2021**]. This participatory design approach is embedded within the core instrument of the Initiative, our combined Use Cases. This approach recognizes that effective collaboration platforms are essential before meaningful impacts can occur, and links them to state-of-the-art advances in agronomy and climate action.

Prioritization of strategic R&D relied on inputs from across CGIAR and ARIs, facilitated through specific **Working Groups**, with engagement of ARI scientists, focused upon thematic research priorities as per the Working Group concept papers [**EiA_Working_Group_Concept_papers_2021**]. EiA is currently engaging with other **Global Initiatives and the Regional Integrated Initiatives** that align to the objectives of EiA, aiming at having specific plans for cooperation finalized by the end of 2021 [**EiA_Interactions_Other_Initiatives_2021**].

2.7 Projection of benefits

The projections below transparently estimate reasonable orders of magnitude for impacts which could arise as a result of the impact pathways set out in the Initiative's theories of change. Initiatives contribute to these impact pathways, along with other partners and stakeholders.

For each Impact Area, projections consider breadth (numbers reached), depth (expected intensity of effect per unit) and probability (a qualitative judgement reflecting the overall degree of certainty or uncertainty that the impact pathway will lead to the projected order of magnitude of impact).

Projections will be updated during delivery to help inform iterative, evidence-driven, dynamic management by Initiatives as they maximize their potential contribution to impact. Projected benefits are not delivery targets, as impact lies beyond CGIAR's sphere of control or influence.

The projected benefits have been estimated based on the following logic:

- The impact targets of the Use Cases are the impact targets of EiA for the current set of 10 Use Cases [**EiA_Use_Case_descriptions_2021**].
- Impact targets of the Use Cases are the impact targets of EiA for the current set of 10 Use Cases [**EiA_Use_Case_descriptions_2021**].
- EiA expects to activate another 10 Use Cases in the first business cycle, 15 in the second, and 20 in the third, totaling 55 Use Cases by 2030. The median impact targets of the current Use Cases have been applied for upcoming Use Cases, and the reduced time to deliver impacts has been integrated in the calculations.
- The solutions targeted in the Use Cases always address yield, income, and climate adaptation, and are explicit about gender and youth.
- While a single depth category is currently used, through farmer segmentation of the Use Cases, a systematic depth assessment will help to identify heterogeneous effects associated with adoption of agronomic solutions among different farmer groups.
- We anticipate synergies with other Initiatives as per our theory of change (TOC). We have not assumed additional impact from these synergies in this set of projections, to ensure these are conservative and to avoid double counting of beneficiaries between Initiatives. We will be further developing the synergies and factoring these into future projections during the inception period

Impact Areas	Indicator	Breadth: Cumulative by 2030	Depth	Probability
Nutrition, health and food security	# of people benefiting from relevant CGIAR innovations	55.6 M people (or 9.3 M households)	Significant: 100% of annual income or 10% permanent impact on income	High certainty: 50%–80% expectation of achieving these impacts by 2030, at this point
Poverty reduction, livelihoods and jobs	# of poor people benefiting from relevant CGIAR innovations	14 M people (or 2.3 M households)	Significant: 100% of annual income or 10% permanent impact on income	High certainty: 50%–80% expectation of achieving these impacts by 2030, at this point
Gender, youth and social inclusion	# of women benefiting from relevant CGIAR innovations	22.2 M women	Gender responsive: The different needs of men and women are identified and differentially met	High certainty: 50%–80% expectation of achieving these impacts by 2030, at this point
	# of youth benefiting from relevant CGIAR innovations	0.1 M youth (to be reached directly through digital service provision)	Substantial: 500% of annual income or 50% permanent impact on income	High certainty: 50%–80% expectation of achieving these impacts by 2030, at this point
		10.5 M youth (to be reached through their families)	Significant: 100% of annual income or 10% permanent impact on income	Medium certainty: 30%–50% expectation of achieving these impacts by 2030, at this point
Climate adaptation and mitigation,	# of people benefiting from climate-adapted innovations	55.6 M people (or 9.3 M households)	Significant: 100% of annual income or 10% permanent impact on income	Medium certainty: 30%–50% expectation of achieving these impacts by 2030, at this point
Environmental health and biodiversity	# of ha under improved management	4.6 M ha	Substantial: Improved management delivers improvements in soil health and fertility	High certainty: 50%–80% expectation of achieving these impacts by 2030, at this point
	# of Tg nitrogen application	0.5 M tons nitrogen	Substantial: Million tons of nitrogen under improved management (i.e., leading to a reduction in environmental harms)	High certainty: 50%–80% expectation of achieving these impacts by 2030, at this point

1. Nutrition, health and food security - # of people benefiting from relevant CGIAR innovations

We project that the nutrition, health, and food security of about 55.6 million people will improve significantly (i.e., equivalent to 100% of annual income or 10% permanent impact on income) and with high certainty (i.e., 50%–80% expectation of achieving these impacts by 2030). This is based on project experiences (e.g., ACAI, CIALCA) and empirical evidence on both reach and per-person effects resulting from adoption of improved agronomic practices [**EiA_Projected_Benefits_2021**]. Work with Use Case scaling partners will help achieve projections, by increasing reach for new and diversified cropping system models and agronomic solutions that improve yield by at least 50%, and contribute to yield stability by reducing the risk of underperforming agronomic solutions by at least 25% and through "agronomic fortification" for better food quality, yield and income for some

beneficiaries. Evidence on the income effects of adoption of improved agronomic practices, including climate-smart agricultural practices, ranges from about 40% income gain in Ethiopia [27] to 53% in Malawi [28], and 29–66% in Zambia [29;30]. A doubling of income (100% gain) is projected for the Central African Great Lakes region (i.e., Rwanda, DR Congo, Burundi) [21].

2. Poverty reduction, livelihoods and jobs - # of poor people benefiting from relevant CGIAR innovations

By enabling poor smallholder households to achieve higher yields as a critical step towards more viable incomes, adoption of improved agronomic practices is expected to benefit 14 million poor people by 2030 [EiA_Projected_Benefits_2021]. The number of poor benefiting from use of the improved agronomic practices promoted by EiA was estimated by multiplying the projected number of beneficiaries for the Use Cases in the EiA target regions by the headcount poverty rate from the World Development Indicators [31] Given the yield and income increases associated with adoption of improved agronomic practices, EiA is expected to generate significant benefits (i.e., equivalent to 100% of annual income or 10% permanent impact on income) with high certainty (i.e., 50%–80% expectation of achieving these impacts by 2030). Several studies showed substantial adoption and impacts of improved agronomic practices among poor households in D.R. Congo, Rwanda, and Burundi [21]; Zambia [29;30]; and Malawi [28]. Experience with ACAI [32] project also demonstrated that digital extension services and the Use Case model can significantly increase adoption and benefits of improved agronomic practices.

3. Gender, youth and social inclusion - # of women benefiting from relevant CGIAR innovations

Given its emphasis on women, it is projected that the EiA Initiative will benefit at least 22 million women by delivering gender-responsive agronomic solutions to smallholder farmers via demand-driven Use Cases in prioritized regions [EiA_Projected_Benefits_2021]. EiA's emphasis on gender and generation-equal outcomes in agronomy, the share of women in the total rural population in EiA target regions (estimated to be 49.7%) and EiA's plan to ensure that at least 40% of the target beneficiaries are women was used to project the number of women benefiting from adopting improved agronomic solutions. The Initiative will have a gender-responsive impact with high certainty (i.e., 50%–80% expectation of achieving these impacts by 2030), with the needs of men and women identified and differentially met. This will be achieved through the Use Case model that addresses underlying causes of gender inequalities in agronomy and combines gender transformative approaches with agronomic solutions. This is consistent with findings from gender-differentiated approaches [33] reporting that adoption of climate-smart agricultural practices has positive nutritional effects among both male- and female-headed rural households in the Blue Nile basin in Ethiopia.

3. Gender, youth and social inclusion - # of youth benefiting from relevant CGIAR innovations

Improved agronomic practices promoted by the EiA Initiative are projected to benefit about 10.6 million youth by 2030 [EiA_Projected_Benefits_2021]. This comprises both direct beneficiaries (100,000 youth) as providers of digital services, particularly in extension and digital agronomic decision support tools, thereby creating job and income generating activities, and indirect beneficiaries (10.5 million) who are members of the households adopting improved agronomic practices. The number of youth beneficiaries was estimated by multiplying the projected number of people benefitting from CGIAR innovations by the share of youth (15–24 years of age) from the total rural population in the countries with Use Cases in the EiA target regions (estimated to be 19%). About 100,000 youth are expected to benefit substantially (i.e., 500% of annual income or 50% permanent impact on income) and with high certainty (i.e., 50%–80% expectation of achievement), whereas 10.5 million youth are expected to benefit significantly (i.e., equivalent to 100% of annual income or 10% permanent impact on income) and with medium certainty (i.e., 30%–50% expectation of achievement). The medium certainty of achievement is due to lower certainty about whether and to what extent the youth will benefit indirectly as members of households adopting improved agronomic practices.

4. Climate adaptation and mitigation- # of people benefiting from climate-adapted innovations

The number of people benefiting from climate-adapted innovations was derived from the number of farmers reached through the Use Cases that promote climate-smart agricultural practices based on the projected adoption rate [**EiA_Projected_Benefits_2021**]. Given that agronomy solutions promoted by all Use Cases are climate-smart, the number of people benefiting from climate-adapted innovations is the same as those adopting improved agronomic practices. We project that the adaptive capacity of about 55.6 million people will be improved significantly (i.e., equivalent to 100% of annual income or 10% permanent impact on income), but with medium certainty (i.e., 30%–50% expectation of achievement) because the effect of climate change adaptation is less visible in the shorter term. The target set out by EiA is to reduce climate-related yield losses by an average 25%. This is backed by evidence that conservation agriculture (CA) in Zambia could reduce probability of yield losses in environments with increased weather risk [34;35]. Similarly, investigators [36] reported that adoption of sustainable intensification practices in Malawi increased the probability of food sufficiency from 12% to 96% and increased the proportion of years without crop failure from 62% to 88%.

5. Environmental health and biodiversity - # of ha under improved management

Improved agronomic practices are expected to be adopted on about 4.6 million ha (representing 30% of EiA's target farmers) by 2030. This is estimated using adoption rates of improved agronomic practices using a logistic adoption function and multiplying the number of farmers targeted by Use Cases by the adoption rate [**EiA_Projected_Benefits_2021**]. Available evidence suggests that adoption of agronomic solutions which increase resource (nutrient, water, and/or labor) use efficiencies by at least 25% over 4.6 million ha of cropland is expected to have a substantial impact (i.e., improved soil health and fertility and enhanced ecosystem services) which will be achieved with high certainty (i.e., 50%–80% expectation of achieving these impacts by 2030). For example, a study in Malawi [36] shows that sustainable intensification practices (maize-pigeon pea intercropping and doubled-up legume rotation of pigeon pea-groundnut with maize) substantially increased the partial factor productivity of nitrogen (N) and also led to modest gains in soil organic carbon. Greenhouse gas emissions from plots with consistent Conservation Agriculture (CA) practices were also lowered, with about 0.6 g CO_2 m^{-2} h^{-1} emitted compared with 0.9 for conventional tillage plots [37;38].

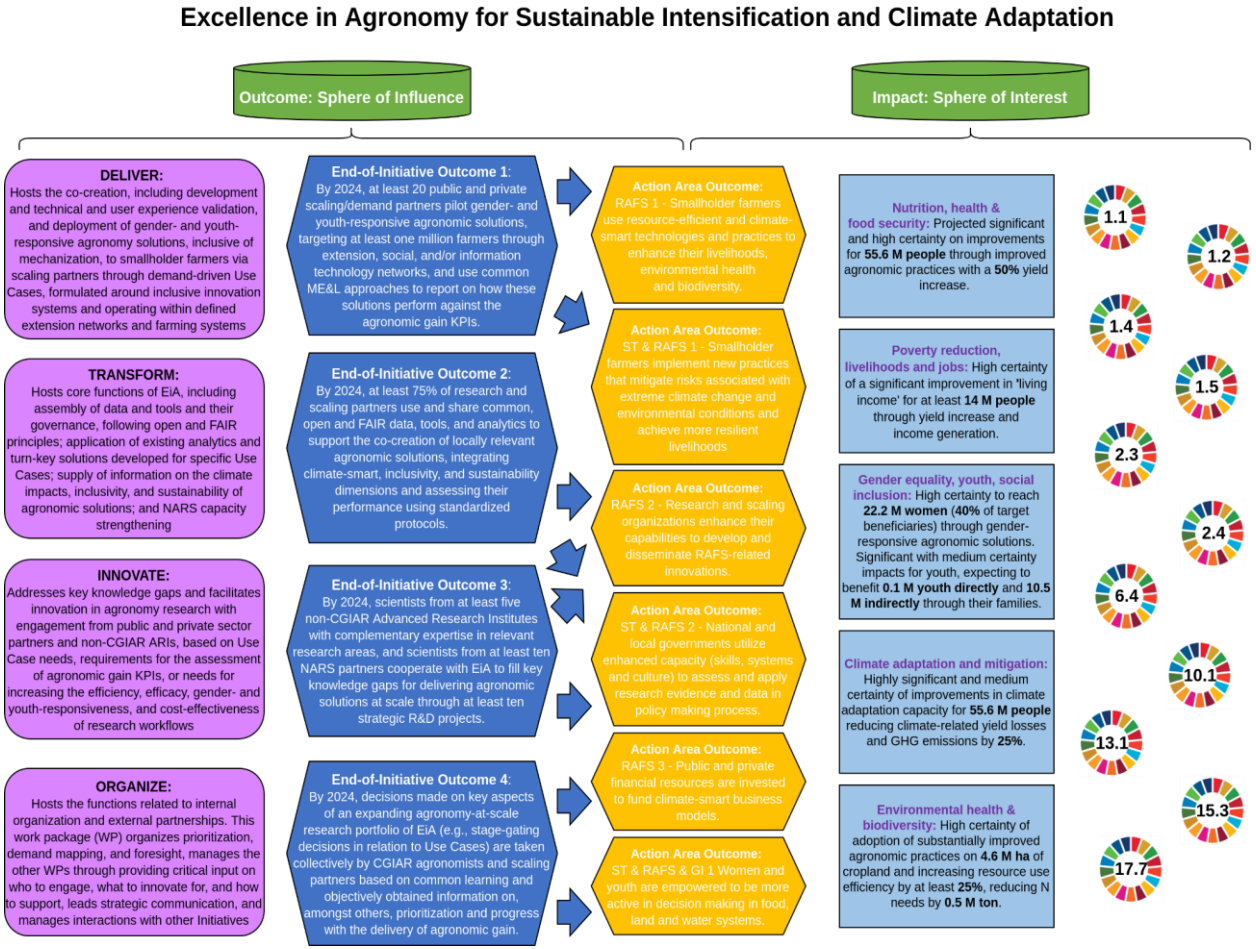
5. Environmental health and biodiversity - # of Tg nitrogen application

The benefits in terms of number Tg N applications were projected based on the TOC of the Initiative which aims to increase N agronomic efficiency (NAE, or kg of grain obtained per kg of N) by at least 25% while increasing yield by about 50% [**EiA_Projected_Benefits_2021**]. This gain is achieved through the addition of less N than would be the case at current NAE levels. Thus, achieving a 50% yield increase will require increasing N application in most EiA target areas, particularly in Africa, but at lower application rates than would be required with current NAE levels. Higher NAE translates to reduction in additional N application to achieve EiA's target of 50% yield increase. Our projection shows that by 2030, about 0.5 million tons of N will be saved. This is expected to provide substantial benefits (i.e., millions of tons of N under improved management, which leads to substantial reduction in environmental damage from chemical fertilizers) with high certainty (i.e., 50%–80% expectation of achieving these impacts by 2030).

3. Research plans and associated theories of change (TOCs)

3.1 Full Initiative TOC

3.1.1 Full Initiative TOC diagram



3.1.2 Full Initiative TOC narrative

EiA builds on progress made through the EiA Planning [**EiA_Planning_Phase_reports**] and Incubation Phase (2020-2022) [**EiA_Incubation_Phase_progress_report_2020**]. EiA's WP structure is based on a set of **interlinked functions** that guide the development and delivery of agronomy-at-scale solutions rather than on specific research themes. After all, EiA's portfolio is **driven by demand** from private and public scaling partners who actively engage with large numbers of farmers rather than by a "supply-driven", thematic research agenda (Section 2.4). The Modules of the EiA Planning Phase were thus used as the basis for formulating the WPs [**EiA_Modules_turned_Work_packages**] while **Communities of Practice** (CoPs) organized around EiA's priority research themes will guide a thematically balanced research portfolio.

The **ORGANIZE** WP prioritizes target areas and systems, promotes EiA as a primary resource for agronomy R&D, identifies opportunities for EiA to focus its research, leads the ex-ante impact assessments of these opportunities, and assesses progress against the agronomic gain KPIs. Opportunities for impact at scale are moved to the **DELIVER** WP that operationalizes Use Cases for the development and delivery of bespoke agronomic solutions.

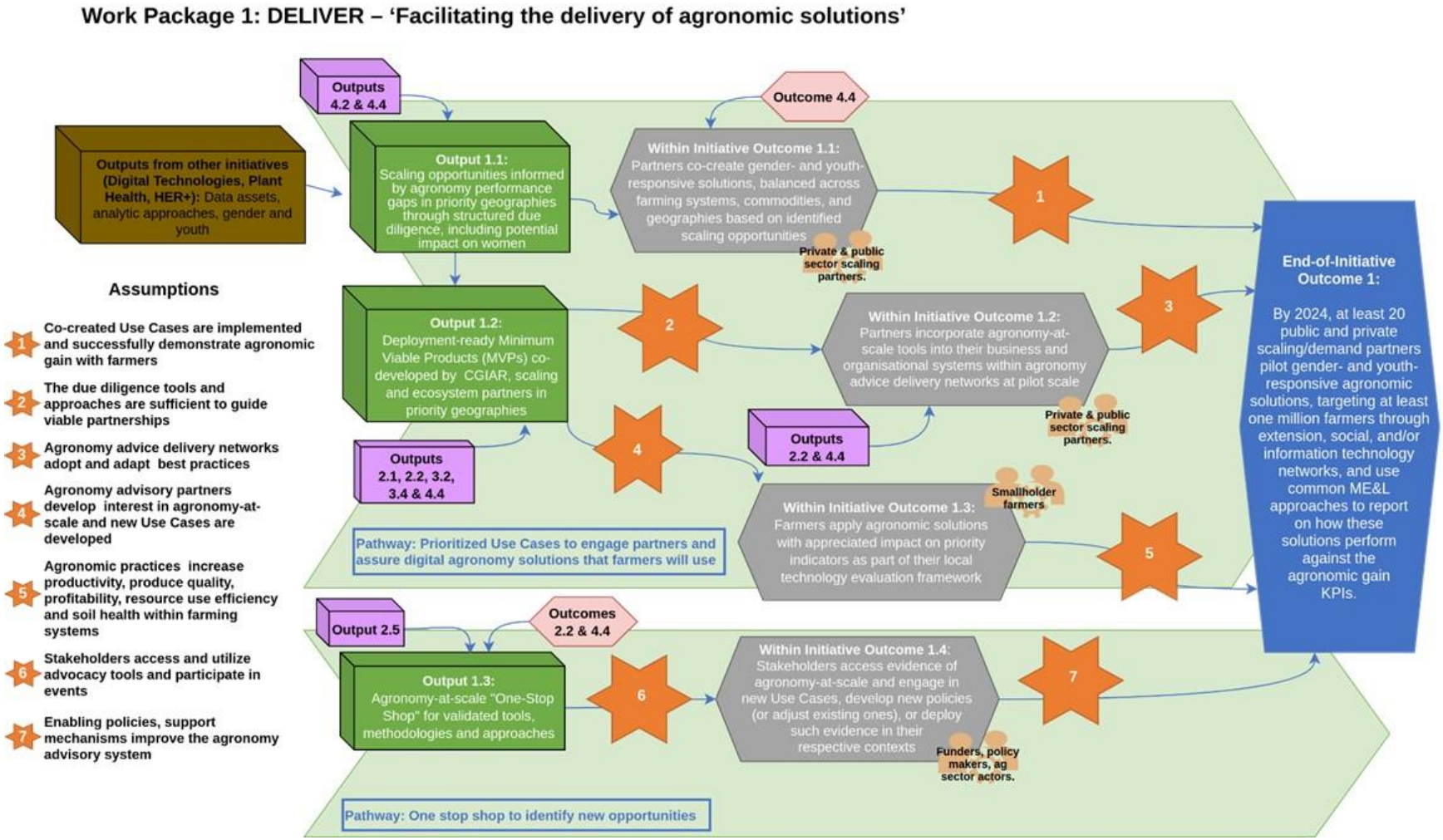
All Use Cases utilize a generic **7-step workflow** to design, validate, and pilot solutions, building strongly on data, analytics, and decision support logic from the **TRANSFORM** WP [**EiA_Use_Cases_Generic_Workflow**]. TRANSFORM also turns piloted solutions into turnkey solutions for other interested partners. This WP hosts capacity development activities to facilitate use of TRANSFORM products by NARES and other public and private science partners. This WP hosts capacity development activities to ensure access to TRANSFORM products by NARS and other public and private science partners. When key data or tools are lacking, the **INNOVATE** WP sets up strategic R&D projects to address such gaps. INNOVATE also supports R&D for other EiA functions (e.g., agronomic gain assessment) and engages with high-risk but potentially high-return R&D, in partnership with ARIs. Communities of Practices will grow into a critical mass of stakeholders working on and benefitting from EiA's priority research themes (see Section 2.4). While TRANSFORM and INNOVATE host most of the functions of **EiA Global**, DELIVER will be core to the **EiA Regional** Programs and ORGANZE will facilitate interactions between both EiA dimensions.

The **end-of-Initiative outcomes** reflect the dimensions required for an efficient and effective agronomy-at-scale Initiative, including (i) Inclusive partnerships aligned along gender- and youth-responsive agronomic solutions, supported by effective decision-making and MELIA tools (end-of-Initiative outcome 1); (ii) Standardized, open, and FAIR data and analytics, supported by effective data governance (end-of-Initiative outcome 2); (iii) State-of-the-art science with direct engagement of ARIs and empowered NARS (end-of-Initiative outcome 3); and (iv) Objective decision-making on which agronomy R&D to implement where, with whom, and why, based on systematic demand mapping (end-of-Initiative outcome 4).

These outcomes contribute to the delivery of the **Resilient Agrifood Systems outcomes** and the five CGIAR Impact Areas, as detailed in section 2.7, and to a diverse set of Sustainable Development Goals. Assumptions underlying contributions to the RAFS outcomes are integrated in the various WP TOCs, as detailed below. EiA is engaging with a number of **other Initiatives** [**EiA_Interactions_with_other_Initiatives_2021**] and discussions with these and other Initiatives will be finalized before the end of 2021.

3.2 Work Package TOCs

3.2.1 Sketch of the DELIVER Work Package



3.2.2 Work Package DELIVER research plans and TOCs

Work Package 1	**DELIVER – "*Facilitating the delivery of agronomic solutions*"**
Work Package main focus and prioritization (max 100 words)	DELIVER hosts the co-creation, including development and technical and user experience validation, and deployment of gender- and youth-responsive agronomic solutions to smallholder farmers via scaling partners through demand-driven Use Cases, formulated around inclusive innovation systems and operating within defined extension networks and farming systems.
Work Package geographic scope	*Global*

The science

The DELIVER WP Research Questions are aligned to the first research objective (Section 2.1) and focus on providing evidence on how to better connect user demands with a set of delivery and partnership mechanisms that increase agronomic gains for women, men, and youth farmers, including their capacity to participate in meaningful climate actions. Regarding **Question 1.1,** "*To what extent does the Use Case approach improve the way science and scaling partners interact towards the development of agronomic solutions?",* we will use a participatory approach to collect information [39] using reflection workshops and semi-structured interviews with Use Case teams. We will assess how different stakeholders feel the approach has influenced interactions between science and delivery towards enabling the delivery of gender- and youth-responsive agronomic solutions.

For **Question 1.2,** *"What is the impact of integrating gender transformative approaches (GTA) in Use Case workflows on women's empowerment and on productivity, profitability, and resilience?",* previous CGIAR studies show that integrating GTAs in agricultural interventions can generate improved development outcomes [40;41]. A randomized controlled trial (RCT) will be initiated with "treatment" households receiving GTA activities within a selected set of Use Cases. The specifics of the RCT will be determined together with Use Case teams and the Standing Panel on Impact Assessment (SPIA) with more details given in Section 6.3.

Regarding **Question 1.3,** "*Do climate change adaptation-focused solutions generate consistent and sufficient short-term benefits to retain smallholder farmers" interest?"*, a combination of quantitative (observations/trials, modelling) and qualitative (perceptions, choices, willingness) methods will be used. Field observations will be complemented with crop modelling in which different weather scenarios (late season start, dry spells, etc.) can be included, allowing the quantification of climate adaptation benefits. An analysis of farmers' perceptions on the impact of climate variability and change and the potential adaptation benefits of agronomic solutions will generate qualitative insights.

Regarding **Question 1.4**, *"What role can incentives and gamification play in encouraging farmers to adopt tailored digital agronomic advice?*", designing effective incentive mechanisms is crucial to facilitate adoption rates of agronomic solutions [42]. An RCT approach will be used to identify causal relationships between incentive mechanisms and adoption agronomic solutions, followed by quantitative assessment of the impact of incentives on the uptake of solutions and agronomic gain. The specifics of the RCT will be determined together with Use Case teams and the Standing Panel on Impact Assessment (SPIA) with more details given in Section 6.3.

The theory of change

The DELIVER end-of-Initiative (EoI) outcome is driven by effective relationships with at least 20 public and private sector scaling partners who will collaborate with EiA to deliver impacts to at least 1 million smallholder farmers through the co-creation of gender- and youth-responsive agronomic solutions.

Outputs and outcomes will be achieved through Clusters of Activities (CoAs) [**EiA_Work_Packages_Clusters_of_Activity_2021**] aligned to two key areas aiming at delivering the EoI Outcomes: (i) Identification of scaling opportunities (Output 1.1) and specific agronomic needs (Output 1.2), resulting in a portfolio of Use Cases in operation (Outcome 1.1), scaling partners integrating solutions in their respective advisory systems (Outcome 1.2), and large numbers of farmers practicing improved agronomy (Outcome 1.3) and (ii) Promoting EiA through a "One-stop-

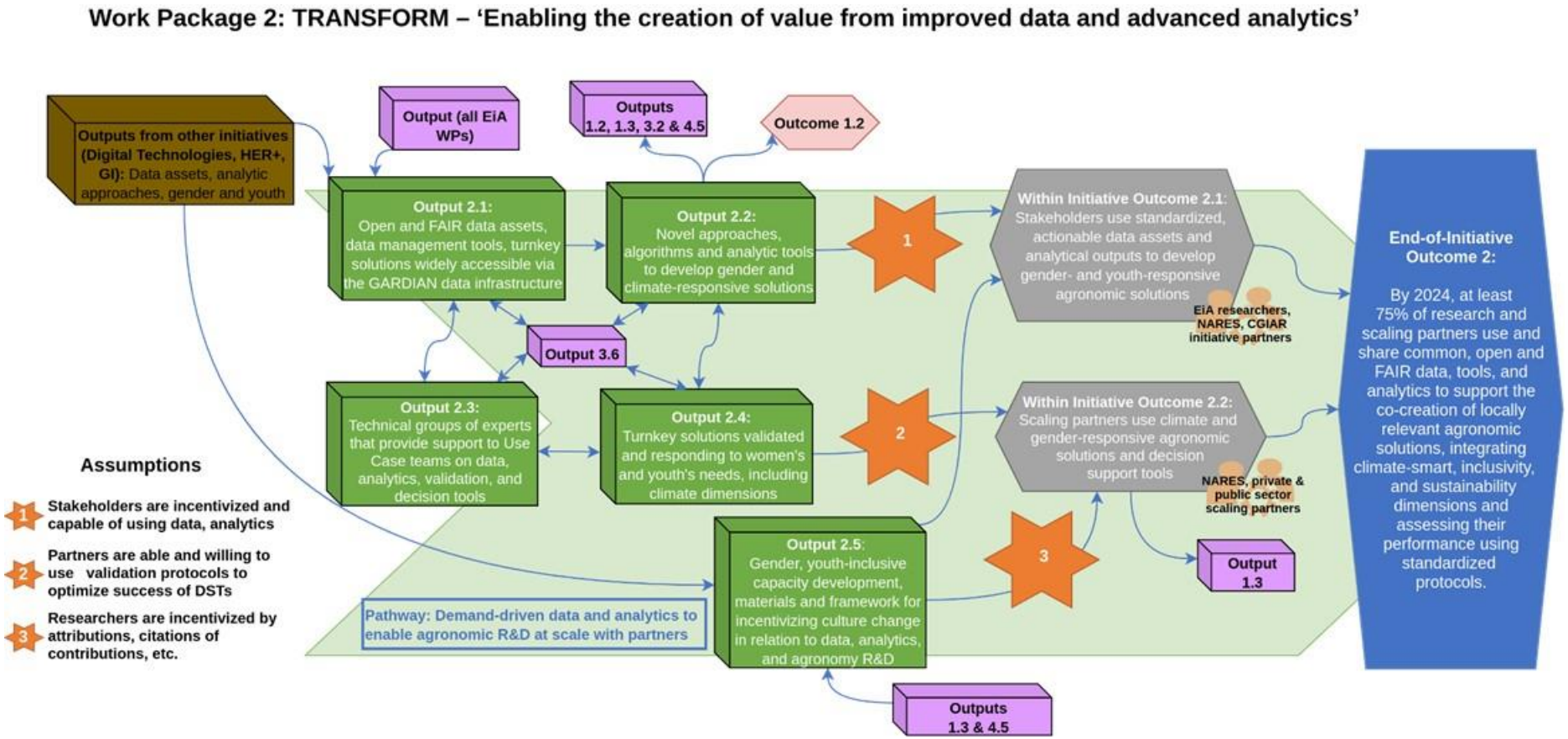
shop" for agronomy advice (Output 1.3), resulting in an expanding portfolio of opportunities and Use Cases (Outcome 1.4). Use Cases will from a pipeline of projects of 3-4 years, informed by stage-gate decisions on progress made against the delivery of the agronomy-at-scale solutions. Handing over solutions to demand partners will thus free up time for the EiA teams to engage in new Use Cases formulated around new agronomic challenges.

Use Cases will be aligned to EiA priority research themes: (1) Sustaining soil health and crop productivity and ecosystem services, focusing on site-specific nutrient management, organic matter recycling, and agronomic fortification; (2) Climate change adaptation, focusing on time of planting management, micro-irrigation and water harvesting, risk reduction, and system re-design; (3) Precision cropping system management solutions, focusing on diversification, mechanization, and weed control; and (4) Perennials for livelihoods and conservation, focusing on tree-based systems, greenhouse gas balances, and linking intensification to conservation. EiA's Incubation Phase already has 10 active Use Cases [**EiA_Use_Case_descriptions_2021**] and an additional set of at least 10 Use Cases will be activated during the 1st business cycle [**EiA_New_Use_Cases_2021**].

Each Use Case is assessed for scaling readiness to ensure that Core Innovations are accompanied with associated complementary innovations and inclusive partnerships. The identification of MVPs will be informed by yield gap analyses and farmer segmentation, and all MVPs will be climate-smart and gender- and youth-responsive. Assumptions underlying the identification and delivery of gender- and youth-responsive agronomic solutions are related to the effectiveness of the Use Case model, the appropriateness of solutions in terms of visible and reliable benefits and the willingness of scaling partners to engage in co-creation processes. Specific MELIA studies are planned to address these assumptions (Section 6.3). One-stop-shops will promote EiA solutions to interested parties through, amongst others, advocacy and engagement in agricultural events. The main partners will be public and private partners leading agricultural development Initiatives with agronomy as a key component. A major assumption is continued investments in agronomic solutions.

The DELIVER WP will utilize the prioritization of cropping systems and geographic regions by the ORGANIZE WP (Outputs 4.2 and 4.5). Furthermore, the TRANSFORM WP Outputs 2.2 and 2.4 will be utilized in the formulation and deployment of MVPs within Use Cases. Outputs related to capacity development from the TRANSFORM WP will enable the implementation of gender-transformative strategies by Use Cases. The DELIVER WP will rely on Outputs of other CGIAR Initiatives, namely the *Digital Technologies,* the *HER+,* and *Plant Health*, noting that discussions are on-going with others [**EiA_Interactions_Other_Initiatives_2021**].

3.2.3 Sketch of the TRANSFORM Work Package



3.2.4 Work Package TRANSFORM research plans and TOCs

Work Package 2	**TRANSFORM – *"Enabling the creation of value from big data and advanced analytics"***
Work Package main focus and prioritization (max 100 words)	TRANSFORM hosts core functions of EiA, including assembly of data and tools and their governance, following open and FAIR principles; application of existing analytics and turn-key solutions developed for specific Use Cases; supply of information on the climate impacts, inclusivity, and sustainability of agronomic solutions; and NARS capacity strengthening.
Work Package geographic scope	*Global*

The science

TRANSFORM Research Questions are aligned to the second research objective (Section 2.1) and focus on understanding how standardized data and advanced analytics can be deployed to increase the efficiency of solution development processes, and the accompanying incentives required to facilitate the engagement of partners with FAIR and open data processes.

Addressing **Question 2.1,** *"Do improved data management and advanced analytics workflows facilitate development and scaling of solutions for agronomic gain?*", involves assuring that common approaches developed for standardized data and analytics pipelines facilitate the development of agronomic solutions by focusing on enabling the creation and use of open and FAIR data and data collection tools, and their use in data-to-decision support built on spatially explicit models, machine learning and crop modeling. Measures of success include increases in the proportion of standards-compliant datasets. Statistics on use and collaborative development of TRANSFORM's data and analytics solutions represent another indicator of success. TRANSFORM is expected to increase efficiencies in developing analytics, and success will again be determined by usage and by qualitative indicators such as time to build and implement turnkey solutions assessed via focus groups and interviews. The success of TRANSFORM's validation protocol will be evaluated by assessing its use by CGIAR and other partners. Key deliverables for this question include standardized datasets around expressed needs (e.g., fertilizer management), a collaborative FAIR data-to-analytics infrastructure, and a generalizable protocol to validate field recommendations. TRANSFORM will also develop a technical solution to facilitate and incentivize proper handling and analysis of gender-related and other sensitive data that may pose institutional risk with respect to personally identifiable information.

Recognizing that improved data science capacity and culture is a core driver for CGIAR and NARS to realize the benefits of agronomy R&D at scale, **Question 2.2** of TRANSFORM asks: "*How can capacity development and culture change incentivize data-driven agronomy for the benefit of women as well as men?*" Determining success will involve assessing if TRANSFORM interventions on capacity and culture change have changed how researchers practice agronomy at scale. Approaches to do this involve evaluating researchers' current Knowledge, Attitudes, Skills, and Habits (KASH) [43] disaggregated by gender and youth indicators. Baseline assessments via surveys and interviews will be compared with those at Initiative-end. KASH are expected to move towards data-intensive agronomy R&D, incentivized by TRANSFORM deliverables responding to mapped demand. These include user-friendly analytics and tools contributing to FAIR data assets and reusable data collections, training to address data management and data science needs, information materials in various formats, and high-impact papers underpinned by collaboratively developed data products and analyses. Other measures to gauge efficacy of capacity interventions will also be employed, such as gender and age-disaggregated participation in trainings, usage of support materials, and culture change-attributable agronomic gains. In this way TRANSFORM will address technical and cultural aspects involved in transforming agronomic R&D.

The theory of change

TRANSFORM's EoI outcome positively affects science and development partners accessing and using its data and tools to accelerate agronomic innovation and solutions. This outcome anticipates scaling and demand articulation via Use Cases and farming communities and looks to NARS and ARI

scientists and private sector for demand, scaling and technical innovation. TRANSFORM will engage across EiA WPs, and with the *Harnessing Digital Technologies, HER+, and Genetic Innovation* Initiatives while discussions are ongoing with others [**EiA_Interactions_Other_Initiatives_2021**].

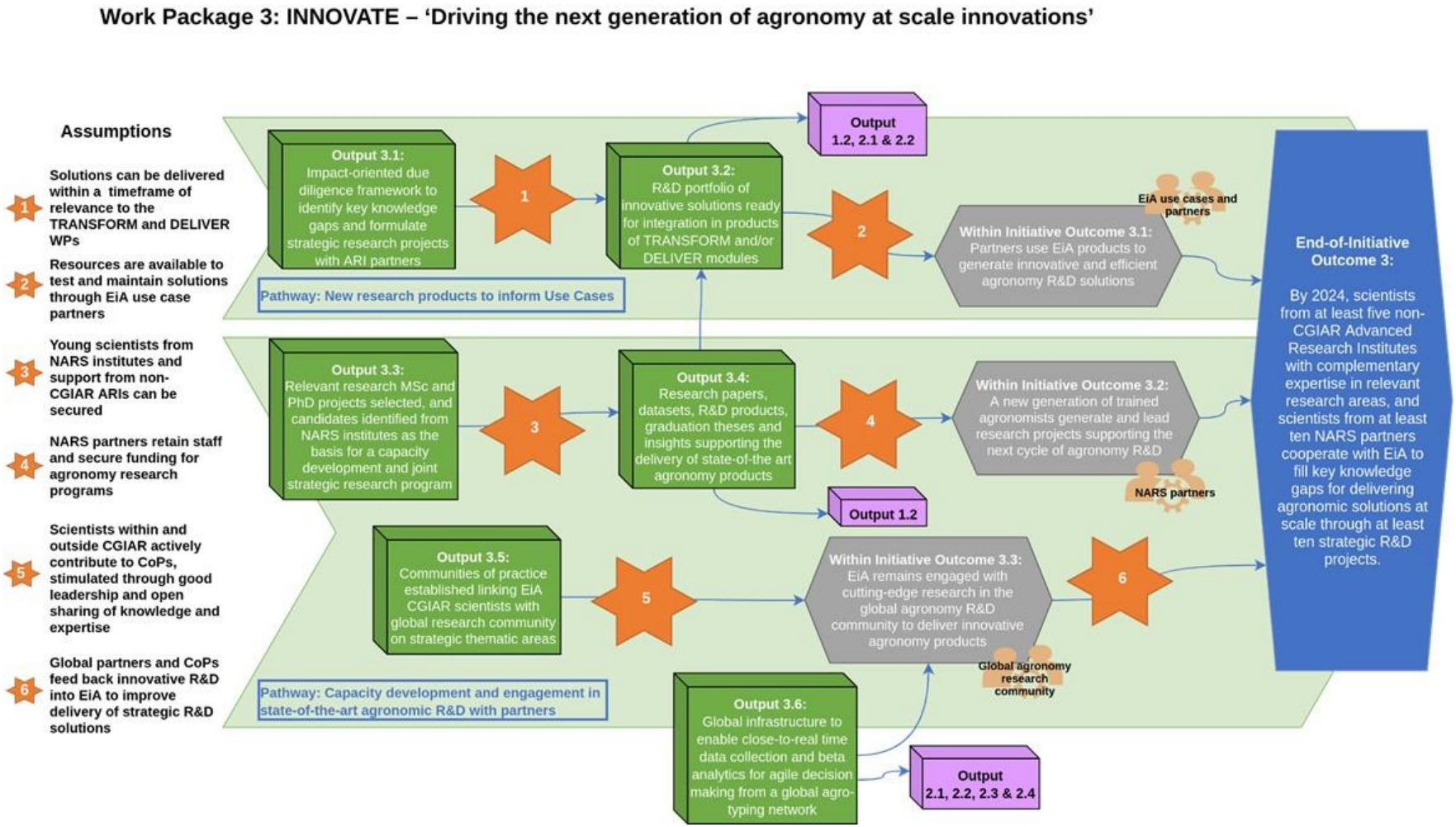
Outputs delivered through CoA's [**EiA_Work_Packages_Clusters_of_Activity_2021**] will address: (i) Development of infrastructure to host data and analytical tools (Outputs 2.1 and 2.2) resulting in this infrastructure being widely used by the agronomy R&D community (Outcome 2.1); (ii) Activation of Use Case support groups (Output 2.3), contributing to Outcome 2.1 and scaling partners using such tools with their constituencies (Outcome 2.2); (iii) Development of protocols and decision support tools for agronomy-at-scale services (Output 2.4), resulting in Outcome 2.2; and (iv) Incentivization of the use of these Outputs (Output 2.5), resulting in open and FAIR data standards, analytics, and decision logic used by agronomy R&D stakeholders (Outcomes 2.1 and 2.2).

Data and analytical infrastructure outputs will build on other EiA outputs and CGIAR Initiative outputs, including from *Digital Technologies*, HER+ and *Genetic Innovation* Initiatives focused on farmer-preferred varieties and delivering genetic gains. TRANSFORM-mediated semantic standards and standards-based data collection will ease the processing of high-value data. The GARDIAN [44] data and analytics infrastructure will be enhanced, facilitating human and machine-interpretable data, and data and analytics-dependencies in other WPs (see Outputs 1.2, 1.3, 3.2, 3.7, and 4.5; Outcome 1.2). Turnkey solutions will be developed based on validated agronomic solutions generated through the Use Cases and made accessible to additional scaling partners over time. Assumptions underlying above processes are related to availability and capacities of EiA scientists, NARS, and ARI colleagues to engage with standardized and actionable data and analytics assets and decision support tools for gender-, youth-, and climate-responsive recommendations.

To validate solutions and backstop data and analytics efforts, a support group of experts will develop, test, and refine protocols for decision support tool validation, addressing gender and climate adaptation (and mitigation as a co-benefit). Another will support front- and back-end development for decision support tool interfaces. Two other support groups will facilitate the generation and curation of standards-compliant data and assist with crop modeling and spatial analysis. Assuming users are willing to use standard protocols to optimize decision support tool success, this output will produce validated recommendations for scaling partners, including NARS, private and public stakeholders, per Outcome 2.2.

Incentivizing TRANSFORM's efforts to deliver on EiA's technology-focused outputs will require targeted capacity and culture enhancement, including addressing data management and science and decision support capabilities across CGIAR and NARS partners. These activities will be augmented by and contribute to INNOVATE CoP efforts (Output 3.5) and ORGANIZE facilitation of culture change (Output 4.6). Assuming that NARS, CGIAR, and ARI researchers can be incentivized in ways that include more attributions and citations of contributions, open and FAIR data standards and reproducible analytics will be commonly used (Outcomes 2.1 and 2.2).

3.2.5 Sketch of the INNOVATE Work Package



3.2.6 Work Package INNOVATE Research Plans and TOCs

Work Package 3	**INNOVATE – *"Driving the next generation of agronomy at scale innovations"***
Work Package main focus and prioritization (max 100 words)	INNOVATE addresses key knowledge gaps and facilitates innovation in agronomy research with engagement from public and private sector partners and non-CGIAR ARIs, based on Use Case needs, requirements for the assessment of agronomic gain KPIs, or needs for increasing the efficiency, efficacy, gender- and youth-responsiveness, and cost-effectiveness of research workflows.
Work Package geographic scope	*Global*

The Science

The INNOVATE WP responds to several Research Questions addressing key knowledge gaps in agronomy with direct relevance to EiA's first business cycle and aligned to the second research objective (Section 2.1). **Question 3.2**, "*How can agronomic interventions be more agilely adapted to changes in climate and rendered more robust against weather variability?*", and **Question 3.4**, "*What are relevant indicators for soil health to measure agronomic gain at scale, and how are these affected by agronomic intervention in the medium and long term?*", aim at designing sustainable solutions, and strengthening EiA's ability to address climate change and soil health-related challenges.

Along with **Question 3.1**, "*How can actionable agronomic recommendations for smallholder cropping systems be designed and tested efficiently at scales ranging from hyperlocal to regional?*", which aims to pull in innovative approaches to design better tailored agronomic recommendations, these questions will enable innovative methods to be integrated into the data and analytics pipeline of the TRANSFORM WP, and in turn, support DELIVER Use Cases. **Question 3.3**, "*How can crop yield (and associated uncertainties) be measured rapidly and accurately at scale, and drive developing locally tailored advice, insights in impact and prioritization?*", will support EiA to measure agronomic gain and the impact of interventions, feeding into MELIA and prioritization activities of ORGANIZE.

Questions 3.5, "*How can agronomic interventions effectively contribute to biofortification of crop produce, and recommendations tailored to relevant soil conditions and crop characteristics?*, and **Question 3.6**, "*How does scale- and gender-appropriate mechanization affect agronomic advisory services for smallholder farmers?*", address critical under-researched agronomy themes, focusing specifically on crop biofortification and underutilized mechanization, and designing recommendations specifically suited for smallholder systems.

Research Questions will be answered through a set of dedicated strategic R&D projects that will be organized globally but implemented regionally and supply solutions to knowledge gaps, identified through the other WPs. These include commissioned R&D projects with ARIs, directly addressing these questions directly, strengthened by additional innovation grants and PhD and MSc research projects. Clear deliverables will be formulated around specific hypotheses with concrete requirements to develop proofs-of-concept, ready for testing in downstream processes of the MVP pipeline. Regular and agile processes will be operationalized to evaluate progress during implementation to evaluate intermediate successes. Continuous analysis of project performance enables the Initiative to adjust processes for selection of new strategic R&D approaches and optimize risks and potential benefits of component activities.

Questions on sustainability, soil health and climate change (3.2 and 3.4) will also be addressed through an agrotyping platform, enabling globally harmonized testing of agronomic innovations across CGIAR institutes and research organizations outside CGIAR. This characterization is in line with the phenotyping approach currently used by the breeder community. Incentivization processes will stimulate efficiency and collaboration, use of standardized protocols, and data sharing.

The Theory of Change

The EoI outcome of the INNOVATE WP will deliver results from strategic R&D projects that address critical knowledge gaps and that are successfully integrated into the TRANSFORM pipeline and reinforcing other key functions of EiA. INNOVATE will also host “blue sky”, supply-driven strategic R&D projects, with high potential and high risk. These projects will be executed in collaboration with relevant ARIs, NARS, and other stakeholders from the public and private sector with agronomic research capabilities.

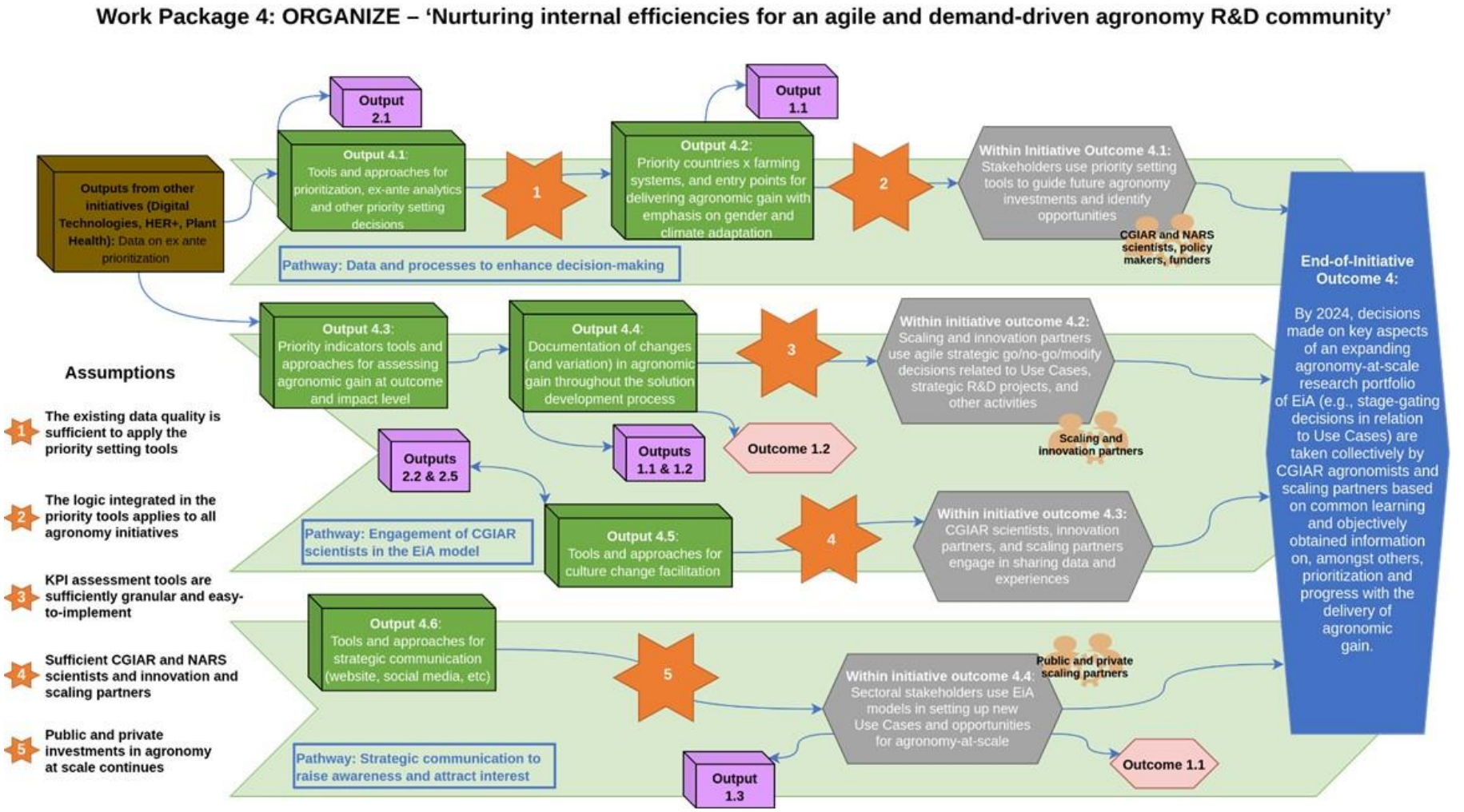
Outputs will be delivered via CoAs [**EiA_Work_Packages_Clusters_of_Activity_2021**] and include (i) A strategic R&D project portfolio (Outputs 3.1 and 3.2), aiming to integrate new research products leading to future agronomic solutions (Outcome 3.1); (ii) Building national partners” capacity for agronomy-at-scale (Outputs 3.3 and 3.4) to create a next generation of skilled agronomists (Outcome 3.2); (iii) Scientific CoPs supported by novel tools (Outputs 3.5, 3.6, and 3.7) to create cutting-edge pipelines for innovation (Outcome 3.3). Key assumptions focus on timeframes for delivery of innovations aligned to needs of the TRANSFORM and DELIVER WP, commitment of supplementary resources, active engagement of research partners based on mutual interests, and minimal capacity of science partners to engage with INNOVATE.

Strategic R&D projects will cover key thematic areas including geospatial mapping of crop quality (“GeoNutrition”), farming systems analytics, climate change adaptation, water management, mechanization, and local agronomic advice. Regarding ARIs, active cooperation is sought with Rothamsted Research (UK), Swiss Federal Institute of Technology (Switzerland), Swedish University of Agricultural Sciences (Sweden), Wageningen University and Research (Netherlands), and the University of Florida (USA), Tufts University (USA), and Cornell University (USA), based on a match of their scientific strengths and EiA needs [**EiA_cooperation_with_ARIs**]. A due diligence framework will guide the prioritization of strategic R&D projects, identified through both competitive and commissioned processes. A first set of strategic R&D projects has been identified through thematic Working Group discussions [**EiA_Working_Group Concept_papers_2021**], addressing critical needs for the first business cycle around agronomic gain, agronomic fortification, soil health assessment, scale-appropriate mechanization, and climate change adaptation.

Graduate research projects will build the capacity of NARS staff supervised by ARI researchers. This enables institutes to retain trained staff by involving them in a new generation of strategic R&D projects. Communities of Practice encourage an open exchange of knowledge and expertise within and beyond EiA. The CoPs will incentivize EiA scientists to engage with cutting-edge research within the global agronomy community and strengthen interactions through dedicated research projects. An agrotyping platform will be operationalized to evaluate and validate agronomic technologies and facilitate independent use of EiA products, as well as generate incentives to contribute data, analytics, and documentation to the platform.

The INNOVATE WP is closely linked to TRANSFORM as it constitutes the initial steps in the MVP development pipeline. INNOVATE focuses on exploring new ideas and opportunities and testing at a proof-of-concept stage under controlled conditions, while TRANSFORM focuses on proven technologies and generating data and turnkey solutions with immediate value to the DELIVER Use Cases. INNOVATE also addresses requests from DELIVER and ORGANIZE to prioritize new research projects.

3.2.7 Sketch of the ORGANIZE Work Package



3.2.8 Work Package ORGANIZE research plans and TOCs

Work Package 4	**ORGANIZE – *"Nurturing internal efficiencies for an agile and demand-driven agronomy R&D community"***
Work Package main focus and prioritization (max 100 words)	ORGANIZE hosts the functions related to internal organization and external partnerships. This WP organizes prioritization, demand mapping, and foresight, manages the other WPs through providing critical input on who to engage, what to innovate for, and how to support, leads strategic communication, and manages interactions with other Initiatives.
Work Package geographic scope (global/region/country)	*Global*

The science

Research Questions under the ORGANIZE WP are aligned both research objectives (Section 1.2) and aim at increasing the likelihood of delivering agronomic gain at scale by being explicit about the scope — which agronomy where and for whom — of a particular agronomy R&D program and progress made against the anticipated benefits generated with the priority agronomic interventions.

The approach used to answer **Question 4.1,** *"How does improved prioritization and targeting affect uptake and impact of interventions at scale, particularly for women and youth?"* starts with the identification of key indicators related to the uptake and impact of agronomic interventions, in line with EiA's overall MELIA system (see Section 6). EiA Use Cases pass a prioritization step in relation to targeting locations and conditions for the uptake of agronomic solutions at scale, the viability and set-up of partnerships around an active scaling partner, and ex-ante impact assessment (Outputs 4.1 and 4.2). ORGANIZE supports Use Cases to effectively target farming populations, including segmentation of rural populations with a particular focus on gender and youth. ORGANIZE will also monitor Use Case progress against the uptake and impact of agronomic interventions. The WP will commission a review of past and current agronomy projects, focusing on analyzing prioritization steps taken at project initiation and uptake and impact of agronomy interventions for a set of relevant, globally representative projects. Conclusions from this study will be compared with uptake of agronomic solutions and impact created through the Use Cases.

The approach used to answer **Question 4.2** *"How does agronomic gain assessment across all development stages affect the efficiency and efficacy of the solution development process?"* starts with the identification of a set of Key Performance Indicators (KPI) related to the efficiency (and efficacy of agronomy at scale. Efficiency relates to the funds and effort spent for delivering a validated prototype solution and efficacy describes the performance of a specific solution in terms of agronomic gain. The agronomic gain KPI framework will be implemented (Output 4.3) at various stages of the generic Use Case workflow [**EiA_Use_Cases_Generic_Workflow**], and comparable studies in similar geographies and farming systems will be identified where the KPI framework was less consistently applied. KPI-mediated gains in efficacy and efficiency for both sets of cases will be compared with the effort and time invested in assessing agronomic gain across the workflow, including prototyping, technical and user-experience validation, piloting, and scaling itself (Output 4.4). This commissioned review will also focus on evaluating how integration of regular feedback on the performance of solutions impacts the solution development process, including when less successful prototypes were pursued for too long and why.

The theory of change

The EoI outcome of the ORGANIZE WP focuses on the creation of a more effective and efficient agronomy R&D community for CGIAR and its partners. Many gains in agronomy at scale R&D workflows are anticipated to be achievable by explicit prioritization, ex-ante assessment, and assessment of progress against anticipated changes supported by agile decision-making processes. These gains require exchange of data, tools and learning, and the facilitation of comprehensive and inclusive partnerships across the research-to-scaling continuum [14]. This WP aims at facilitating this,

integrating evidence generated through its research questions with specific attention given to culture change management, capacity development, and how best to mobilize tools and approaches.

Outputs will be delivered through CoAs [**EiA_Work_Packages_Clusters_of_Activity_2021**] and aligned to four interacting areas of support aiming at the delivery of the EoI outcome, including for: (i) Decision making to make agronomy R&D fully goal-oriented (Outputs 4.1 and 4.2) resulting in CGIAR and partners using such tools for decision-making on future investments (Outcome 4.1); (ii) Monitoring progress against such goals (Outputs 4.3 and 4.4) resulting in agile decision-making related to activities in progress (Outcome 4.2) [**EiA_Agronomic_gain_KPI_document_2021; EiA_Agronomic_gain_LTEs_2021**]; (iii) Changing mindsets of the CGIAR R&D community and beyond (Outputs 4.5) resulting in the honest engagement of agronomists and other scientists with above processes (Outcome 4.3); and (iv) Expanding the reach and partnerships of EiA (Outputs 4.6) resulting in more scaling partners co-creating better solutions with direct EiA support (Outcome 4.4).

Assumptions underlying the delivery of Outcome 4.1 are linked to the relevance and generic nature of the tools and the availability of sufficient data to deploy them. Delivery of Outcome 4.2 assumes quality and efficiency in the deployment of the agronomic gain assessment tools and approaches. Assumptions related to the delivery of Outcome 4.3 are linked to the readiness of CGIAR and other research organizations to engage in new ways of creating and applying agronomic knowledge. Lastly, delivery of Outcome 4.4 assumes continued interest from the public and private sector in agronomy as an entry point to address challenges hindering the success of CGIAR Impact Areas and an opportunity for additional investment.

The ORGANIZE WP is logically linked to other WPs in several ways. It relates to DELIVER by providing prioritized country x farming system combinations through the tools needed for the ex-ante analytics of potential interventions and those necessary for assessing progress against agronomy gain KPIs, and by supporting identification of new opportunities for Use Case communication. It relates to the TRANSFORM WP by facilitating culture change; and to the INNOVATE WP by facilitating interactions between CoPs, non-CGIAR ARIs and other EiA components. This WP will also interact with the *Harnessing Digital Technologies* and the *HER+* Initiatives in support of the gender- and youth-responsive solution development and validation processes, noting that discussions are on-going with other Initiatives [**EiA_Interactions_Other_Initiatives_2021**].

4. Innovation Packages and Scaling Readiness Plan

Scaling in EiA happens through **Use Cases**, informed by Scaling Readiness and constructed around a core innovation or MVP, Complementary Innovations, and inclusive partnerships. MVPs consist of a core innovation and complementary innovations while scaling depends upon access, understanding and appreciation of Innovation Packages by smallholder farmers. For example, an MVP may be related to a site-specific nutrient management system complimented by rapid diagnostic tools, effective credit systems, and planting advisory. Complementary innovations may be sourced through other Initiatives (e.g., the Plant Health Initiative when it concerns best pest/disease management). The current set of Use Cases, activated during the Incubation Phase, have identified their Core Innovations [**EiA_Use_Case_descriptions_2021**]. Agronomy-related Innovations, developed by teams within CGIAR engaged in EiA, are available in a searchable database [**EiA_Innovations**].

The Use Case model aligns with the concept of Innovation Packages with a “Scaling Readiness” approach adopted as a tool to assess completeness of Innovation Packages. The Use Cases, established during the EiA Incubation Phase, have undergone scaling readiness assessment with specific recommendations [**EiA_Use_Case_Scaling_Readiness_Profiles 2021**]. EiA will apply the Scaling Readiness approach to all its existing and new Use Cases, and then across its total Initiative innovation portfolio by end of 2024 The Initiative allocated US$364,000 to implement the Innovation Packages and Scaling Readiness plan (2022: US$180,000; 2023: US$92,000; 2024: US$92,000), noting that the suggested reductions over time point towards an increasingly efficient and targeted approach to Scaling Readiness. Dedicated activities, deliverables, indicators and line-items are

included in the Management Plan, MELIA and Budget Sections. Portfolio Management will require additional investment to develop Initiative-wide portfolio management tools, processes, and protocols.

5. Impact statements

5.1 Nutrition, health and food security

Challenges and prioritization: Agronomic production of staple crops forms the basis of food security. Agronomic interventions result in ever-increasing crop yield increases **Error! Bookmark not defined.** provided that these address key yield-limiting production factors and sufficient use of production inputs. These interventions not only increase crop yields but can also increase food quality in terms of protein, carbohydrate and micronutrient contents, e.g., using micro-nutrient-containing fertilizers [45] (cropping system diversification with legumes [46;47]. Thus, this Impact Area is key for EiA, largely through increasing yields and, to a lesser extent, through improved yield quality. EiA's priority setting considered areas where the status of its agronomic gain KPIs is sub-optimal and step 2 of the priority setting logic (see Section 2.4) explicitly addressed yield gaps for cereals and roots/tubers as a key criterion.

Research questions: EiA asks to what extent smallholders' food and nutritional security is improved through the adoption of agronomic solutions and approaches this question from several angles. The Research Questions (see Section 3) supporting the delivery of progress against the current Impact Area focus on assessing the process to define where to operate and which agronomic solutions to prioritize in a specific context (Question 4.1 – "*How does improved prioritization and targeting affect uptake"*) and how the solution development, validating, and scaling framework constructed around Use Cases delivers such solutions successfully and in an inclusive and gender- and youth-responsive manner (Question 1.1 – "*To what extent does the Use Case approach change/disrupt the way science and scaling partners interact?"*). A third question (Question 4.2 – "*How does agronomic gain assessment across all development stages affect"*) focuses on the efficiency of the solution development process by ensuring that the delivery of improved crop yields and produce quality happens in the most effective way, including agile and strategic decision-making processes. Question 3.3, "*How can crop yield be measured rapidly and accurately at scale?*" addresses the efficiency of mapping yield at scale while Question 3.5, "*How can agronomic interventions effectively contribute to biofortification of crop produce,"* determines best opportunities for focusing on produce quality.

Components of Work Packages: WPs have been populated through Clusters of Activities (CoAs) [**EiA_Work_Packages_and_Clusters_of_Activity_2021**] that address all Impact Areas, including food and nutritional security. Facilitated by the DELIVER WP, this Impact Area will be specifically addressed by the Use Cases that focus their MVP on yield increases through improved nutrient or water management in conjunction with other agronomic practices [**EiA_Use_Case_descriptions_2021**; **EiA_New_Use_Cases_2021**]. Several Use Cases address improved nutrition through the inclusion of biofortified field crops or cropping system diversification as part of larger agronomic bundles, with attention paid to achieving improved nutritional quality through soil fertility management (Question 3.5).

Measuring performance and results: The DELIVER end-of-Initiative outcome – "*By 2024, at least 20 public and private scaling partners integrate agronomic solutions, targeting at least 1 million farmers,"* is directly related to this Impact Area. The metrics for this Impact Area include: (i) increases in yields and yield quality of key staple crops, legumes, and perennial cash crops within prioritized farming systems by at least 50%, on average and (ii) reductions in the risk of underperformance of agronomic solutions by at least 25%.

Partners: The partners engaged in the delivery of this Impact Area targets are the scaling partners that demand a specific agronomic solution addressing this Impact Area for their respective programs or projects and target areas. In the context of EiA, scaling partners are equal to demand partners since Use Cases are formulated around the demand for agronomic solutions by active scaling

partners [**EiA_Use_Case_descriptions_2021**]. Innovation partners include the CGIAR community, ARIs, science leads belonging to the organizations or companies that host Use Cases, and NARS scientists operating in the Use Case target areas (Annex I).

Human resources and capacity development of Initiative team: Details on staffing for the WP components are given in Section 9.3. Sufficient expertise in field agronomy is present while a strategic relationship with Rothamsted Research (UK) will reinforce the work on agronomic impacts on produce quality.

5.2 Poverty reduction, livelihoods and jobs

Challenges and prioritization: As yields increase beyond a certain threshold, so do crop surpluses which may be sold at profit in ways that raise household income. A key pathway to reduce poverty for smallholders generating a substantial fraction of their income through agriculture is to improve crop yields based on a benefit-cost ratio of at least 2-3 and facilitating access to profitable markets for extra produce or add value to raw produce [48;49]. EiA priority-setting focused on areas with substantial rural poverty (at least 30% of the population below the poverty threshold) in the West and Central Africa (WCA), East and Southern Africa (ESA), and South Asia (SA) regions. In this context, the focus is on increasing productivity and produce quality, based on improved resource use efficiencies of inputs (water, labor, nutrients), to potentially generate increased yields with reduced investments. Job creation is facilitated through the delivery of advisory services to smallholder communities as well as by more commercialized farms offering more and better employment to farm workers.

Research questions: Given the relatively small size of target farms (<5 ha, smaller in many priority geographies), to what extent does modern agronomic practice open the door to improved livelihoods? Besides Questions 4.1 and 1.1, addressed in Section 5.1, the key Research Question (see Section 3) supporting the delivery of progress against the current Impact Area focuses on the evaluation of incentive schemes for smallholder farmers to apply the agronomic solutions in their respective farms (Questions 1.4 - "*What role can incentives and gamification play in encouraging farmers to adopt?"*). Prior evidence emphasizes the need to accompany agronomic advisory services with complementary "service bundles" [50;51].

Components of Work Packages: WPs have been populated through CoAs [**EiA_Work_Packages_and_Clusters_of_Activity_2021**] of which some directly address the current Impact Area. The DELIVER WP and Use Case model through which this is operationalized will ensure that targeted farmers have access to adapted and locally-relevant solutions and accompanying measures that allow them to put solutions into profitable practice, and that this intensification leads to greater demand for labor. The processes hosted by TRANSFORM, INNOVATE, and ORGANIZE, as described in Section 5.1, also apply to this Impact Area.

Measuring performance and results: The DELIVER end-of-Initiative outcome is directly related to this Impact Area: *By 2024, at least 20 public and private scaling partners integrate agronomic solutions, targeting at least 1 million farmers, through extension, social or information technology networks, and use common ME&L concepts to report on how these solutions perform against agronomic gain KPIs*. The metrics for this Impact Area include: (i) generation of a "living income", allowing households to cross the poverty line and also invest in improving their overall livelihood status and (ii) job creation through service delivery Initiatives.

Partners: The partners engaged in the delivery of this Impact Area targets are the scaling partners requiring a specific agronomic solution to address this Impact Area. In the context of EiA, scaling partners are equal to demand partners [**EiA_Use_Case_descriptions_2021**]. Innovation partners include the CGIAR community, ARIs, science leads belonging to the organizations or companies that host Use Cases, and NARS scientists operating in the Use Case target areas (Annex I).

Human resources and capacity development of Initiative team: Details on staffing for the WP components are given in Section 9.3. Sufficient expertise is available to facilitate the Use Cases towards the delivery of poverty reduction goals, facilitated by the Chief Growth Officer (CGO).

5.3 Gender equality, youth and social inclusion

Challenges and prioritization: Women and youth are promising targets for agronomic innovations, in part due to their interests and abilities to innovate. However, wide and pervasive gender productivity gaps limit agricultural development [52], shaped by lack of access to agricultural inputs, technologies, and extension services by women [53]. Women's farm yields could increase by 20 to 30% if their access to productive resources was the same as men's, thus increasing total agricultural output by 2.5 to 4.0% in lower-income countries [54]. However, even with equal access, gender norms, institutional constraints, and market failures impact how women use these resources to increase productivity. We know little about age (generational) gaps in productivity [55] but better educated rural youth unable to find decent employment represent tomorrow's most innovative farmers. EiA will carry out both gender-integrated and -strategic research to inform the design and validation of gender- and youth-responsive agronomic solutions that meet the needs and circumstances of women, men, and youth, and will implement transformative approaches alongside these solutions to address the underlying causes of said gaps in productivity.

Research questions: Besides Questions 4.1 and 1.1 addressed in Section 5.1, the key Research Questions (see Section 3) supporting the delivery of progress against the targeted impacts from women and youth empowerment within the Use Cases are captured through four Research Questions as elements of Use Case planning and implementation. Question 1.2 asks *"What is the impact of integrating gender-transformative approaches (GTA) in Use Cases?* Questions 2.1 asks *"What are key elements of a framework to assure that agronomy gain-focused decision support tools are widely adopted?*" and 2.2 asks "*What capacity and culture change incentives are needed to enable agronomy at scale that is responsive to gender, youth, and climate adaptation needs?*". Both responses require that data collection and analytic tools respond to gender and youth needs. Question 3.6 asks "*How does scale- and gender-appropriate mechanization affect agronomic advisory services for smallholder farmers?*", a query that specifically addresses issues of labor use within the context of gender- and youth-specific priorities.

Components of Work Packages: WPs have been populated through CoAs [**EiA_Work_Packages_and_Clusters_of_Activity_2021**] of which some directly address the current Impact Area. All relevant CoAs will have data collection and engagement strategies using explicit gender- and youth-segregated or responsive tools and approaches. The Use Cases under DELIVER will embed gender- and youth-related issues from the planning stage in order to develop gender- and youth-responsive solutions. An RCT is planned to assess benefits created by GTAs. All MEL and IA studies will be gender- and youth-specific.

Measuring performance and results: The DELIVER end-of-Initiative outcome is directly related to this Impact Area: *By 2024, at least 20 public and private scaling partners integrate agronomic solutions, targeting at least 1 million farmers, through extension, social or information technology networks, and use common ME&L concepts to report on how these solutions perform against agronomic gain KPIs.* The metrics for this Impact Area include: (i) engagement of at least 40% female farmers and (ii) engagement of tens of thousands of young people, providing services to farmers.

Partners: The partners engaged in the delivery of this Impact Area targets are all scaling partners that require a specific agronomic solution. In the context of EiA, scaling partners are demand partners [**EiA_Use_Case_descriptions_2021**]. Innovation partners include the CGIAR community, ARIs, science leads belonging to the organizations or companies that host Use Cases, and NARS scientists operating in the Use Case target areas (Annex I).

Human resources and capacity development of Initiative team: Details on staffing for the WP components are given in Section 9.3. EiA will directly engage gender experts and is in the process of formalizing cooperation with the *HER+* Initiative [**EiA_Interactions_Other_Initiatives_2021**]. Tufts University (USA) will support the GTA RCT.

5.4 Climate adaptation and mitigation

Challenges and prioritization: Agronomy has previously not been viewed as a climate action mechanism, but this is changing. Cropland has lost carbon to the atmosphere and re-accumulation is expected and timely. Agronomy is a valid entry point for climate change adaptation and mitigation and are core areas of EiA interest. Many existing agronomic solutions can sustain productivity under variable conditions [56], though limits are likely to emerge under the predicted intensification of wet and dry season extremes [57;58;59]. Incremental adaptation - existing actions to avoid disruptions such as changing planting dates, modifying nutrient inputs, diversifying cropping systems, introducing irrigation, retaining residues, among others - buffer production systems against increased climate variability [60;61;62]. Agronomy also offers solutions for entire systems to adapt, where farmers switch crops or move production to new locations [63;64;65]. Many of the agronomic solutions that support farmer adaptation have potential to reduce direct agricultural greenhouse gas emissions from fields and the associated emissions agriculture induces from land use change. This project includes perennial crops that serve as durable carbon sinks. Where agronomy intensifies production and generates more food per ha, it has the potential to relieve pressure to convert forests and peatlands at the extensive margin to production; in many cases this can reduce some of the most acute land emissions [66;67;68].

Research questions: To what extent does agronomic improvement also represent climate action? Besides Questions 4.1 and 1.1 addressed in Section 5.1, is the issue of short-term benefits vs longer-term impacts and evaluating whether climate change adaptation and mitigation measures can generate short-term benefits to smallholder farmers — most often a prerequisite for their adoption. Question 1.3 asks "*Do climate change adaptation focused solutions generate consistent and sufficient short-term benefits?"*. A second question is related to the relevance of integrating climate-specific information in all data and analytical processes (Question 2.1 – *How can advances in data and analytics help in targeted decision-making and scaling of gender and climate-responsive agronomy solutions?*). Question 3.2 asks "*How can agronomic interventions be more agilely adapted to changes in climate and rendered more robust against weather variability?*". Together these queries assure that climate change adaptation is well-integrated in the context of modernizing agronomic interventions.

Components of Work Packages: WPs have been populated through CoAs [**EiA_Work_Packages_and_Clusters_of_Activity_2021**], that address all Impact Areas, including the current Impact Area. Responses to the threat of climate change appear within all Use Cases and their agroecological contexts and in compliance with their respective Nationally Determined Commitments to the UNFCCC. TRANFORM data and tools will be climate-responsive and strategic R&D under INNOVATE will address the integration of climate adaptation aspects in all agronomic solutions. Agronomic gain, hosted by ORGANIZE, includes an indicator related to climate adaptation (yield stability), long-term trials will support the evidence base related to the adaptative capacity of specific agronomy interventions.

Measuring performance and results: EiA will lead to increased carbon sequestration and reduced greenhouse gas emissions and these gains will be quantified. The DELIVER end-of-Initiative outcome is directly related to this Impact Area: *By 2024, at least 20 public and private scaling partners integrate agronomic solutions, targeting at least 1 million farmers, through extension, social or information technology networks, and use common ME&L concepts to report on how these solutions perform against agronomic gain KPIs*. The metrics for this Impact Area include: (i) reduction in climate-related yield losses to an average 25% of target yields and (ii) reduction of product-based greenhouse gas emission intensities (ton CO2-equivalent) by at least 25%.

Partners: The partners engaged in the delivery of this Impact Area targets are the scaling partners that require a specific agronomic solution addressing this Impact Area. In the context of EiA, scaling partners are equal to demand partners [**EiA_Use_Case_descriptions_2021**]. Innovation partners include the CGIAR community, ARIs, science leads belonging to the organizations or companies that host Use Cases, and NARS scientists operating in the Use Case target areas (Annex I).

Human resources and capacity development of Initiative team: Details on staffing for the WP components are given in Section 9.3. Climate adaptation experts are part of EiA and a CoP on climate change will ensure that its climate adaptation agenda remains state-of-the-art, supported by modelling

expertise, with engagement of the University of Florida (USA). The Swiss Federal Institute of Technology (Switzerland) will support the assessment of greenhouse gas dynamics.

5.5 Environmental health and biodiversity

Challenges and prioritization: EiA aims at the Sustainable Intensification (SI) of smallholder farming systems in ways that benefit the agricultural resource base and its native organisms. All dimensions of SI, namely increased and stable yields, more efficient use of resources, and improved delivery of ecosystem services, including those supported by soil health [69;70] are priority KPIs of EiA. The Initiative results in: (i) higher productivity per unit of land, thus limiting the expansion of agricultural land at the expense of forests or other natural lands, (ii) improved nutrient and water use efficiencies, and (iii) improved management practices to restore soil health and associated ecosystem services. Nutrient use efficiency, especially of nitrogen, plays an important and dual role. Where fertilizer use is high or poorly managed, nitrogen losses (including as greenhouse gases) can present a major environmental risk and lead to biodiversity loss [71;72]. On the other hand, most smallholder farming systems apply little or no chemical fertilizers, which results in nutrient mining and soil degradation [73]. Central to our priority setting is the acknowledgement that good agronomic management plays an essential role in protecting our environmental health and biodiversity, but the reverse is too often the case with mismanagement accelerating land degradation. EiA recognizes that environmental health and biodiversity are of critical importance to maintain the functions and services on which sustainable agricultural production depends and its Use Cases operate accordingly [74].

Research questions: Agronomic interventions necessarily have environmental consequences, and this is embodied within EiA. Besides Questions 4.1 and 1.1 addressed in Section 5.1, the key Research Questions that deliver on the current Impact Area address the needs related to the soil health KPI: (i) The need for integrated agronomic solutions that effectively restore soil health, based on a better understanding of the synergies and trade-offs between soil health and other agronomic gain KPIs; and (ii) The demand for efficient methods to assess soil health across production systems and contexts. In this context, **Question 3.4** asks "*What are relevant indicators for soil health to measure agronomic gain at scale, and how are these affected by agronomic intervention in the medium and long term?*" and focuses on the identification of critical soil health indicators that are responsive to changes in agronomic interventions.

Components of Work Packages: WPs have been populated through CoAs [**EiA_Work_Packages_and_Clusters_of_Activity_2021**], that address all Impact Areas, including the current Impact Area. INNOVATE prioritizes and implements strategic R&D that overcome important methodological and knowledge gaps related to soil health. Research activities make use of existing databases (where possible) and newly collected data from EiA Use Cases and long-term trials. Soil health is one of the priority thematic areas, so INNOVATE will also host a CoP on this topic. ORGANIZE will focus on framework and method development for the assessment of Agronomic Gain KPIs including measures of soil health, supported by a network of long-term trials.

Measuring performance and results: Agronomic advance will result in quantified environmental gains. The end-of-Initiative outcome is directly related to this Impact Area: *By 2024, at least 20 public and private scaling partners integrate agronomic solutions, targeting at least 1 million farmers, through extension, social or information technology networks, and use common ME&L concepts to report on how these solutions perform against agronomic gain KPIs*. The metrics for this Impact Area include: (i) increased resource (nutrient, water, and/or labor) use efficiencies by at least 25% and (ii) acreage of agricultural land converted to sustainable land use through the adoption of practices that surpass thresholds for soil properties below which soil degradation occurs.

Partners: In the context of EiA, scaling partners are equal to demand partners, and the environmental concerns of all are included within the design and operations of the respective Use Cases [**EiA_Use_Case_descriptions_2021**]. Innovation partners include the CGIAR community, ARIs, science leads belonging to the organizations or companies that host Use Cases, and NARS scientists operating in the Use Case target areas (Annex I).

Human resources and capacity development of Initiative team: Details on staffing for the WP components are given in Section 9.3. EiA is engaging soil health experts and will facilitate a CoP on soil health with direct engagement of ARIs.

6. Monitoring, evaluation, learning and impact assessment (MELIA)

6.1 Result framework

CGIAR Impact Areas				
The collective global 2030 targets are available centrally here to save space.				
• # of people benefiting from relevant CGIAR innovations	• # of people benefiting from relevant CGIAR innovations	• # of women benefiting from relevant CGIAR innovations • # of youth benefiting from relevant CGIAR innovations	• # of people benefiting from climate-adapted innovations	• ha under improved management • Tg nitrogen application
SDG Targets				
#2.3	#1.1; #1.2; #10.1	#1.4	#1.5; #13.1	#2.4; #6.4; #15.3; #17.7

Resilient Agrifood Systems (RAFS) - Action Area outcomes	Resilient Agrifood Systems (RAFS) - Action Area outcome indicators
RAFS 1 - Smallholder farmers use resource-efficient and climate-smart technologies and practices to enhance their livelihoods, environmental health and biodiversity	RAFSi 1.1 Number of resource-efficient and climate-smart technologies at stage IV (uptake by next user), disaggregated by type
RAFS 2 - Research and scaling organizations enhance their capabilities to develop and disseminate RAFS-related innovations	RAFSi 2.1 Number of organizations
RAFS 3 - Public and private financial resources are invested to fund climate-smart business models	RAFSi 3.1 Total amount (US$) invested in climate smart business models
ST & RAFS 1 - Smallholder farmers implement new practices that mitigate risks associated with extreme climate change and environmental conditions and achieve more resilient livelihoods	STRAFSi 1.1 Number of smallholder farmers who have implemented new practices that mitigate climate change risks, disaggregated by gender and type of practice
ST & RAFS 2 - National and local governments utilize enhanced capacity (skills, systems and culture) to assess and apply research evidence and data in policy making process	STRAFSi 2.1 Number of policies/ strategies/ laws/ regulations/ budgets/ investments/ curricula (and similar) at different scales that were modified in design or implementation, with evidence that the change was informed by CGIAR research
ST & RAFS & GI 1 Women and youth are empowered to be more active in decision making in food, land and water systems	STRAFSGIi 1.2 Number of women, youth and people from marginalized groups who report input into productive decisions, ownership of assets, access to and decisions on credit, control over use of income, work balance, and visiting important locations

Initiative and Work Package outcomes, outputs and indicators											
Result type	**Result**	**Indicator**	**Unit of measurement**	**Geo-graphic scope**	**Data source**	**Data collection method**	**Frequency of data collection**	**Baseline value (out-come only)**	**Baseline year (out-come only)**	**Target value**	**Target year**

DELIVER Work Package											
End-of-Initiative outcome 1	By 2024, at least 20 public and private scaling/demand partners pilot gender- and youth-responsive agronomic solutions, targeting at least one million farmers through extension, social, and/or information technology networks, and use common ME&L approaches to report on how these solutions perform against the agronomic gain KPIs	Number of scaling partners (disaggregated by type and country) targeting farmers with agronomic solutions	Number	Global	Primary: MELIA System	Recording of scaling partners dissemination activities	Annual	0	2022	20	2024
		Number of farmers (disaggregated by gender) receiving agronomic solutions	Number	Country[1]	Primary: MELIA System; partner scaling data	Observation and evaluation of MELIA system	Annual	0	2022	1 million	2024
Outcome 1.1	Partners co-create Use Cases balanced across farming systems, commodities and geographies based on identified scaling opportunities	Number of use cases co-created (disaggregate by crop, geographies and farming system)	Number	Regional[2]	Primary: MELIA System	Key informant Interview	Annual	10	2022	20	2024
Outcome 1.2	Partners incorporate agronomy-at-scale solutions into their business and organizational systems within agronomy advice delivery networks at pilot scale	Number of agronomy at scale solutions undergone scaling readiness; Score (low, medium, high)	Number	Countries	Secondary (scaling readiness assessment reports)	NA	Annually	0	2022	20 (Use Cases)	2024
Outcome 1.3	Farmers apply agronomic solutions with appreciated impact on priority indicators as part of their local technology evaluation framework	Number of beneficiaries (farmers) using the solution (disaggregated by gender, type of innovation, country)	Number	Country	Primary: smallholder farmers	Panel survey; Tracing/ recording of scaling activities	Baseline Annual-Panel studies	0	2022	500,000	2024
		Area under agronomic innovations	ha	Country	Primary: smallholder farmers	Panel survey; Tracing/recording of scaling activities	Baseline Annual-Panel studies	0	2022	200,000	2024
Outcome 1.4	Stakeholders access evidence of agronomy-at-scale and engage in new Use Cases, develop new policies (or adjust existing ones), or deploy such evidence in their respective contexts	Number of new use cases, (adapted) policies (disaggregated by maturity level)	Number	Global	Primary: funders, policy makers, agricultural sector actors	Key informants' interviews (stakeholders)	Annual	0	2022	35	2024
Output 1.1	Scaling opportunities informed by agronomy performance gaps in priority	Number of other information products	Number	Global	Primary: Use Case due	Evaluation of Use Case due	Annual	NA	NA	20	2022

	geographies through structured due diligence, including potential impact on women				diligence reports	diligence reports					
Output 1.2	Deployment-ready MVPs co-developed by CGIAR, scaling and ecosystem partners in priority geographies	Number of innovations (MVPs) and innovation Packages available for uptake	Number	Country	Primary: Public and private scaling partners Secondary: list of MVPs developed	Key informants' interviews; EiA annual reports	Annual	NA	NA	20	2023
Output 1.3	Agronomy-at-scale “One-Stop Shop” for validated tools, methodologies, and approaches	Number of other information products	Number	Regional (all regions)	Primary: One Stop Shop user data	NA	Annual	NA	NA	7	2023
TRANSFORM Work Package											
End-of-Initiative outcome 2	By 2024, at least 75% of research and scaling partners use and share common, open and FAIR data, tools, and analytics to support the co-creation of locally relevant agronomic solutions, integrating climate-smart, inclusivity, and sustainability dimensions and assessing their performance using standardized protocols.	Uptake of information product by research, public and private scaling partners (disaggregated by region and type of partner)	Percent	Global	Primary: research, public and private scaling partners	Key informants” interview: research, public and private scaling partners	Annual	0	2022	75%	2024
Outcome 2.1	Stakeholders use standardized, actionable data assets and analytical outputs as inputs to develop gender- and youth-responsive agronomic solutions	Uptake of information product (disaggregated by type of information products, stakeholders, gender)	Number	Global	Primary: stakeholders - NARS	Key informants” interview: stakeholders, NARS	Annual.	0	2022	50	2024
Outcome 2.2	Scaling partners use climate and gender-responsive agronomic solutions and decision support tools	Uptake of information product (Disaggregated by partner type, decision support tools)	Number	Global	Primary: scaling partners	Key informants” interview: scaling partners	Annual	0	2022	20	2024

Output 2.1	Open and FAIR data assets, data management tools, turnkey solutions widely accessible via the GARDIAN data infrastructure	Number of other information products	Number	Global	Primary: TRANSFORM team	Evaluation of tools on GARDIAN	Annual	NA	NA	30	2024
Output 2.2	Novel approaches, algorithms, and analytic tools to develop gender and climate-responsive solutions	Number of other information products	Number	Global	Primary: TRANSFORM team	Evaluation of tools	Annual	NA	NA	30	2024
Output 2.3	Technical groups of experts that provide support to Use Case teams on data, analytics, validation, and decision tools	Number of interactions with Use Cases	Number	Global	Primary: TRANSFORM team	Key Informant Interviews.	Annual	NA	NA	2,000	2024
Output 2.4	Turnkey decision tools that respond to women's needs and include climate dimensions	Number of information products that are gender-, youth-, and climate-responsive	Number	Global	Primary: MELIA System	Observation and evaluation of data.	Annual	NA	NA	10	2024
Output 2.5	Gender, youth-inclusive capacity development, materials and framework for incentivizing culture change related to data, analytics, agronomy R&D	Number of information products	Number	Global	Primary: MELIA System	Observation and evaluation of products	Annual	NA	NA	500	2024
INNOVATE Work Package											
End-of-Initiative outcome 3	By 2024, scientists from at least five non-CGIAR ARIs with complementary expertise in relevant research areas, and scientists from at least ten NARS partners cooperate with EiA to fill key knowledge gaps for delivering agronomic solutions at scale through at least ten strategic R&D projects.	Number of non CGIAR ARI and NARS partners cooperating with EiA	Number	Global	Primary: MELIA System	Key informant interviews	Annual	0	2022	15	2024
		Number of R&D projects through which stakeholders are cooperating with EiA	Number	Global	Secondary: R&D partner records	NA	Annual	0	2022	10	2024
Outcome 3.1	Partners use EiA products to generate innovative and efficient agronomy R&D solutions	Uptake of information product disaggregated by type of partner and product	%	Global	Primary: MELIA System	Key informant interviews;	Annual	0	2022	10	2024
Outcome 3.2	A new generation of trained agronomists generate and lead research projects supporting the next cycle of agronomy R&D	Change in the capacity of key Individuals; three levels: (i) unrealized alignment and contribution to shared objectives; (ii)	Score	Global	Primary: trained agronomists	Key informant interview: trained agronomists	End of Initiative	0	2022	4 PhD Students	2024

		mid-point alignment and contribution to shared objectives; (iii) full alignment and contribution to shared objectives									
Outcome 3.3	EiA remains engaged with cutting-edge research in the global agronomy R&D community to deliver innovative agronomy products	Number of ARIs actively engaged in EiA (disaggregated by type)	Number	Global	Primary: ARI partners	Key informant interview: ARI partners	End of Initiative	0	2022	6	2024
Output 3.1	An impact-oriented due diligence framework to identify key knowledge gaps and formulate strategic R&D projects	A due diligence framework established to identify knowledge gap, prioritize and select innovative projects;	Number	Global	Primary: INNOVATE team	Observation and evaluation	Annual	NA	NA	1	2022
Output 3.2	R&D portfolio of strategic R&D solutions ready for integration in products of TRANSFORM and/or DELIVER module	Number of innovations available for uptake,	Number	Global	Primary: INNOVATE team)	Scaling readiness &KPI Assessments	Annual	NA	NA	5	2024
Output 3.3	Relevant research MSc and PhD projects selected, and candidates identified from NARS institutes as the basis for a capacity development and joint strategic research program	Number of people trained, long-term (including Masters and PhDs) and short-term, disaggregated by gender	Number	Global	Secondary: (INNOVATE team	NA	Annual	NA	NA	20	2024
Output 3.4	Research papers, datasets, R&D products, graduation theses as input to delivery of state of-the art agronomy products	Number of other information products	Number	Global	Secondary: INNOVATE team	NA	Annual	NA	NA	40	2024
Output 3.5	Communities of practice linking EiA CGIAR scientists with global research community on strategic thematic areas	Number of meetings of Communities-of-Practice	Number	Global	Primary: INNOVATE team	Review of Meeting Minutes	Annual	NA	NA	80	2024
Output 3.6	Global infrastructure to enable close-to-real time data collection and beta analytics for agile decision making from a global agro-typing network	Number of prototype solutions validated through agro-typing network	Number	Global	Primary: INNOVATE team	Review of agro-typing network	Annual	NA	NA	5	2024
ORGANIZE Work Package											
End-of-Initiative	By 2024, decisions made on key aspects of an expanding agronomy-at-	Number of partners, weighted for level of	Number	Global	Primary: stakeholders	Key informants”	Annual	0	2022	20	2024

outcome 4	scale research portfolio of EiA (e.g., stage-gating decisions in relation to Use Cases) are taken collectively by CGIAR agronomists and scaling partners based on common learning and objectively obtained information on, amongst others, prioritization and progress with the delivery of agronomic gain.	participation (weight - scale of 1-3 to assess level of participation) in collective decision making (disaggregated by stakeholders, parameters of decision making - prioritization, sharing of data, tools, and learning)				interview (all partners)					
Outcome 4.1	Stakeholders use priority setting tools to guide future agronomy investments and identify opportunities	Uptake of information product	Percent	Global	Primary: ORGANIZE team; stakeholders	Key informants" interview (stakeholders)	Annual	0	2022	10	2024
Outcome 4.2	Scaling and innovation partners use agile strategic go/no go/modify decisions related to Use Cases, strategic R&D projects, and other activities	Uptake of information product to support decision making	Number	Global	Primary: ORGANIZE team; all partners	Key informants" interview (stakeholders)	Annual	0	2022	10	2024
Outcome 4.3	CGIAR scientists, innovation partners, and scaling partners engage in sharing data and experiences	Number of scientists and partners engaged in sharing data and experiences	Number	Global	Primary (stakeholders)	Key informants" interview (stakeholders)	Annual	0	2022	50	2024
Outcome 4.4	Sectoral stakeholders use EiA models in setting up new Use Cases and opportunities for agronomy at scale	Number of new Use Cases under development outside those facilitated directly by EiA	Number	Global	Primary (Sectoral stakeholders)	Key informants" interview (stakeholders)	Annual	0	2022	30	2024
Output 4.1	Tools and approaches for prioritization, ex-ante analytics and other priority setting decisions	Number of other information products validated	Number	Global	Primary: ORGANIZE team	Evaluation of records of validated tools	Annual	NA	NA	4	2022
Output 4.2	Priority countries x farming systems, and entry points for delivering agronomic gain with emphasis on gender and climate adaptation	Number of countries x farming systems identified disaggregated by, climate adaptation	Number	Global	Primary: ORGANIZE team	Evaluation of MELIA records	Annual	Na	NA	20	2024
Output 4.3	Priority indicators, tools, and approaches for assessing agronomic gain at outcome and impact level	Number of information products	Number	Global	Primary: ORGANIZE team	Assessment of agronomic gain KPI framework	Annual	NA	NA	4 (1 per workflow step)	2022

Output 4.4	Documentation of changes in agronomic gain KPI throughout the solution development process	Number of agronomic gain KPI assessments	Number	Country	Primary: ORGANIZE team	Assessment of KPI reports	Annual	NA	NA	0	2024
Output 4.5	Tools and approaches for culture change facilitation	Number of other information products	Number	Global	Primary: ORGANIZE team	Evaluation of MELIA records	Annual	NA	NA	3	2024
Output 4.6	Tools and approaches for strategic communication (websites, social media etc.)	Number of other information products (tools and approaches)	Number	Global	Primary: ORGANIZE team	Evaluation of MELIA records	Annual	NA	NA	10	2024

[1] With the current set of Use Cases, the countries are Nigeria, Ghana, Ethiopia, Rwanda, Egypt, India, Cambodia, Mexico, Peru, Colombia; this list of countries will expand with the activation of at least 10 new Use Case during the first business cycle.
[2] The regions include: WCA, ESA, CWANA, SA, SEA, and LAC

6.2 MELIA plan

MELIA operates across all WPs and Use Cases and consists of two main components: **Monitoring, Evaluation, and Learning** (MEL) for documenting and reporting on Initiative outputs and outcomes (Section 6.1) against baseline, and **Impact assessment** (IA). MEL provides the basis for stage-gating and course correction decisions and informs adaptive project management. IA helps to document lessons based upon case studies assessing agronomic gains (Output 4.4) and to evaluate processes and behavioral changes involved in development and use of EiA solutions.

MEL collects standardized data (see section 6.1) measuring progress through digital data collection, interviews, surveys, and workshops. Key learning objectives are captured within the research questions of each WP and will be addressed through participatory reflection workshops and observations [39], and key informant interviews among staff and key partners. These data form the basis for annual reporting, validation, and adaptation of TOC, provide evidence for project adjustments, and assist in planning activities and their related budgets. These are conducted through mid-year reviews and annual workshops. MEL will also provide information used in a regularly updated dashboard. Internal reviews will serve as the basis for external evaluation by the Office of Evaluation and Evidence, where applicable.

EiA's **IA plans include**: (i) RCTs to address key learning questions related to adoption bottlenecks for delivery mechanisms, with a focus on gender transformation approaches (GTA) and incentives for uptake of agronomic solutions; (ii) Tracing activities and panel surveys (baseline and follow-up surveys) for potential long-term, large-scale ex-post impact assessment of agronomic KPIs, and (iii) Qualitative outcome studies involving process evaluation and behavioral changes. [**EiA Impact Assessment 2021**]. **RCTs** will be designed to generate rigorous evidence on the impact and cost-effectiveness of (a) gender and youth transformative delivery mechanisms [40;41] (*Research Questions 1.2 in the DELIVER WP)* and (b) incentives/complementary bundling service options (*Research Questions 1.4 in the DELIVER WP)*. The above key research questions were identified based on an assessment of the main adoption and scaling bottlenecks of agronomic solutions as part of the Scaling Readiness assessment of existing Use Cases within the EiA Incubation Phase (from July 2020). To establish the basis for potential future accountability-oriented long-term impact assessment of the Initiative, IA plans will focus on the administration of follow-up **panel surveys** along with tracing activities tracking roll out mechanisms of Use Cases and other scaling partners over space and time. Leveraging on the availability of panel data (baseline and follow-up surveys as part of the GTAs/incentive RCTs), potential long-term IA in these areas will be conducted to exploit experimental variation in the initial treatment assignment. EiA will require **behavioral change** in stakeholders including CGIAR and other scientists, innovation and scaling partners in the use of tools for agile decision-making. Qualitative studies will be conducted as part of MELIA studies to track the results of outcomes 2.2, 3.1, 3.2, 4.1, 4.2 and 4.3 in the TOC.

6.3 Planned MELIA studies and activities

Type of MELIA study or activity	**Result or indicator title that the MELIA study or activity will contribute to.**	**Anticipated year of completion**	**Co-delivery of planned MELIA study with other Initiatives**	**How the MELIA study or activity will inform management decisions and contribute to internal learning**
1. Causal Impact Assessment learning studies: Randomized Controlled Trials (RCT) to assess:	• Outcomes 1.2; 1.4 and 4.2 • Research Questions	2024	HER +	Evidence from RCTs will help to inform/design/replicate gender- and youth-responsive scaling strategies for existing and new Use Cases. RCTs will also inform Use Cases on

(i) Impact of gender and youth transformative delivery approaches (ii) The role of incentives/ complementary bundling options	1.2 and 1.4			appropriate incentives for farmers to use agronomic solutions at scale.
2. Tracing of scaling activities & policy advice, as base for long-term, large scale impact studies (i) Tracking of diffusion of agronomic solutions and scaling mechanisms by partners over space and time (ii) Panel study to monitor changes in the uptake of agronomic solutions and their effects on agronomic gain	• End of Initiative Outcome 1 • Outcome 1.3	2024 and beyond	To be explored with the Regional Integrated Initiatives	Lessons learnt from tracing activities will be documented and shared with Use Cases and other scaling partners to facilitate collaboration, learning, and adaptation and form a basis for panel studies. Panel surveys will help to generate rigorous evidence on medium to long-term impact of agronomic solutions in relation to agronomic gain.
3. Qualitative outcome study (i) Outcome study on partner attitudinal/ behavioral change (ii) Outcome on internal CGAIR efficiencies and effectiveness	• End of Initiative Outcomes 2; 3; and 4 • Outcomes 2.1; 2.2; 3.1; 3.2; 3.3; 4.1; and 4.3	2024	To be explored; discussions are on-going with various other Initiatives	EiA emphasizes institutional and personal changes required for the development and delivery of agronomic solutions at scale. These studies will elicit how people and organizations are willing to adapt their ways of doing business and what incentives can facilitate such changes. This information will also serve as a basis for capacity development and formal assessment of changes in knowledge, attitudes, skills, and habits (KASH).
4. Scaling readiness assessment (i) Use of the Scaling Readiness' approach for setting up the Use Cases in order to facilitate scaling	• Outcomes 1.2 and 4.2	2024	Not applicable	The scaling readiness assessment of Use Cases will expedite planning for necessary Complementary Innovations and partnerships to facilitate the scaling of agronomic solutions.
5. Program evaluation or review (i) Project internal reviews for course correction and stage-gate decisions (ii) End-of-project external evaluation	• All Outputs/ Outcomes in Section 6.1	2024	Not applicable	These processes will ensure accountability and generate early learnings for the validation and/or modification of the TOCs. The external evaluation will support strategic planning decisions for EiA's next phase.
6.Other MELIA activity (i) MEL routine data to track progress against all relevant outputs and outcomes	• All Outputs/ Outcomes in Section 6.1	2024	Not applicable unless with Initiatives operating in similar areas.	Regular MEL will track EiA progress based on the results framework. Data collected will be used for annual internal performance, reviews, reporting and planning, and contribute to stage-gate and course correction decisions.

7. Management plan and risk assessment

7.1 Management plan

The **EiA Core Team**, consisting of the Chief Executive Officer (CEO), Chief Growth Officer (CGO), Chief Data Officer (CDO), and Chief Science Officer (CSO), and supported by EiA Regional Leads, the KPI team, and the MELIA officer, will facilitate six-monthly evaluations of the TOC, the Results Framework, and the risk register and (re)direct investments towards the delivery of the end-of-Initiative outcomes. An External Advisory Board will assist in decision-making on an annual basis, in line with the annual Plans of Work and Budget.

The TOC and related WPs of EiA are formulated around the operationalization of prioritized and **demand-driven Use Cases**, hosted by DELIVER, in the form of a pipeline of 3-4 year projects driven by stage-gating processes at set-up and implementation, allowing for “fast-fail” decision-making. Prioritization of Use Cases will be informed by a due diligence process and the ex-ante assessment of projected benefits and their construction by scaling readiness information. MELIA information and agronomic gain assessments will inform decision-making related to the advancement, redesign, hand-over, or discontinuation of the Use Cases.

Stage-gating processes also inform the INNOVATE WP, hosting novel science within EiA, through a pipeline of 3-4 year strategic R&D projects, driven by the needs of DELIVER or other EiA key functions. INNOVATE and DELIVER are informed by the data and tools hosted by the TRANSFORM WP and contribute to this WP by submitting novel data and learnings. Interactions between the WPs are thus critically important for EiA and will be a key area of focus of MELIA.

The ORGANIZE WP hosts the overall MELIA and the agronomic gain assessment to inform overall Initiative performance at the WP and cross-WP level.

7.2 Summary management plan Gantt table

Note that the detailed management plan is also available [EiA_Management_Plan_2021].

Initiative Start Date		Timelines												Description of key deliverables (maximum 3 per row, maximum 20 words per deliverable)
		2022				2023				2024				
Work Packages	Lead organiz-ation	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Work package 1: DELIVER	CGIAR	1			2	3								*1. Regional Use Case coordinating teams formed in 6 CGIAR regions.* *2. Twenty primary demand partners engaged in co- developing Use Cases.* *3. Global & regional online one-stop-shop for agronomy at scale tools, approaches, methodologies.*
Work package 2: TRANSFORM	CGIAR		1		2		3	2		2	3	2	3	*1. Operational functional Use Case teams.* *2. Open and FAIR datasets, and FAIR data tooling, and associated trainings, training materials.* *3. Turnkey solutions and associated trainings, training materials.*
Work package 3: INNOVATE	CGIAR			1			2		2		2		2,3	*1. Due diligence framework for new R&D projects.* *2. Datasets, research reports, and papers from strategic R&D projects & degree-related projects.* *3. Strategic R&D solutions ready for integration into the TRANSFORM pipeline.*
Work package 4:	CGIAR				1,2, 3				1,2, 3				1,2	*1. Annual report on the impacts of the strategic communcation events.* *2. Annual progress reports demonstrating changes in agronomic gain KPIs.* *3. Culture change and capacity development event for EiA scientists.*
Innovation Packages & Scaling Readiness	CGIAR	1	2		2	3	2		2	3	2		3	*1.Tailored EiA scaling readiness protocol developed.* *2. Scaling readiness baselines and bi-annual progress reports produced for Use Cases.* *3. Annual EiA portfolio scaling readiness report developed.*
MELIA	CGIAR				1	1	1	1	1,2, 3	1	1	1	1,2, 3	*1. Monitoring data available on MEL platform for reporting and implementation.* *2. RCT reports showing the impact of gender transformative approaches, incentives in adoption.* *3. Panel study report showing the level of adoption of innovation packages by farmers.*
Project Management	CGIAR	1			2	1			2	1			2	*1. Project meeting, planning workshops including TOC updating and projected benefits completed.* *2. Annual technical and financial reports submitted.*

7.3 Risk assessment

Top 5 risks to achieving impact	Description of risk	Likelihood	Impact	Risk score	Opportunities
Unable to plan for unexpected changes, emerging opportunities, and synergies with other Initiatives (all WPs)	This risk is retained in relation to inability to plan for synergies with other Initiatives (since EiA is anticipated to respond to demand for agronomic solutions from other Initiatives) and to advance its solutions to such Initiatives for greater impact. Currently, interactions between Initiatives are ad-hoc, carrying substantial risk for reduced delivery of agronomic gain.	3	4	12	(i) Reinforce bilateral discussions with other Initiatives that place specific emphasis on agronomy; (ii) Engage actively with One CGIAR processes that will foster such interactions.
Lack of sense of ownership of the Research and Innovation Strategy by public, private, civil society stakeholders involved in foresight and priority-setting processes (all WPs)	The Research and Innovation Strategy presents the core agenda of CGIAR and Initiatives depend on having this owned by key public and private partners, including the funder community. While the risk is focusing on foresight and priority-setting, this applies to all other processes that will drive CGIAR towards its Impact Areas.	3	4	12	(i) Actively engage at the CGIAR and Initiative level with stakeholders; (ii) Operationalize a strategic communication framework; (iii) Operationalize One-Stop-Shops hosting the products/tools developed by EiA.
Unable to incentivize right behaviors by farmers, value chain actors, and policy makers needed for adoption (WP1)	Uptake of agronomic solutions requires the right incentives and institutional setting to deliver sufficient agronomic gain, however, they may not provide sufficient gain or require excessive investment causing stakeholders to discontinue their engagement in ways that hamper scaling.	2	4	8	(i) Engage directly with local and national policy makers; (ii) Identify novel incentive schemes for farmers to adopt solutions; (iii) Develop alternative models generating benefits for all key stakeholders engaged in the Use Cases
Failure to attract, engage, develop and retain talent (all WPs)	Talent in the agronomy-at-scale space is critical for EiA's success, with a focus on attracting young scientists, engaged in state-of-the-art science. Failure to retain existing, more experienced talent can equally hamper the delivery of EiA's objectives. The latter is especially important since EiA is building on earlier investments in agronomy across many programs and institutions.	3	3	9	(i) Establish a mentoring program; (ii) Facilitate interactions between junior and senior staff and non-CGIAR ARIs; (iii) Create a customized career development program; (iv) Invest in W3/bilaterally fund-raising.
Initiative relies on assumption that increase in funding would result from One CGIAR transition (all WPs)	This risk is related to above risk in the sense that funding is critical to retain talent. Increases in funding will be required since the overall Initiative, constructed around an EiA Global Program, interacting with 6 EiA Regional Programs is estimated to require US$85 million.	3	4	12	(i) Explore new partnerships and scope for alternative donors; (ii) Develop proposals for W3/bilateral projects that align with EIA.

8. Policy compliance, and oversight

8.1 Research governance

“Researchers involved in the implementation of this Initiative will comply with the procedures and policies determined by the System Board to be applicable to the delivery of research undertaken in furtherance of CGIAR’s 2030 Research and Innovation Strategy, thereby ensuring that all research meets applicable legal, regulatory and institutional requirements; appropriate ethical and scientific standards; and standards of quality, safety, privacy, risk management and financial management. This includes CGIAR’s CGIAR Research Ethics Code and to the values, norms and behaviors in CGIAR’s Ethics Framework and in the Framework for Gender, Diversity and Inclusion in CGIAR’s workplaces.”

8.2 Open and FAIR data assets

Researchers involved in the implementation of this Initiative shall adhere to the terms of the Open and FAIR Data Assets Policy.

EiA will align with the OFDA Policy’s Open and FAIR requirements, ensuring:

1. Rich metadata conforming to the CGIAR Core Schema to maximize Findability, including geo-location information where relevant.

2a. Accessibility by utilizing unrestrictive, standard licenses (e.g. Creative Commons for non-software assets; General Public License (GPL))/Massachusetts Institute of Technology (MIT) for software, and depositing assets in open repositories.

2b. Wider access through deposition in open repositories of translations and requiring minimal data download to assist with limited internet connectivity.

3. Interoperability by annotating dataset variables with ontologies where possible (controlled vocabularies where not possible).

4. Adherence to Research Ethics Code (Section 4) relating to responsible data (through human subject consent, avoiding personally identifiable information in data assets and other data-related risks to communities).

To do this, EiA will leverage resources developed through the Big Data Platform, enhancing them through testing and use for full needs-responsiveness. These tools will be available along with EiA and other data and publications via the GARDIAN infrastructure and include: the GARDIAN data portal; FAIRscribe, an in-development, user-friendly workflow to FAIRify data assets; CG Labs, a collaborative analytical environment based on R and Python; a digital data collection tool to generate findable and interoperable agronomic data; a PII service to check for PII in datasets; and a service to safely enable analysis over privacy-sensitive data, modeled on the biomedical sector’s OpenSafely.

9.Human resources

9.1 Initiative team

Category	*Area of expertise*	*Short description of key accountabilities*
	CROSS-CUTTING	
Research	Chief Executive Officer (CEO), Chief Data Officer (CDO), Chief Scientific Officer (CSO), Chief Growth Officer (CGO)	Coordinate WPs (DELIVER – CGO, TRANFORM – CDO, INNOVATE – CSO, ORGANIZE – CEO)
Support	Regional coordination	Facilitate Use Cases, track demand, communication
Support	Program coordination - technical & capacity	Technical coordination of development; capacity development coordination
Support	Administrative support	Assist management team and regional coordinators
	DELIVER Work Package	
Research	Field agronomy	Implement Use Case workflows in specific geographies
Research	Agronomy program management	Provide regional support and coordination for Use Cases
Research	Social scientist - scaling	Support and embed scaling readiness in Use Cases
Research	Social science - behavioral change	Design mechanisms for farmer adoption of advisories
	TRANSFORM Work Package	
Research	Data science, climate, soil, field analytics, crop modelling	Support Use Cases by developing data and analytics solutions and refining validation protocols
Research	Data management and standards	Assist with data management towards open & FAIR outcomes
Research	Diverse expert consultancies	Support development of analytics responding to gender, climate, soil health needs
Support	System administration	VMware, Cloud solution & server set-up, maintenance
Support	Software development	Development of infrastructure and tooling
	INNOVATE Work Package	
Research	Data science	Integrate strategic R&D products in the TRANSFORM pipeline
Research	Weed management, mechanization, farming systems, gender, biofortification, soil health, climate adaptation, policy	Lead strategic research projects, supervise PhD and MSc research projects, decide on new investments in new strategic R&D projects and lead CoPs around thematic areas
	ORGANIZE Work Package	
Research	ME&L	Operationalize MELIA system
Research	Socioeconomics - foresight, ex-ante analysis, segmentation	Lead priority setting exercises, including ex-ante analytics and projected benefits
Research	Data science	Develop tools for yield gap decomposition for Use Cases
Research	Socioeconomics - impact assessment	Implement RCTs, baseline and panel studies, and impact assessment
Research	Agronomy-soil science	Assessment of the agronomic gain KPI framework
Support	Program management	Facilitate planning and technical/financial reporting
Support	Communications	Facilitate strategic communication
Support	ICT Specialist	Operate One-Stop-Shop for agronomy solutions

9.2 Gender, diversity and inclusion in the workplace

The Initiative team is **close to meeting CGIAR's gender target** of a minimum of 40% women in professional roles (about 30% currently) and is comprised of individuals from diverse backgrounds. That said, we will consciously consider diversity when we recruit additional staff in ways that close

this gap, following the guidance outlined in CGIAR's GDI Inclusive Recruitment Toolkit, mindfully including diverse voices into all our project activities. Meeting this target requires the participation of about five women as Researchers and five as Support Staff (see section 9.1), easily achieved targets given currently available expertise across CGIAR.

Women, minorities, and other under-represented groups will hold **leadership roles** in the Initiative team. This is already evident in our senior team composition and will extend to the fair allocation of leadership activities and accountabilities.

9.3 Capacity development

While sufficient expertise is available to staff a gender-balanced Initiative, it is inadequate to transform agriculture in line with larger development goals. For this reason, EiA shall organize a series of **capacity development actions** as follows. First, Initiative team leaders and managers will complete training on inclusive leadership and Initiative procedures within three months of launch. Within six months of launch, Initiative team members will complete training on gender, diversity and inclusion, including on whistleblowing and how to report concerns. The Initiative kick-off will include an awareness session on CGIAR's values, code of conduct and range of learning opportunities available within CGIAR. These activities will be funded by CGIAR.

After six months, attention to capacity development shifts to **partners and stakeholders**, including mentorship from senior scientists, internships/scholarships with representation of emerging professionals from under-represented groups, conference attendance, specific training activities, interactions with ARIs. Training will include management of innovations promoted via Use Cases, and mechanisms will be established that permit country partners to recommend, organize and conduct training at localized levels. Training will also be offered to private sector representatives to ensure that production inputs required for scaling materialize. Improved data and analytics capacity and agronomy PhD- and MSc-level training is systematically incorporated into WPs and Use Cases, including through national public universities of partnering countries. Capacity development will include a combination of virtual and hand-on learning opportunities and be compliant with efforts to overcome the COVID-19 pandemic.

10. Financial resources

10.1 Budget

Note that the budget figures are based on a fully operational EiA Global Program and two EiA Regional Programs in sub-Saharan Africa (WCA and ESA) with some seed funding for the Central and West Asia and North Africa (CWANA), Latin America and the Caribbean (LAC), and Southeast Asia (SEA) Regional Programs. The latter regions are suggested to become fully operational in 2023 while the SA Regional Program will be activated in 2022 through committed W3 support.

10.1.1: Activity breakdown (without overhead) (US$)

USD	2022	2023	2024	Total
Crosscutting across Work Packages	2,349,000	3,436,000	3,443,000	9,228,000
Work Package 1 - DELIVER	5,786,000	9,706,000	12,428,000	27,920,000
Work Package 2 - TRANSFORM	2,841,000	4,288,000	4,375,000	11,504,000
Work Package 3 - INNOVATE	2,416,000	3,785,000	4,332,000	10,533,000
Work Package 4 - ORGANIZE	3,428,000	5,575,000	6,448,000	15,451,000
Innovation Packages, Scaling Readiness	180,000	92,000	92,000	364,000
Total	**17,000,000**	**26,882,000**	**31,118,000**	**75,000,000**

10.1.2: Geography breakdown (without overhead) (US$)

USD	2022	2023	2024	Total
Global	9,061,000	12,187,000	12,207,000	33,455,000
Region (WCA)	1,178,000	1,634,000	1,823,000	4,635,000
Region (ESA)	1,178,000	1,634,000	1,823,000	4,635,000
Region (LAC)	61,000	783,000	1,153,000	1,997,000
Region (SE-A)	61,000	783,000	1,153,000	1,997,000
Region (CWANA)	61,000	783,000	1,153,000	1,997,000
Nigeria	315,000	410,000	533,000	1,258,000
Ghana	630,000	819,000	1,065,000	2,514,000
Cote D'Ivoire	315,000	410,000	533,000	1,258,000
Senegal	315,000	410,000	533,000	1,258,000
Mali	315,000	410,000	533,000	1,258,000
DRC	315,000	410,000	533,000	1,258,000
Rwanda	315,000	410,000	533,000	1,258,000
Ethiopia	630,000	819,000	1,065,000	2,514,000
Kenya	315,000	410,000	533,000	1,258,000
Malawi	315,000	410,000	533,000	1,258,000
Tanzania	315,000	410,000	533,000	1,258,000
Uganda	315,000	410,000	533,000	1,258,000
Zambia	315,000	410,000	533,000	1,258,000
Zimbabwe	315,000	410,000	533,000	1,258,000
Colombia	45,000	315,000	410,000	770,000
Mexico	45,000	315,000	410,000	770,000
Peru	45,000	315,000	410,000	770,000
Egypt	45,000	315,000	410,000	770,000
Morocco	45,000	315,000	410,000	770,000
Cambodia	45,000	315,000	410,000	770,000
Vietnam	45,000	315,000	410,000	770,000
Philippines	45,000	315,000	410,000	770,000
Total	**17,000,000**	**26,882,000**	**31,118,000**	**75,000,000**

*S-A will be funded through Window 3

Annex I: List of partners

Partner category	Partner type	Region	Country	Partner name	CLARISA Code	Engagement in WP	Status
Demand/ Scaling partner	D4Ag	WCA	NG-Nigeria	Sasakawa Africa Association (SSA)	2068	DELIVER	Active
Demand/ Scaling partner	D4Ag	WCA	NG-Nigeria	Atafi Agro Merchanidse Services Ltd.	7188	DELIVER	Active
Demand/ Scaling partner	D4Ag	ESA	ET-Ethiopia	Digital Green (DG)	1855	DELIVER/ TRANSFORM	Active
Demand/ Scaling partner	D4Ag	SA	IN-India	JEEViKa	2905	DELIVER	Active
Demand/ Scaling partner	D4Ag	LAC	PE-Peru	Asociacion Pataz	4496	INNOVATE/ DELIVER/ ORGANIZE	Active
Demand/ Scaling partner	Private	WCA	GH-Ghana	Ghana Agricultural Insurance Pool (GAIP)	1145	DELIVER	Active
Demand/ Scaling partner	Public	ESA	ET-Ethiopia	Ministry of Agriculture and Natural Resources (MoA)	1905	DELIVER	Active
Demand/ Scaling partner	Public	SA	IN-India	Department of Agriculture, (DoA) Bihar State	1457	DELIVER/ TRANSFORM	Active
Innovation partner	ARI	ALL REGIONS	NL-Netherlands	Wageningen University and Research Center (WUR)	1	INNOVATE	Active
Innovation partner	NARS	WCA	NG-Nigeria	Bayero University	2525	TRANSFORM/ INNOVATE	Active
Innovation partner	NARS	ESA	ET-Ethiopia	Ethiopian Agricultural Research Council Secretariat (EARCS)	3490	DELIVER/ TRANSFORM/ INNOVATE	Active
Innovation partner	NARS	ESA	ET-Ethiopia	Deutsche Gesellschaft für Internationale Zusammenarbeit/German Society for International Cooperation (GIZ)	1407	DELIVER/ TRANSFORM/ INNOVATE	Active
Innovation partner	NARS	ESA	ET-Ethiopia	Ethiopian Institute of Agricultural Research (EIAR)	143	DELIVER/ TRANSFORM/ INNOVATE/ ORGANIZE	Active
Innovation partner	NARS	ESA	ET-Ethiopia	Amhara Regional Agricultural Research Institutes (RARIs)	796	INNOVATE/ ORGANIZE	Active
Innovation partner	NARS	ESA	ET-Ethiopia	Tigray Regional Agricultural Research Institutes (RARIs)	Being processed	INNOVATE/ ORGANIZE	Active

Innovation partner	NARS	ESA	ET-Ethiopia	Oromia Regional Agricultural Research Institutes (RARIs)	Being processed	INNOVATE/ ORGANIZE	Active
Innovation partner	NARS	ESA	ET-Ethiopia	Southern Nations Regional Agricultural Research Institutes (RARIs)	Being processed	INNOVATE/ ORGANIZE	Active
Innovation partner	NARS	SEA	KH-Cambodia	Cambodian Agriculture Research and Development Institute (CARDI)	573	TRANSFORM/ INNOVATE	Active
Innovation partner	NARS	LAC	MX-Mexico	Mexico's Secretariat of Agrifood and Rural Development (SDAyR)	3626	TRANSFORM/ INNOVATE	Active
Innovation partner	Public	ESA	RW-Rwanda	University of Rwanda	1707	INNOVATE/ ORGANIZE	Active
Innovation partner	Public	SA	IN-India	Bihar Agricultural University (BAU)	681	TRANSFORM/ INNOVATE/ ORGANIZE	Active
Innovation partner	Public	SEA	KH-Cambodia	Ministry of Agriculture, Forestry and Fisheries (GDA)	574	DELIVER/ TRANSFORM/ INNOVATE/ ORGANIZE	Active
Innovation partner	Public	CWANA	EG-Egypt	Agricultural Research Center (ARC)	1901	DELIVER/ TRANSFORM/ INNOVATE	Active
Innovation partner	Public	CWANA	EG-Egypt	Ministry of Agriculture and Land Reclamation (MALR)	1989	DELIVER/ TRANSFORM/ INNOVATE/ ORGANIZE	Active
Innovation partner	Public	LAC	CO-Colombia	Ministry of Agriculture and Rural Development (MADR)	126	TRANSFORM/ INNOVATE/ ORGANIZE	Active
Innovation partner	Public	LAC	MX-Mexico	Secretario de Desarollo Agroalimentario y Rural (SDAyR)	3626	DELIVER/ TRANSFORM/ INNOVATE/ ORGANIZE	Active
Innovation partner	Public	LAC	PE-Peru	Ministry of Agriculture and Innovation (MINAGRI)	874	DELIVER/ TRANSFORM/ INNOVATE/ ORGANIZE	Active
Scaling partner	D4Ag	SEA	KH-Cambodia	Cambodia Australia Value Chain Program (CAVAC)	7178	DELIVER	Active
Scaling partner	D4Ag	SEA	KH-Cambodia	Syngenta Foundation for Sustainable Agriculture (SFSA)	1668	DELIVER	Active
Scaling partner	D4Ag	LAC	CO-Colombia	Federacion Nacional de Culitvaodres de Cereales, Leguminaces Y Soya (FENALCE)	603	DELIVER	Active

Scaling partner	Private	SEA	KH-Cambodia	Australian Center for International Agricultural Research (CAMSID-ACIAR)	1354	DELIVER	Active
Scaling partner	Private	SEA	KH-Cambodia	Agri-Smart Innovative Solutions for Cambodian Farmers	7181	DELIVER	Active
Scaling partner	Private	SEA	KH-Cambodia	Harvest center Cambodia	7184	DELIVER	Active
Scaling partner	Private	SEA	KH-Cambodia	Brooklyn Bridge to Cambodia Technologies Co. Ltd. (BB2C)	7181	DELIVER	Active
Scaling partner	Private	SEA	KH-Cambodia	Agricultural Systems Research Co. Ltd, (ASR)	7183	DELIVER	Active
Scaling partner	Public	WCA	GH-Ghana	Ministry of Agriculture and Food (Ghana) (MoFA)	722	DELIVER/ TRANSFORM	Active
Demand/ Scaling partner	D4Ag	WCA	GH-Ghana	Esoko	1061	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	WCA	NG-Nigeria	Competitive African Rice Initiative (CARI)	7179	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	ESA	KE-Kenya	Mercy Corps	1533	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	ESA	KE-Kenya	Rainforest Alliance	1043	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	ESA	KE-Kenya	ePROD	7124	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	ESA	KE-Kenya	Farm to Market Alliance (FtMA)	2798	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	ESA	MW-Malawi	Solidaridad	2436	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	ESA	RW-Rwanda	Innovative Solutions for Decision Agriculture (iSDA)	2814	DELIVER	Under discussion
Demand/ Scaling partner	D4Ag	ESA	RW-Rwanda	One Acre Fund (OAF)	1607	DELIVER	Under discussion
Demand/ Scaling partner	Private	WCA	CD-Congo (Democratic Republic)	OLAM International	2636	DELIVER	Under discussion
Demand/ Scaling partner	Private	ESA	KE-Kenya	Crop Nutirtion Laboratory Services	3048	DELIVER	Under discussion
Demand/ Scaling partner	Private	ESA	KE-Kenya	Pula Advisors	7180	DELIVER	Under discussion
Demand/ Scaling partner	Private	ESA	MW-Malawi	Bayer Crop Science	190	DELIVER	Under discussion
Demand/ Scaling partner	Public	ESA	KE-Kenya	Kenya Agricultural Livestock and Research Organization (KALRO	59	DELIVER	Under discussion

Demand/ Scaling partner	Public	ESA	RW-Rwanda	Ministry of Agriculture Rwanda (MINAGRI)	37	DELIVER	Under discussion
Demand/ Scaling partner	Public	CWANA	MA-Morocco	Ministry of Agriculture, Maritime Fisheries, Rural Development and Water and Forests (MAPMDREF)	7182	DELIVER	Under discussion
Innovation partner	ARI	ALL REGIONS	AU-Australia	Commomwealth Scientific and Industrial Research Organization (CSIRO)	166	INNOVATE	Under discussion
Innovation partner	ARI	ALL REGIONS	CH-Switzerland	Swiss Federal Institute of Technology (ETH)	1667	INNOVATE	Under discussion
Innovation partner	ARI	ALL REGIONS	GB-United Kingdom	Rothamsted Research (RR)	2578	INNOVATE	Under discussion
Innovation partner	ARI	ALL REGIONS	SE-Sweden	Swedish University of Agricultural Sciences (SLU)	561	INNOVATE	Under discussion
Innovation partner	ARI	ALL REGIONS	US-United States of America	University of Florida (UF)	137	INNOVATE	Under discussion
Innovation partner	ARI	ALL REGIONS	US-United States of America	Cornell University (CU)	1398	INNOVATE	Under discussion
Innovation partner	ARI	ALL REGIONS	US-United States of America	Tufts University (TU)	1679	INNOVATE	Under discussion
Innovation partner	NARS	WCA	CD-Congo (Democratic republic)	Institut Facultaire Des Sciences Agronomiques De Yangambi (IFA)	4535	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	WCA	GH-Ghana	Council for Scientific and Industrial Research (CSIR)	1126	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	WCA	ML-Mali	Federation Nationale Des Producteurs de L'Agriculture Biologique Et Equitable Du Mali (FENABE)	7169	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	WCA	ML-Mali	Association Malienne d'Éveil au Développement Durable (AMEDD)	534	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	WCA	SN-Senegal	Universite Iba det Thiam de Thies	7177	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	ESA	ET-Ethiopia	Hawassa University (HU)	163	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	ESA	KE-Kenya	Kenya Agricultural Livestock and Research Organization (KALRO	59	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion

Innovation partner	NARS	ESA	TZ-Tanzania	Tanzania Agricultural Research Institute (TARI)	2836	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	ESA	UG-Uganda	National Agricultural Research Organization (NARO)	7	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	ESA	UG-Uganda	Kyambogo University (KYU)	2620	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	SEA	ID-Indonesia	Indonesian Center for Rice Research (ICRR)	2970	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	SEA	PH-Philippines	Philippine Rice Research Institute (PhilRice)	488	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	NARS	CWANA	MA-Morocco	Institut National de la Recerche Agronomique (INRA)	2732	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	Public	WCA	ML-Mali	Institut d' Economie Rurale	12	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	Public	ESA	MW-Malawi	Department of Agricultural Research Services (DARS)	3530	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	Public	SEA	VN-Vietnam	Ministry of Agriculture and Rural Development	282	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Innovation partner	Public	SEA	VN-Vietnam	Ministry of Agriculture and Rural Development (MARD-DCP)	282	TRANSFORM/ INNOVATE/ ORGANIZE	Under discussion
Scaling partner	NARS	ESA	RW-Rwanda	Rwanda Agriculture and Animal Resources Development Board (RAB)	2402	DELIVER/ TRANSFORM	Under discussion
Scaling partner	Private	SEA	VN-Vietnam	Loc Troi Group	6576	DELIVER	Under discussion

Annex II: List of Additional Documents

1. EiA_Agronomic_gain_KPI_document_2021
2. EiA_Agronomic_gain_LTEs_2021
3. EiA_Cooperation_with_ARIs
4. EiA_Due_diligence_process_2021
5. EiA_Incubation_Phase_progress_report_2020
6. EiA_Innovations
7. EiA_Interactions_Other_Initiatives_2021
8. EiA_Modules_turned_Work_packages
9. EiA_Letters_Support_NARS
10. EiA_Letters_Support_Use_Cases
11. EiA_Letters_Support_ARIs
12. EiA_Impact_Assessment_2021
13. EiA_Management_Plan_2021
14. EiA_New_Use_Cases_2021
15. EiA_Planning_Phase_reports
16. EiA_Prioritization_of_target geographies_2021
17. EiA_Projected_Benefits_2021
18. EiA_Regional Priority_report_2021
19. EiA_Survey_NARS_2021
20. EiA_Use_Case_descriptions_2021
21. EiA_Use_Cases_Generic_Workflow
22. EiA_Use_Case_Scaling_Readiness_Profiles 2021
23. EiA_Work_Packages_Clusters_of_Activity_2021
24. EiA_Working_Group Concept_papers_2021

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