

CGIAR Global Assets Study: Phase I Findings
Phase I: Rapid assessment to identify
trends in investment needs and opportunities across Centers
and to identify systemic gaps in holistic asset management

Purpose

This document sets out the findings of the first phase of the CGIAR global asset study. This initiative was launched in response to the CGIAR System Council's request at its 19th meeting to analyze the funding, structure, and management of CGIAR's critical assets.

Phase I: A Rapid Assessment

The initial phase consisted of a four-week, rapid qualitative assessment. Its primary goals were to:

- Identify trends in investment needs and opportunities for CGIAR Centers' assets.
- Uncover systemic gaps in our current approach to holistic asset management.

Steering Group and Methodology

Following Executive Managing Director Ismahane Elouafi's directive, a Steering Group comprised of Director General nominees oversaw the study. This group, led by Gail Amare (CGIAR Senior Director of Facilities Management, Security and Administration), defined the study's objectives, terms of reference, and data collection. The data collection gathered high-level information on CGIAR Centers' most strategic and critical tangible and intangible, research and support assets.

Boston Consulting Group (BCG) was contracted to complete phase one only. Their contract was signed on 26 April 2024 with their final deliverable due on 24 May 2024. In addition to the data collected, BCG primarily relied on interviews and document review.

Looking Ahead: Phase II

The overall objective of the asset study is to understand which assets should be maintained to deliver on the CGIAR 2030 research strategy; what is the cost of upgrading and

maintaining these assets; what assets are redundant; and how can we drive better efficiencies in our asset management practice across the CGIAR.

For phase II, BCG concludes that to adequately answer these questions, a deep dive on one Center (to be determined) should be conducted, the results of which may be scaled up to all Centers. The deep dive would design a prioritized set of initiatives for implementation addressing systemic challenges and driving internal and cross-Center regional efficiencies; as well as identifying funding mechanisms to finance gaps in maintenance and one-time upgrades of long-term assets; and finally, to calculate a final funding gap based on outcomes of internal efficiency estimates and funding mechanisms.

Action Requested

We invite the System Council to:

- **Discuss the findings** of the study's four-week rapid assessment phase I
- **Provide strategic input and clarify expectations** for the study's next phase

<p>Document category: Working document of the System Council. There is no restriction on the circulation of this document</p>
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Prepared by:

- Gail Amare, CGIAR Senior Director of Facilities Management, Security and Administration, and convenor of the CGIAR Global Asset Study Steering Group, based at ILRI in Addis Ababa, Ethiopia
- Consultant team from Boston Consulting Group (BCG) led by:
 - Thomas Kingombe, Managing Director & Partner, Johannesburg
 - Zoë Karl-Waithaka, Managing Director & Partner, Nairobi
 - Akshay Pant, Principal and Project manager, Nairobi

Objectives of the study and inputs

1. The overall objective of the asset study is to ensure CGIAR Centers can leverage their strategic and critical assets to deliver impactful science and innovation in a dynamic world.
2. Phase I of the study concluded on 24 May 2024, consisting of a four-week, rapid qualitative assessment.
 - a) Its primary goals were to:
 - i. Identify trends in investment needs and opportunities for CGIAR Centers' assets.
 - ii. Uncover systemic gaps in our current approach to holistic asset management.
 - b) Seed germplasm held in Genebanks were not in scope for this study. In addition, the study did not attempt to address the human capacity and capabilities, as well as partnerships, which are arguably some of the CGIAR most important assets. The study also did not attempt to determine the value on assets including land and buildings provided for by host governments, as well as intangible assets.
3. Inputs for phase I:
 - a) High-level data collection of ~2,800 assets identified as strategic or critical by 13 CGIAR Centers/Alliances
 - b) Over 50 hours of interviews conducted in over 27 sessions across 13 Centers, 4 central functions, 9 Programs, and 3 Accelerators involving over 140 people
 - c) Analyzing ~50 documents including the data collection and investment opportunities identified by the Centers

Key findings of Phase I

- a) **CGIAR is experiencing a tighter and more restrictive funding environment**, which has caused a challenge to fund the full cost of assets (incl. maintenance) across centers
- b) **In line with this challenge, BCG conducted a 4-week rapid study to identify opportunities for investments in assets including improved asset management.** The conclusions of Phase I, are mainly qualitative¹, but preliminary estimations indicate a recurring (annual) maintenance funding gap (value TBD), as well as a

¹ The collected data was mostly of a qualitative nature (Center interviews, as well as survey based questionnaires). Note: Overall value of CGIARs intellectual property, expertise and real estate has not been estimated

necessary 'one-off' investment for upgrades of at least >>\$100Mn² (further qualification needed) for critical long-term assets (e.g., germplasms, data models, research labs)

- c) **Several opportunities have been identified; including but not limited to cost saving potentials (some with investments)** e.g., increased utilization, outsourcing, valorization, decommissioning of non-strategic assets, renewable energy installations and upgrading of critical infrastructure
- d) **In order to realize these opportunities, further work is needed in Phase II. We propose doing a deep-dive on 1 Center (TBD),** given the complexity of lack of systemic enablers and central reported data, to:
 - i. Design initiatives addressing systemic challenges and driving internal efficiencies (note: for consolidation opportunities it is necessary to work across Centers in a region e.g., East Africa)
 - ii. Identify alternate funding mechanisms to finance gaps in maintenance and upgrades of long-term assets
 - iii. Finalize funding gap based on outcomes of internal efficiency estimates and funding mechanisms
- e) **This will provide a blueprint and playbook, for other Centers on how to realize holistic asset management and enable a refinement of the final funding gap, to be raised to the donors and funders**

The full Phase I report is provided as a read-ahead.

² Total funding gap (incl. upgrade and annual running costs) depend significantly on which assets are deemed critical, aligned costing methodologies across centers and what state of (dis)repair the key assets are currently in.

CGIAR Global Assets Study

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Overall Executive summary

Context

- **CGIAR is experiencing a tighter and more restrictive funding environment**, which has caused a challenge to fund full cost (incl. maintenance) across centers
- **In line with this challenge, BCG conducted a 4-week rapid study to identify opportunities for investments in assets including improved asset management.**

Key findings

- The conclusions of Phase I, are mainly qualitative¹, but preliminary estimations indicate **a recurring (annual) maintenance funding gap (value TBD), as well as a necessary 'one-off' investment for upgrades of at least >>\$100Mn²** (further qualification needed) for critical long-term assets (e.g., germplasms, data models, research labs)
- **Several opportunities have been identified; including but not limited to cost saving potentials** (some with investments) e.g., increased utilization, outsourcing, valorization, decommissioning of non-strategic assets, renewable energy installations and upgrading of critical infrastructure

Way forward

- **In order to realize these opportunities, further work is needed in Phase II. We propose doing a deep-dive on 1 center** (TBD), given the complexity of lack of systemic enablers and central reported data, to:
 - **Design initiatives addressing systemic challenges and driving internal efficiencies³**
 - **Identify alternate funding mechanisms** to finance gaps in maintenance and upgrades of long-term assets
 - **Finalize funding gap** based on outcomes of internal efficiency estimates and funding mechanisms
 - **Develop playbook and governance for rolling-out initiatives from deep-dive centers across other centers**

Note: Overall value of CGIARs intellectual property, expertise and real estate has not been estimated

1. The collected data was mostly of a qualitative nature (Center interviews, as well as survey based questionnaires)

2. Total funding gap (incl. upgrade and annual running costs) depend significantly on which assets are deemed critical, aligned costing methodologies across centers and what state of (dis)repair the key assets are currently in.

3. For consolidation opportunities we will have to work across centers in a region e.g., East Africa

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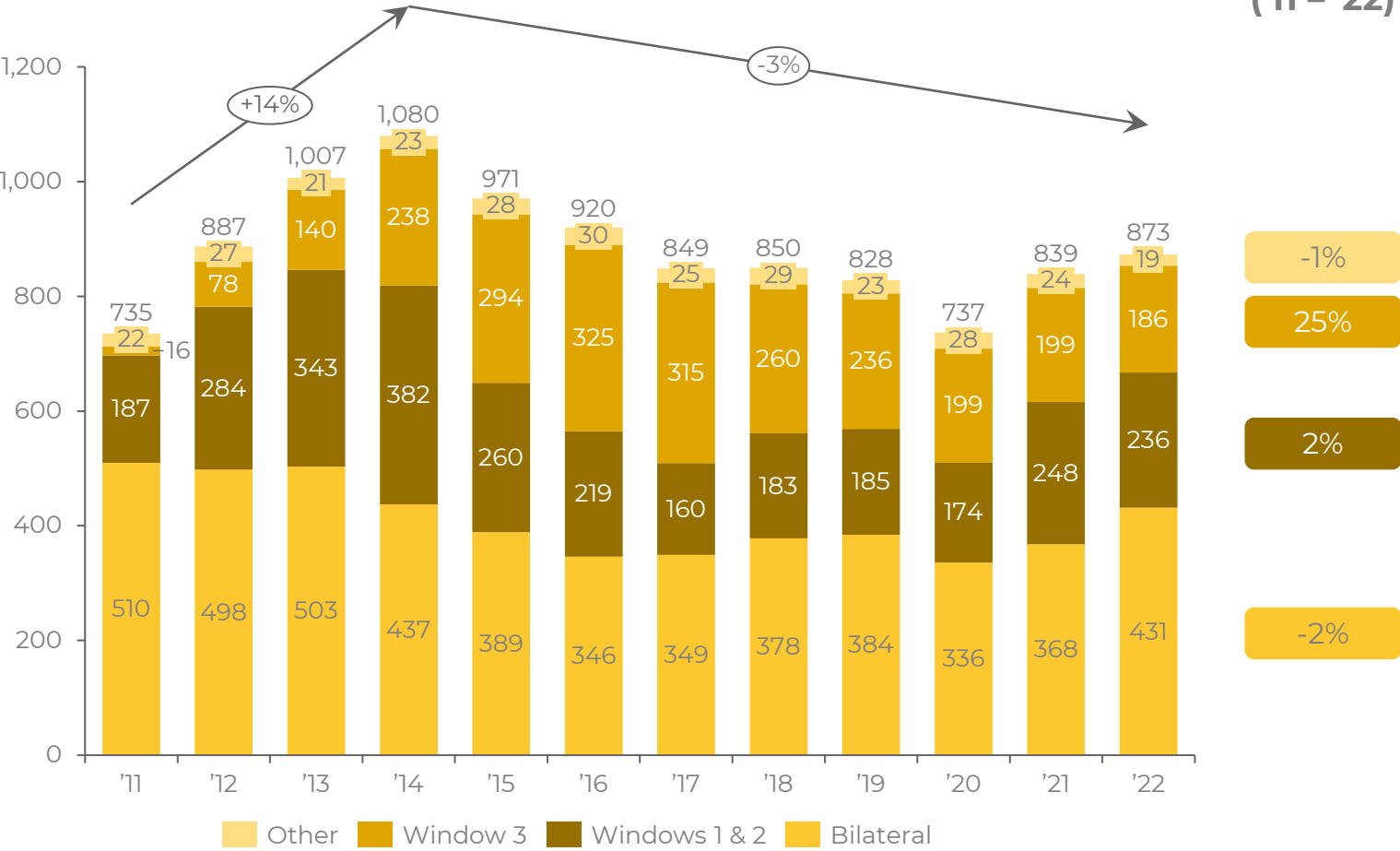
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CGIAR is experiencing a tighter and more restrictive funding environment

All CGIAR revenue by year and source of funding (\$Mn)



Funding declined by 3% (CAGR) since 2014, and was significantly impacted during Covid

In addition, funding mix has changed (towards W3 compared to W1 and W2) and become more restrictive (>95% of funding is restrictive) shifting to research / initiative-based programs

This has limited center's ability to direct funds beyond projects, making maintenance of essential long-term assets difficult beyond program life cycle

Note: 2023 figures not available yet
Sources: CGIAR Financial Dashboards, 2022 Annual Reports for CIFOR, ICRAF and ICRISAT

Phase I rapid assessment has relied on qualitative sources for identifying investment opportunities due to data limitations

Study objectives and scope

- We conducted a 4-week rapid assessment to identify opportunities for investments in assets including an improved asset management approach

Out-of-scope for the study

- **Seed bank** asset types are not covered as they are primarily covered by genebanks, which have previously been studied and were not in scope for this study
- **Value of land** (despite being a major asset) has not been covered in the study
- **Intangible non-research assets** e.g., human capacity and capability, CGIAR partnerships, knowledge and expertise etc. have not been covered by the study

Study and data limitations

- **Without a centralized asset repository or data system**, the analysis **relies on self-reported data** by centers, which meant varying understandings of definitions, and incomplete data reporting
 - For example, inconsistent classifications of strategic vs non-strategic assets and utilization rates; as well as varying completeness of data provided for items like maintenance and upgrade costs
- **Lack of data for true costs of assets**, especially operating costs of assets, makes it difficult to understand shortfall for cost recovery and the funding gap
- **Lack of definition and standardization across centers** e.g., costing methodology, definition of strategic assets, makes it difficult to do cross center analysis



Data limitations make analysis directional requiring further deep -dive in phase 2

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We identified opportunities to minimize funding gap, while highlighting enablers required to capture these opportunities

Opportunities

Across CGIAR, multiple opportunities exist to drive internal efficiencies:

- **Drive increased cost efficiency, at times with investment** (e.g., decarbonization, upgrading critical infrastructure)
- **Optimize asset utilization and costs, through consolidation** (e.g., decommissioning underutilized assets)

Enablers

To enable holistic asset management in CGIAR and make this exercise sustainable in the long term, the following enablers are pre-requisites and must be put in place:

- **Distinguishing between strategic and non-strategic assets:** In determining what assets to fund, a fundamental first step is the definition of what is strategic or not. This avoids investment in non-critical assets. A clear definition framework needs to be designed and cascaded throughout the organization to support this distinction in future efforts (linked to Megaprograms – in development for Sep '24)
- **Developing an improved costing methodology:** A full asset life cycle costing methodology (including maintenance, upgrade and common costs / overheads for full asset lifecycle) is needed to understand gaps in cost recovery and ensure assets can be funded (linked to Costing Methodology Review)
- **Implementing a central asset repository and inventory management tool:** Implementation of such a tool is a critical enabler to managing assets. It also creates asset transparency, enabling identification of opportunities for cost efficiency and collaboration across centers (linked to Facilities+ database and ICI)
- **Exploring alternative sources and models of funding:** Once the above is in place it is critical to determine the appropriate funding mechanisms for various asset types to maintain long-term critical assets beyond program lifecycles and reduce the funding gap. Examples include private sector partnerships, subscription and license fees, however commercialization of assets requires proper consideration (linked to Innovative Funding and Resource Mobilization)

20 opportunities identified for driving impact, from a longer list of opportunities identified by centers

~60+ opportunities identified by centers¹



~30 interviews across centers, megaprograms and central functions



~50 documents analyzed inc. data collection tool




Summarized into 20 investment opportunities across 3 themes



Opportunities for direct cost optimization

Opportunities identified for potential direct cost optimization from **interviews and data analysis**

- 1 **Consolidate offices and buildings** in close geographic proximity across centers
- 2 **De-commission and consolidate underutilized tangible research assets** (labs, equipment, germplasm); outsource services, where required
- 3 **De-commission underutilized intangible assets** i.e., platforms, applications and websites to reduce maintenance costs
- 4 Provide **3rd party research services** to increase lab utilization and do full cost recovery
- 5 **Localize resources** (HQ, labs, people), closer to areas of implementation

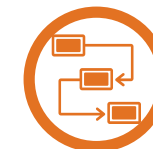
 Potential to bring cost efficiency and/or revenue generation in the long run



Investment in existing or new assets

Investment in assets **proposed by centers in the data collection tool**, some can bring cost efficiency and revenue generation

- 6 Invest in **decarbonization of facilities** to bring down energy cost and carbon emission 
- 7 Build **new strategic tangible and intangible research assets** (e.g., genebank, germplasm health unit, fish breeding facility, water data hub)
- 8 **Upgrade and refurbish existing offices / buildings and conference rooms** to maintain day-to-day operations
- 9 **Upgrade critical infrastructure** (such as electrical, water, roads and generator systems) to maintain day-to-day operations 
- 10 **Modernize research labs and equipment** to make them fit for purpose and deliver on identified research outcomes 
- 11 Invest in **upgrade and interoperability of datasets and data models** to help consolidate and reduce maintenance costs in the long run 
- 12 Build **new office spaces in existing facilities** to host CGIAR/non-CGIAR partners for better utilization of campus space 
- 13 Invest in a **common ERP system** to drive shared services across centers 



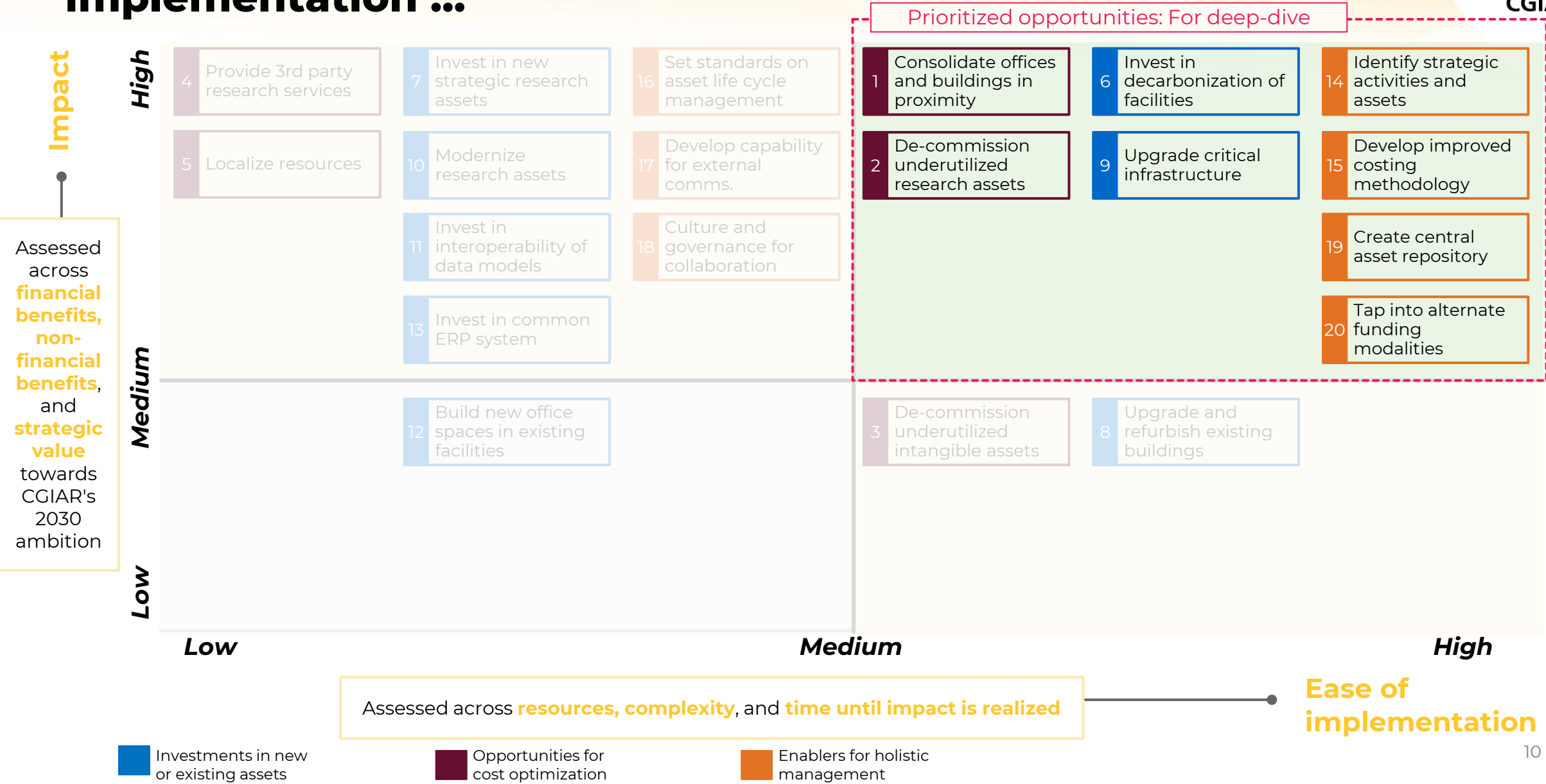
Enablers for holistic asset management

Enablers for holistic asset management from **BCG asset management framework, pre-requisites for to capture other opportunities**

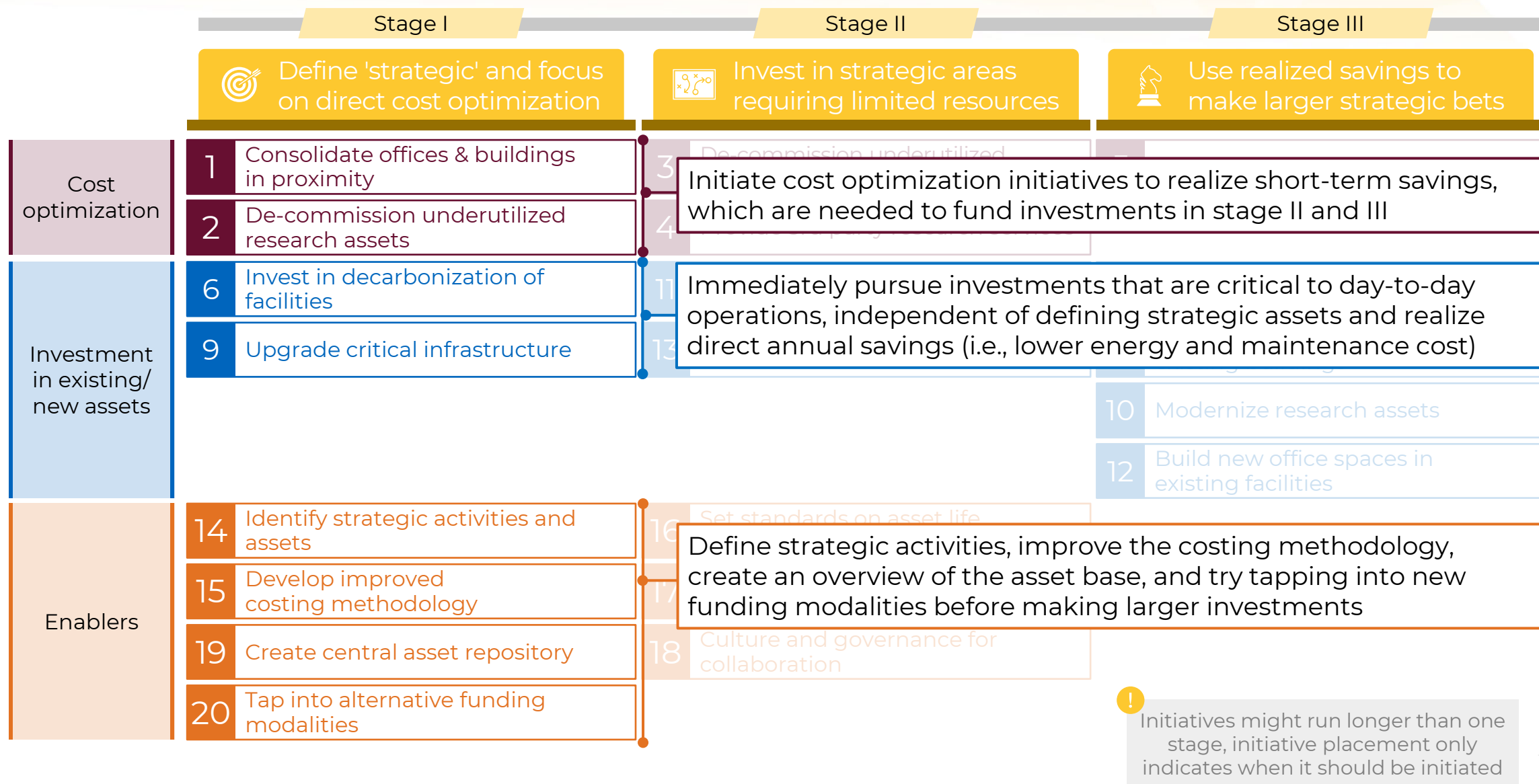
- 14 Develop **framework to identify strategic vs non-strategic activities** and assets, to identify strategic assets that need to be invested in and maintained
- 15 Develop improved **costing methodology** for internal and external purposes to identify true costs of assets across lifecycle (maintenance, upgrade)
- 16 Set **standards on asset life cycle management** including preventive maintenance and quality control
- 17 Invest in **capability building for external communication and advocacy with funders and donors** (communication, grant writing, advocacy)
- 18 Implement **culture and governance structure** to incentivize cost efficiency and drive collaboration
- 19 Create **central repository for all assets** (tangible and intangible) to avoid duplication of work and assets (including IPs and licenses)
- 20 Identify and tap into **alternative funding** to maintain long term critical assets (e.g., long term study trial, germplasm, data model)

1. Full list in Appendix VI: Long list of investment opportunities by centers

We have prioritized 8 opportunities for immediate implementation ...



... however, in the long run financial and other resource constraints demand a stage-wise implementation (II)



Several opportunities for cost efficiency exist across centers, however, require further exploration in Phase II

Example opportunities for deep-dive in Phase 2



Consolidating offices and buildings in geographic proximity across Centers

Offices are fragmented both across and within Centers, increasing costs

Centers can consolidate office spaces within geographic proximity to one-another, improving economies of scale and lowering overall lease costs

To identify appropriate opportunities for consolidation, we will have to conduct deep-dives with relevant centers in similar geographies to understand:

- **Local complexity and context** e.g., assets that have been provided by governments
- **Understand operating costs, lease costs and other overheads** to identify the true potential



Decommissioning or consolidate underutilized research labs and equipment

Labs and research equipment within centers are underutilized, increasing maintenance costs

Centers can:

- Decommission and consolidate underutilized asset bundles, and outsource where required, to reprioritize operating and maintenance cost spend
- Or provide 3rd party services to external parties, to increase utilization and do full cost recovery

To identify appropriate opportunities for decommissioning and consolidation, we **will have to:**

- Develop a **clear definition of strategic vs. non-strategic assets**
- **Conduct deep-dives with centers to identify similar assets (across centers)** due to lack of central data

DRAFT - to be refined in Phase 2

Investing in decarbonization can reduce energy cost by up to 40% and reduce CO₂ emissions by ~20%



Internal example | Reduced energy cost by ~15% without investment

In 2018 CIAT partnered with a local energy company to install solar panels on its Colombia campus, **generating ~40% of energy on-site**

CIAT **lowered energy spend ~15%** and **carbon emissions ~20%**, while improving energy reliability

Solar panels were fully financed by the electricity company

Implementation lasted **2 years**



External example | Reduced energy cost by ~50% with investment

ICIPE lowered its grid reliance in Kenya through:

- Energy Management System to identify opportunities for energy efficiency
- Policy for procuring energy efficient equipment
- Solar panel installation generating 35% of energy on-site

Total **energy cost reduced by 50%**

Key case study findings when internally funded

\$14-20Mn

Estimated upfront investment

~\$2Mn

Estimated annual savings

10-15%

Estimated annual ROI

**-20%
kg CO₂
emissions**

Reduction in CO₂ emissions

1-2 yrs

Implementation timeline

Upgrading critical infrastructure enables centers to conduct daily research effectively, whilst also providing cost savings



Internal example 1 | Replace old CIP genebank refrigeration system

System is ~50 years old and critical elements are no longer produced, necessitating a new system or shutdown

Estimated replacement benefits:

- No more corrective maintenance
- Reduces preventive maintenance
- Reduces energy consumption by 10-20%

Total **annual ROI** of **7%** assuming \$250k investment



Internal example 2 | Construct new wells & boreholes at CIP - La Molina

~30 year old wells and tubes are **beyond their lifecycle** and hence **unreliable** and at **risk of collapse**

Estimated replacement benefits:

- Eliminate corrective maintenance
- Reduce preventive maintenance
- Reduction water wastage improving environmental sustainability

Total **annual ROI** of **2%** assuming \$375k investment

Key case study findings

\$3.5-4Mn

Estimated upfront investment

\$0.1-0.3Mn

Estimated annual savings

2-7%

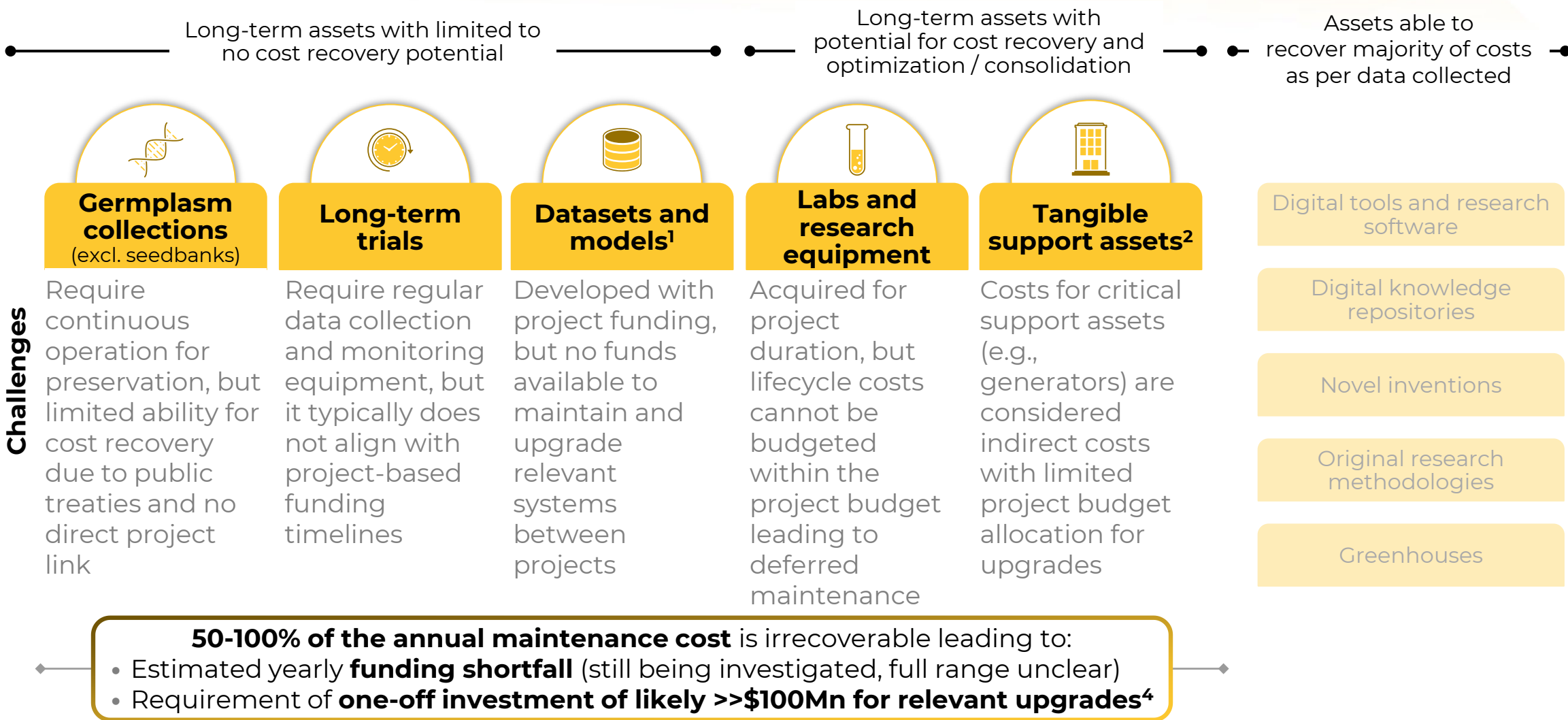
Estimated annual ROI

<1 yrs

Implementation timeline



For 5 critical long-term asset types 50-100% of maintenance cannot be recovered leading to a recurring annual funding gap



1. Includes Unique datasets and Specialized databases; 2. No conclusion on funding challenges of Parent tangible support assets and Leases were derived as maintenance data was not collected for these assets; 3. Assuming centers have only reported on strategic assets and that a significant share of the asset base is not capture; 4. Final figure strongly depends on final classification of strategic and non-strategic assets and upgrade investments will have to made over a longer period than one year

Source: CGIAR asset database; Note: data as of 01.05.2024 and overall value of CGIARs intellectual property, expertise and real estate has NOT been estimated;

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Different funding mechanisms can be used based on the asset type e.g., monetization of long-term trials / data models / labs

Monetization mechanisms						
	Germplasms	Long-term trials	Datasets and models	Labs and research equipment	Tangible support assets	
	Private sector partnerships	Partner with players that may benefit from CGIAR germplasms (e.g Bayer, Syngenta)	Partner with players that may benefit from CGIAR long-term trials (e.g Corteva, BASF)	Partner with agri & food companies that leverage data and analytics (e.g Cargill, PepsiCo)	Partnership can be designed to fund labs and research equipment (e.g with OEMs)	Partnership can be designed to fund support assets (e.g decarbonisation)
	Subscription / membership fees	General membership fees may cover a portion of costs, although need to consider fairness	General membership fees may cover a portion of costs, although need to consider fairness	Feasible to charge for access & usage of datasets (e.g full version), although need to consider fairness	Feasible to charge for some lab and equipment usage (e.g 3 rd party research services)	Feasible to charge for access to some support facilities (e.g hosting)
	Patents and licence fees	Public good nature of germplasms make it unlikely to be licensed as IP	Outcomes & procedures from trials may be licensed, although need to consider fairness	Models a candidate for IP that may be licensed, although need to consider fairness	Minimal IP created that can be licensed	Minimal IP created that can be licensed
	Endowment investments	Continuous maintenance needed and limited alternate funding options	Long-term and regular funding needed given duration of trials	Regular updating and maintenance of datasets and models needed	Possible although cost recovery via users more feasible	Possible although cost recovery via users more feasible
	Subsidised financial liabilities	Minimal direct cost saving / income generating investments possible	Minimal direct cost saving / income generating investments possible	Minimal direct cost saving / income generating investments possible	Investments into efficient equipment may realise net cost savings / greater income	Funding can realise cost savings that can be used to repay financing (e.g boreholes)

Potential application: ■ High ■ Medium ■ Low

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This asset study overall aims to answer a set of questions regarding...

- ? Which assets should be maintained to deliver on the CGIAR 2030 research strategy?
- ? What is the cost of upgrading and maintaining these assets?
- ? Where do we see redundancies in the asset base that need to be addressed?

..., but pre-requisites need to be developed to answer these

- > Framework for defining strategic activities and assets
- > Central asset repository of the asset base
- > Improved costing methodology for estimating the true cost of an asset

Given the complexity and requirements for developing these pre-requisites, we propose a phased approach for deep-dive in Phase II

- Focus on one center to put in the pre-requisites for answering these questions, which can then be extended to other centers

For phase II, we propose the following scope

In phase I we identified initiatives to address systemic challenges and to drive internal efficiencies and we estimated the funding gap for long-term assets

For phase II, we propose to deep-dive on one center (TBD which center) to achieve the following objectives:

- 1 **Design and deploy initiatives addressing systemic challenges (enablers)**, which are *Identify strategic activities and assets, Develop improved costing methodology, Create central asset repository, and Identify alternate funding mechanisms*
- 2 **Design initiatives driving internal efficiencies**, which are:
 - 2A Cost optimization initiatives involving the region of the deep-dive center: *Consolidate offices and building in proximity and De-commission underutilized research assets*
 - 2B Initiatives requiring upfront investment involving only the deep-dive center: *Invest in decarbonization of facilities and Invest in critical infrastructure*
- 3 **Refine center maintenance and upgrade funding gap**
- 4 **Develop playbook and governance for rolling-out initiatives from deep-dive centers across other centers**

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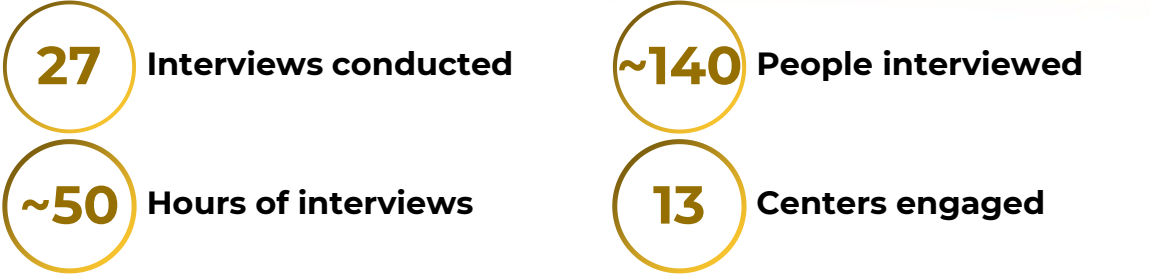
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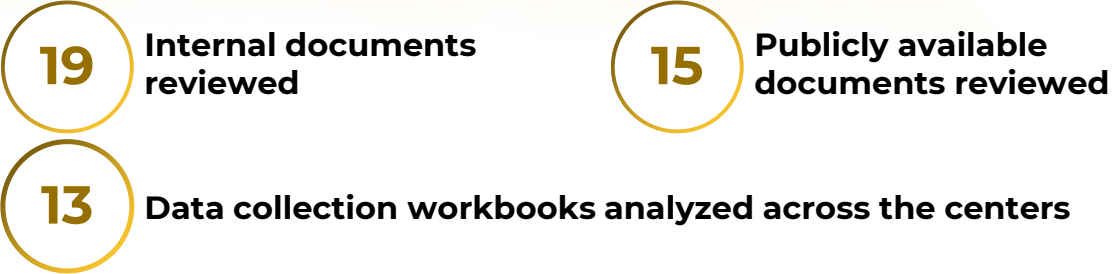
 Appendix

Appendix I: Process update

Conducted 27 interviews across 13 centers, 4 central functions and 10 mega-programs, analyzing ~50 documents



Centers	No. of interviewees		Function	No. of interviewees
Alliance	8	Central functions	Facilities Management	1
CIP	8		Breeding Resources	3
ICRISAT	14		Genebanks	1
IFPRI	3		Finance team	2
IITA	7	Mega-programs	MP5 ¹	2
IRRI	21		MP7 ²	1
IWMI	7		MP10 ³	5
CIFOR/ICRAF	6		MP6 ⁴	5
WorldFish	7		MP3 ⁵	2
ICARDA	8		MP1 ⁶	10
ILRI	11		MP2 ⁷	
CIMMYT	5		MP4 ⁸	
AfricaRice	5		MP8 ⁹	
			MP9 ¹⁰	



Internal documents	Public documents
CGIAR 2030 research and innovation strategy	CGIAR Financial Reporting Dashboards
CGIAR portfolio and megaprograms design process	Public audit report for all centers (x13)
CGIAR Facilities + Database	Crop Trust endowment fund documents
Facility management overview and hosting implications	
Study of CGIAR Center Assets (High-Level Intro)	
CGIAR financial statements by center	
Facilities profiles by center (x13)	
Data collection tool by center (x13)	

1. Closing Productivity & Resilience Gaps Through Genetic Innovation; 2. Animal & Aquatic Food Systems for Nutrition & Health; 3. Accelerator: Digital & Data; 4. Closing the Production and Sustainability Gap through Agronomy; 5. Institutional Innovations, Policies and Trade-offs for Food, Land and Water System Sustainable Transitions; 6. Climate Action across food, Land and Water Systems (mitigation and adaptation); 7. Regenerative Landscape and Agroecosystems (agroecology, nature-positive solutions, one health, and other approaches); 8. Delivering Sustainable Diets, Nutrition, and Health; 9. Future Food Systems Frontiers; 10. Delivery and Scaling of CGIAR Offers (in national innovative systems)

Appendix II: Limitations of the study

Limitations of the study

Scope: The focus of the study was a 4-week rapid assessment to identify opportunities for investments in assets including an improved asset management approach

Limitations:

- This study **does not cover intangible non-research assets** (e.g., human capacity and capability, CGIAR partnerships etc.) and land value (despite being a major asset)
- The **analysis relies on the data collected as self-reported numbers via the centers**, with varying understanding (due to lack of definition) for:
 - Strategic vs non-strategic assets
 - Asset bundle labelling
 - Utilization rates for research assets by asset bundle vs asset type
 - Utilization rates for intangible support assets
 - Maintenance and upgrade cost
 - *This makes the analysis more directional and requires further deep-dive in phase 2*
- **Lack of data for true costs of assets, especially operating costs** of assets, makes it difficult to understand shortfall for cost recovery and the funding gap
- **Note: Data collection for Phase 1 only focused on assets that are currently utilized, not capturing a potential larger set of assets that are under utilized** and still are maintained (have maintenance costs) – resulting in cost reduction opportunity estimates falling on the lower end of spectrum

Appendix III: CGIAR asset classification

A comprehensive list of CGIAR Centers' tangible and intangible assets

A



Germplasm collections

- Seed banks
- Live gene banks
- Microbial culture collections
- Aquatic germplasm collections
- Invertebrate germplasm collections (insects)
- Disease vectors

Long-Term Studies/Trials

Laboratories (including germplasm health units)

Research Equipment



C

Group A:
Tangible
Research
Assets

Group B:
Intangible
Research
Assets

Group C:
Tangible Support
Assets

B



Intellectual property

- Patents on novel inventions (including hybrids)
- Copyrights on original research methodologies or publications

Knowledge Management

- Datasets
- Knowledge repositories

Systems and Software

- Specialized software applications or research applications, or data models

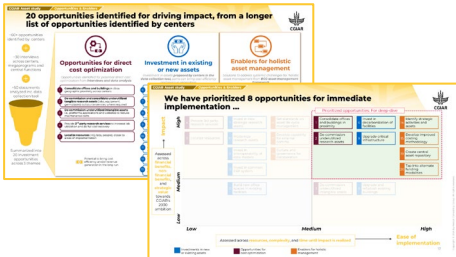
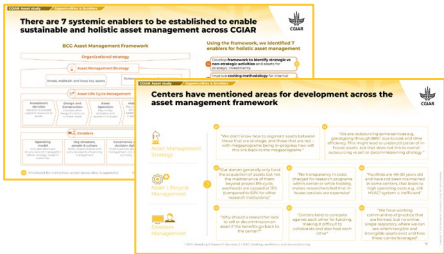
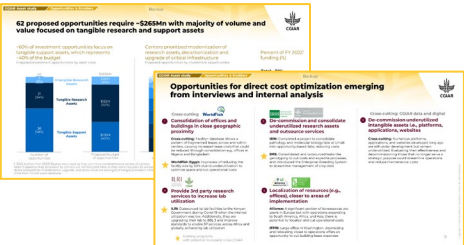
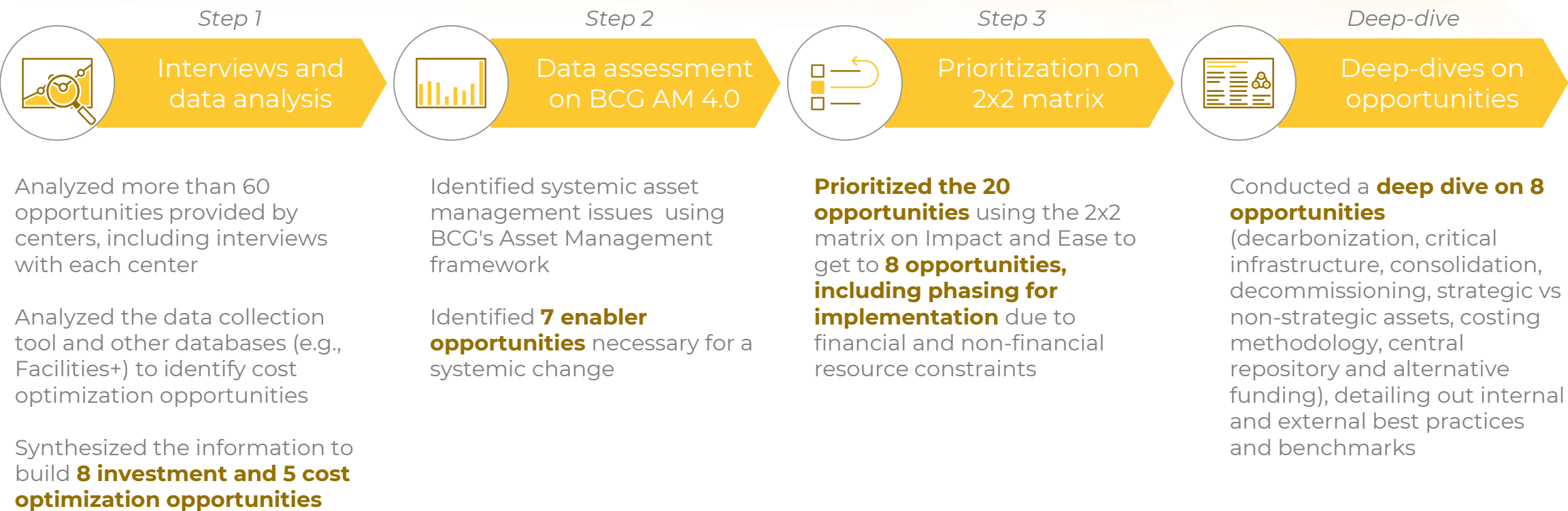
Research capabilities

- Established research methodologies and protocols

Equipment and Machinery (\$100K) Land and Buildings

- | | |
|-----------------------|---|
| • Land and Buildings | • Animal facilities |
| • Campuses | • Ponds |
| • Research stations | • Infrastructure |
| • Office Buildings | (Generators, water treatment plants, solar farms, etc...) |
| • Experimental Fields | |
| • Labs | |

Appendix IV: Details on summarized 20 opportunities



Opportunities for direct cost optimization emerging from interviews and internal analysis

Cross-cutting WorldFish

1 Consolidation of offices and buildings in close geographic proximity

Cross-cutting: Facility+ database shows a pattern of fragmented leases across and within centers, causing increased lease costs that could be reduced through consolidation e.g., offices in Nigeria and Bangladesh



WorldFish Egypt: In-process of reducing the facility size by 60% due to underutilization to optimize space and cut operational costs



4 Provide 3rd party research services to increase lab utilization



ILRI: Outsourced its lab facilities to the Kenyan Government during Covid-19 when the internal utilization was low. Additionally, they are upgrading their lab to BSL 3 and improve standards to enable 3P services across Africa and globally, enhancing lab utilization



Existing programs, with potential to expand cross CGIAR



2 De-commission and consolidate underutilized research assets and outsource services

IRRI: Completed a project to consolidate pathology and molecular biology labs at Umali into opportunity-based labs, reducing costs



BRS: Consolidated and outsourced tasks like genotyping to cut costs and expedite processes, and introduced the Enterprise Breeding System to streamline management of crop data



5 Localization of resources (e.g., offices), closer to areas of implementation

Alliance: A significant portion of its resources are spent in Europe but with operations expanding to South America, Africa, and Asia, there is potential to 'localize' and cut operational costs

IFPRI: Large office in Washington, downsizing and relocating closer to operations offers an opportunity to cut building lease expenses

Cross-cutting: CGIAR data and digital

3 De-commission underutilized intangible assets i.e., platforms, applications, websites

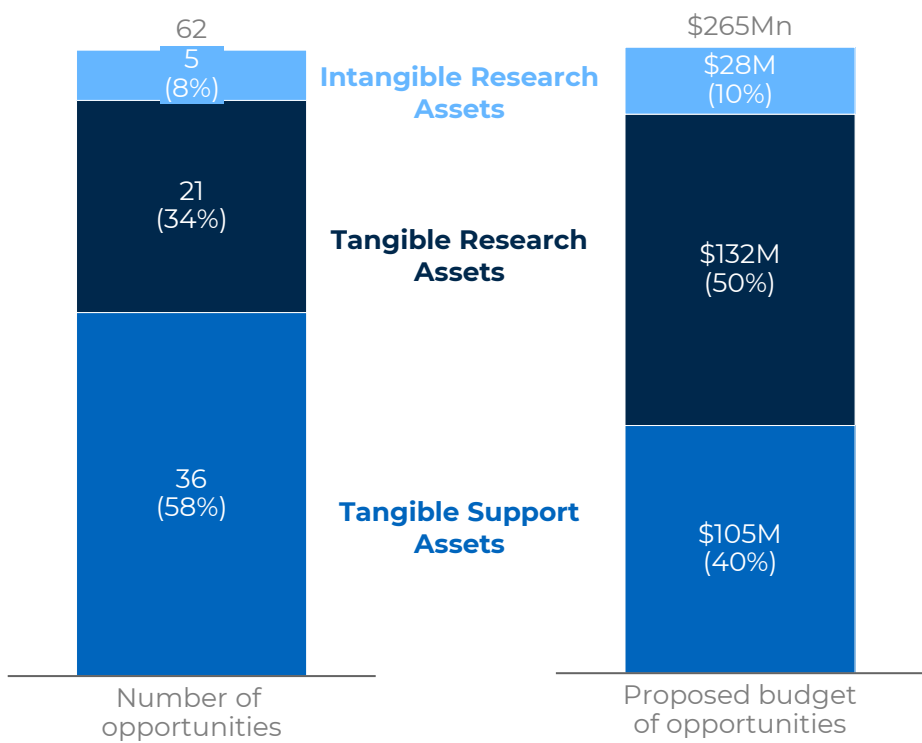
Cross-cutting: Numerous platforms, applications, and websites developed long ago are still under development but remain underutilized. Evaluating their effectiveness and decommissioning those that no longer serve a strategic purpose could streamline operations and reduce maintenance costs



62 proposed opportunities require ~\$265Mn with majority of volume and value focused on tangible research and support assets

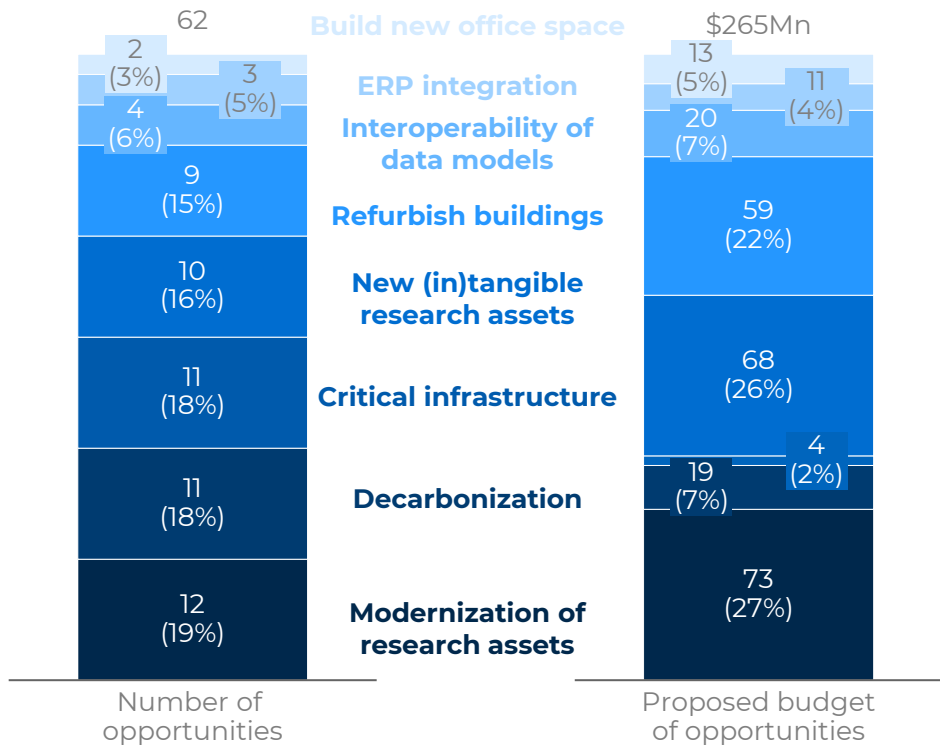
~60% of investment opportunities focus on tangible support assets, which represents ~40% of the budget

Proposed investment opportunities by asset class

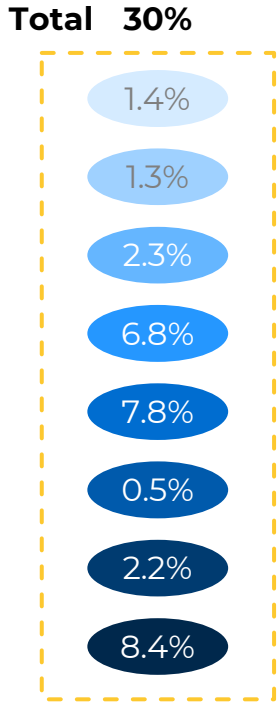


Centers prioritized modernization of research assets, decarbonization and upgrade of critical infrastructure

Proposed opportunities by investment opportunities



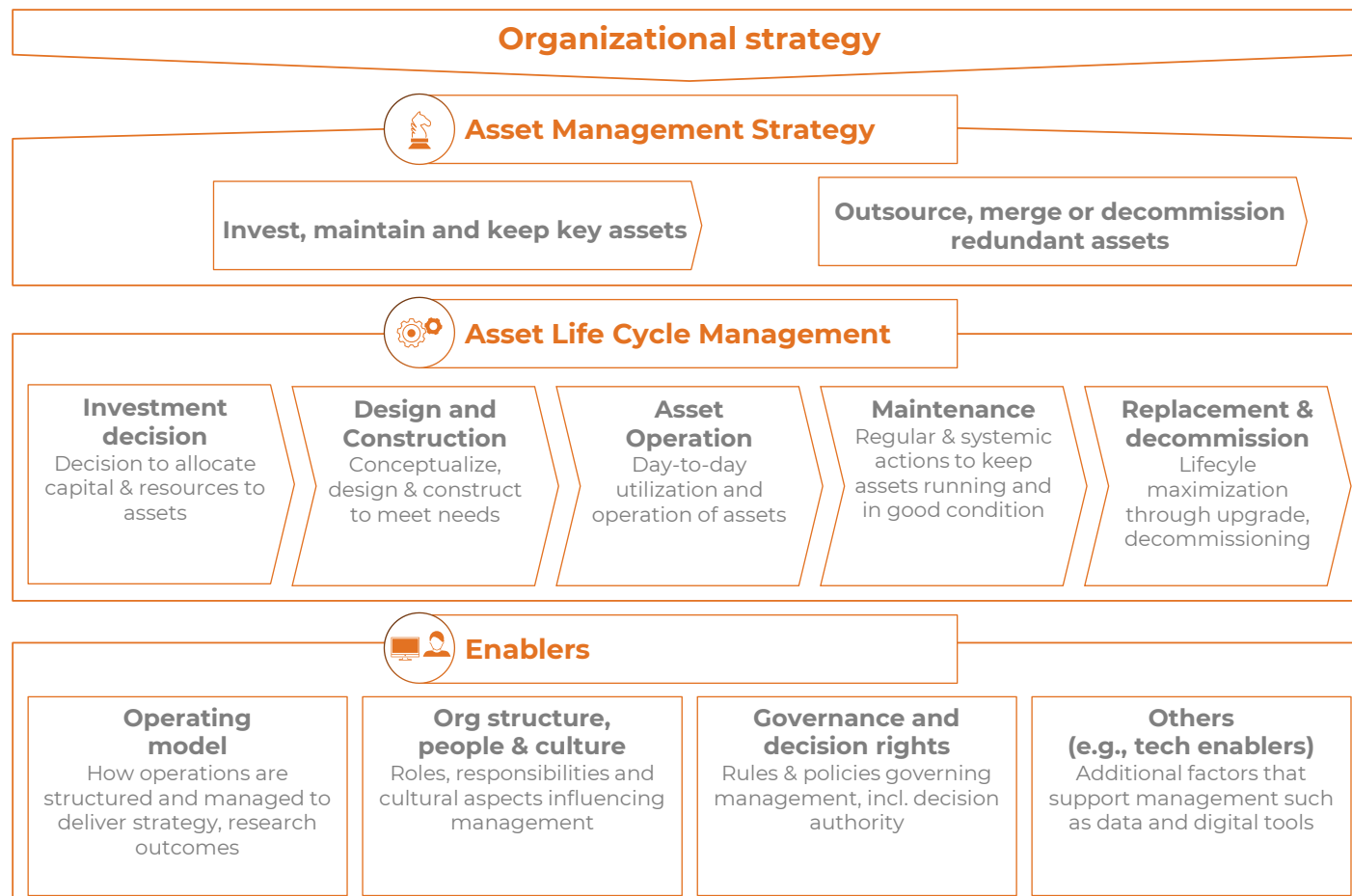
Percent of FY 2022¹ funding (%)



1. 2022 (rather than 2023) figures were used as they are more comprehensive across all centers
Note: 3 opportunities proposed by centers are not included here as they were requests for annual maintenance funding and not an investment opportunity; dollar amounts for maintenance, upgrade, and book value are averages of ranges provided in the CGIAR asset database Opportunities listed as of 8th May 2024 from CGIAR asset database

There are 7 systemic enablers to be established to enable sustainable and holistic asset management across CGIAR

BCG Asset Management Framework



Using the framework, we identified 7 enablers for holistic asset management

- 14 Develop **framework to identify strategic vs non-strategic activities** and assets for strategic investments ☆
- 15 Improve **costing methodology** for internal and external purposes to identify true costs of assets across lifecycle ☆
- 16 Set **standards on asset life cycle mgmt.** incl. preventive maintenance and quality control
- 17 Invest in **capability building for external communication and advocacy with funders and donors**
- 18 Implement **culture and governance structure** to incentivize cost efficiency and drive collaboration
- 19 Create **central repository for all assets** (tangible and intangible) to avoid duplication of work and assets (incl. IP/licenses) ☆
- 20 Identify and tap into **alternative funding** to maintain long term critical assets (e.g., long term study trials, germplasms, data models) ☆

Centers have mentioned areas for development across the asset management framework



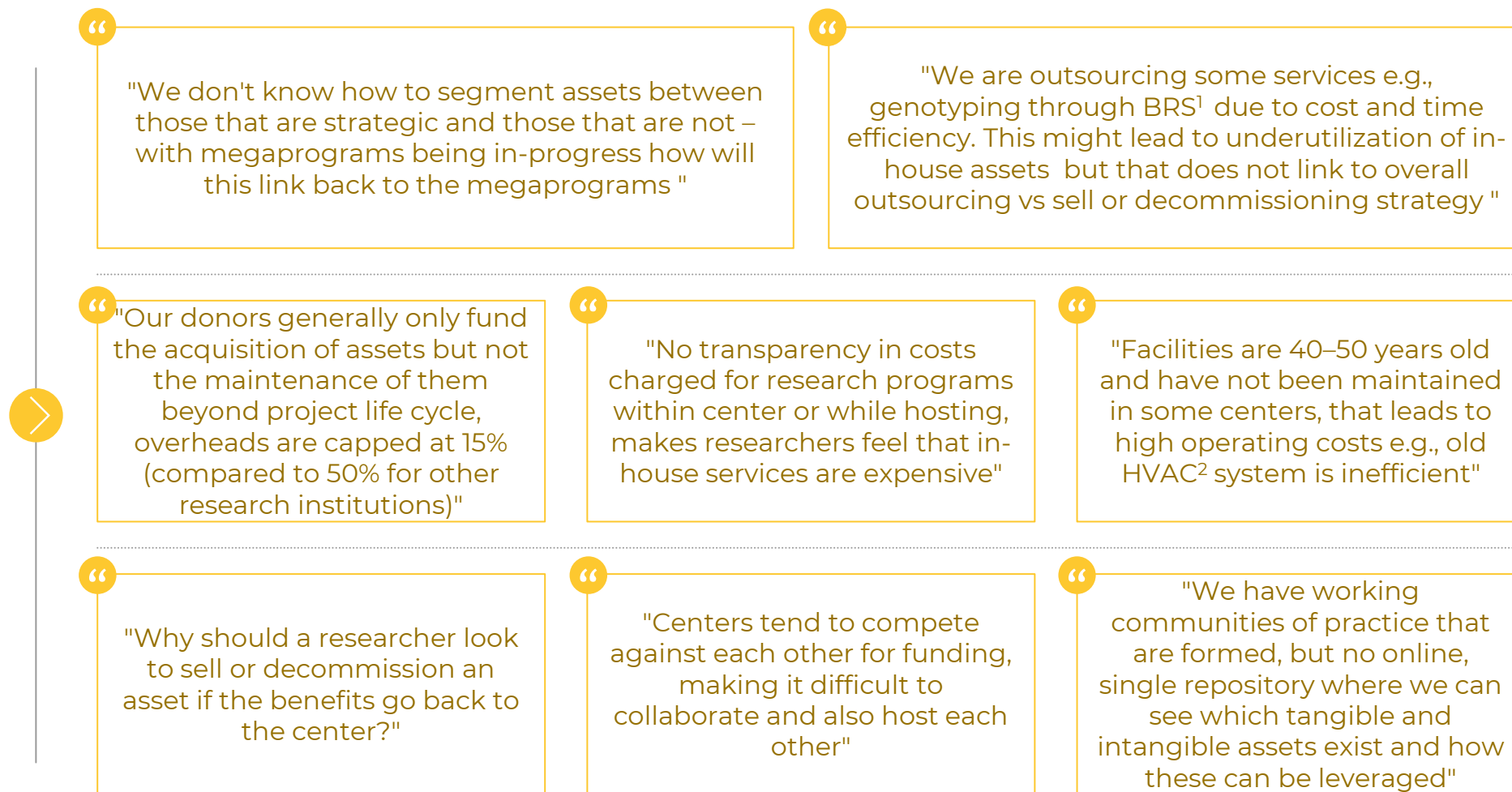
Asset Management Strategy



Asset Lifecycle Management



Enablers Management



1. BRS: Breeding & Research Services, 2. HVAC: Heating, ventilation, and air conditioning

We have identified 5 opportunities for cost optimization (I/II)

1 Consolidate offices and buildings in close geographic proximity across centers

Context: Leases in several geographies are fragmented both across and within centers, causing an inefficient clustering of office spaces, thus increasing costs

Solution: Increasing cross and intra-center coordination and planning, allowing for consolidation of office spaces within close geographic proximity to one-another, allowing for benefits from economies of scale

Use case: Clusters of buildings in Bangladesh, Nigeria, Senegal, India

3 De-commission underutilized intangible assets i.e., platforms, applications and websites to reduce maintenance costs

Context: Outdated and/or unused platforms, applications, and websites are kept running beyond their useful life, resulting in an unnecessary allocation of resources and time towards the maintenance of these assets

Solution: Decommissioning of intangible assets once they have surpassed their useful life, allowing for a reallocation of funds and technical capacity

Use case: ICARDA, CIP

2 De-commission and consolidate underutilized tangible research assets (labs, equipment, germplasm); outsource services, where required

Context: Low research lab and equipment utilization rates for processes like genotyping, due to limited need for frequent use; duplication of equipment across centers; and researchers opting to outsource these processes, given offerings of lower costs and faster processing times

Solution: Decommission underutilized non-strategic assets, thus allowing for a reprioritization of maintenance spend and ensuring centers can prioritize their core areas of expertise

Use case: ICRAF/CIFOR, ILRI, IWMI, WorldFish

4 Provide 3rd party research services to increase lab utilization and do full cost recovery

Context: Multiple research labs across (and within) centers are under utilized, and are also not being made available to the full spectrum of 3rd party research services

Solution: Adjust business model to allow a wider spectrum of 3rd party researchers (e.g. private sector, government) to use CGIAR facilities to increase utilization

Use case: ILRI using contract research facility (CRF) and providing 3P services e.g., during Covid to Kenyan government

We have identified 5 opportunities for cost optimization (II/II)

5 Localize resources (HQ, labs, people), closer to areas of implementation

Context: Over time, Centers have shifted their core areas of geographic focus, without repositioning key assets like HQ's and laboratories. This has resulted in reduced research efficiencies and increased administrative costs like travel and shipping of samples across geographies

Solution: Localize strategic resources to ensure closer proximity to core areas of implementation, thus increasing factors like analysis timelines, and lowering administrative costs

Use case: Alliance, IFPRI

We have identified 8 investment opportunities related to investment in existing or new assets (I/II)

6 Invest in decarbonization of facilities to bring down energy cost and carbon emission

Context: Many facilities have high energy costs and unreliable electricity sources putting critical infrastructure at high risk e.g., genebanks, and germplasm health units. Thus, facilities rely on generators, further increasing operational cost and emissions.

Solution: Invest in decarbonization through solar installments to reduce operating costs in long run and enhance reliability.

Use case: Alliance Colombia, ILRI Ethiopia and Nairobi, IWMI campuses and vehicles

8 Upgrade and refurbish existing offices / buildings and conference rooms to maintain day-to-day operations

Context: Centers have outdated buildings and facilities used for offices including conference rooms. This hampers day-day operations and reduces workforce productivity

Solution: Invest in refurbishing and/or upgrading facilities and offices to improve workforce efficiency and improve employee satisfaction

Use case: Africa Rice administrative buildings, IRRI HQ and regional campuses, Alliance HQ in Rome

7 Build new strategic tangible and intangible research assets (e.g., genebank, germplasm health unit, fish breeding facility, water data hub)

Context: Centers have identified investments to build new strategic tangible and intangible research assets to deliver on research outcomes and for geographic expansion to area of implementation (e.g., genebank, germplasm health unit, fish breeding facility, water data hub)

Solution: Invest in building new tangible and intangible research assets based on research outcomes and geographic focus, linking to the megaprograms

Use case: IRRI-WorldFish-IWMI datahub for open access global water data, Alliance new genebank in Uganda

9 Upgrade critical infrastructure (such as electrical, water, roads and generator systems) to maintain day-to-day operations

Context: Centers have outdated critical tangible support assets (e.g., generators, water drainage, and electrical equipment) leading to high operating costs (e.g., energy) and corrective maintenance cost. This also increases likelihood of failure jeopardizing critical operations

Solution: Invest in upgrading critical support assets to reduce operating costs in long run and enhance reliability

Use case: CIP upgrade of refrigeration system for Genebank and construction of new wells & boreholes

We have identified 8 investment opportunities related to investment in existing or new assets (II/II)

10 Modernize research labs and equipment to make them fit for purpose and deliver on identified research outcomes

Context: Facilities have outdated research equipment and laboratories without the budget for upgrading these leading to higher maintenance costs and lower research efficiency and effectiveness

Solution: Invest in research labs and equipment with high maintenance costs and scientific value, linked to the megaprograms

Use case: ILRI BSL 3 lab, CIMMYT Phenotyping labs

12 Build new office spaces in existing facilities to host CGIAR/non-CGIAR partners for better utilization of campus space

Context: Campuses have additional green space that can be used to build new office space to host CGIAR and non-CGIAR partners for better utilization of campus space

Solution: Build new office spaces on campuses that have potential to host more partners for better utilization of space and higher cost recovery for campus as a whole

Use case: ILRI Nairobi and Addis campus

11 Invest in upgrade and interoperability of datasets and data models to help consolidate and reduce maintenance costs in the long run

Context: Datasets and data models do not have a user-friendly front-end and are not connected with each other leading to lower usage and higher maintenance costs as databases are fragmented

Solution: Invest in upgrading and increasing interoperability to enhance collaboration, increase research efficiency and utilization, and lower maintenance costs

Use case: IRRI interoperability between databases

13 Invest in a common ERP system to drive shared services across centers

Context: Different centers operate on different ERPs, and have standalone support functions (e.g. Finance, IT and HR) that operate independently across centers

Solution: Gradually shift centers onto a common ERP to standardize data and interface. This allows for economies of scale and unlocks shared services for support functions across these centers

Use case: Triparty agreement between IRRI, IWMI & WorldFish to have common ERP system and shared services for support functions

We have identified 7 opportunities to enable a holistic asset management framework (I/II)

14 Develop framework to identify strategic vs non-strategic activities and assets, to identify strategic assets that need to be invested in and maintained

Context: Centers don't have a framework and guidelines to decide which activities are strategic vs non-strategic making it difficult to identify strategic assets (to keep, maintain and upgrade) vs non-strategic (can be outsourced, sold or decommissioned)

Solution: Develop framework and guidelines to define strategic vs non-strategic assets linked to megaprograms and relevant research outcomes

Use case: Cross-cutting, linked to existing CGIAR program: megaprograms

16 Set standards on asset life cycle management including preventive maintenance and quality control

Context: Centers lack standards (guidelines and standard operating procedures) for preventive maintenance and quality control of both tangible and intangible assets (e.g., germplasm health units and data models)

Solution: Develop guidelines and standard operating procedures for all assets including an audit mechanism, e.g., standards developed for management and quality control of genebanks

Use case: Cross-cutting, linked to existing CGIAR program: FM Standards Working Group

15 Develop improved costing methodology for internal and external purposes to identify true costs of assets across lifecycle

Context: Centers do not have standardized costing methodology to understand true costs of assets across lifecycle (e.g., upgrade and maintenance costs) and common costs for facility / campus (e.g., utilities, IT etc.)

Solution: Develop a holistic costing methodology to identify true costs of assets to be able communicate and effectively recover costs, both internally (within centers while hosting) and externally (to donors and funders)

Use case: Cross-cutting, linked to existing CGIAR program: Costing Methodology Review

17 Invest in capability building for external communication and advocacy with funders and donors (communication, grant writing, advocacy)

Context: CGIAR requires overall capacity and capability development in core areas of external advocacy and marketing e.g., communication and marketing of work being done for advocacy with donors and funders. This includes clear communication of asset life cycle true costs

Solution: Identify gaps in capacity and capability that require further investment and development, as mentioned above

Use case: Cross-cutting

We have identified 7 opportunities to enable a holistic asset management framework (II/II)

18 Implement culture and governance structure to incentivize cost efficiency and drive collaboration

Context: Centers have history of independence leading to low collaboration and there is lack of incentives to drive cost efficiency (e.g., no incentive to decommission lab equipment as costs go back to center and not a research program)

Solution: Develop a culture and governance structure (including KPIs) to incentivize cost efficiency and collaboration across centers

Use case: Cross-cutting, linked to existing CGIAR program: ICI

20 Identify and tap into alternative funding to maintain long term critical assets (e.g., long term study trial, germ plasms, data models)

Context: Long term assets (e.g., labs and equipment, long term study trials, germ plasms health unit and data models) face issue of lack of funding to maintain and upgrade these assets for their full lifecycle. This is due to short term and restrictive nature of project-based funding mechanisms

Solution: Tap into alternative funding mechanisms like endowments (e.g., Crop trust fund for genebanks), JVs, PPPs and subsidized long-term loans

Use case: Cross-cutting, linked to existing CGIAR program: Innovative Funding and Resource Mobilization

19 Create central repository for all assets (tangible and intangible) to avoid duplication of work and assets (including IPs and licenses)

Context: Need to invest in a central repository of tangible and intangible assets across centers to avoid duplication of work and assets, as well as reduce underutilization, maintenance and operating costs

Solution: Invest in building a digital central repository (accessible to all centers) of all assets across CGIAR centers

Use case: Cross-cutting, linked to existing CGIAR program: Facilities+ database, requires adding tangible and intangible research assets to the database

Appendix V: Prioritization - opportunity scoring on impact and ease

20 opportunities identified for driving impact, from a longer list of opportunities identified by centers

~60+ opportunities identified by centers¹



~30 interviews across centers, megaprograms and central functions



~50 documents analyzed inc. data collection tool




Summarized into 20 investment opportunities across 3 themes



Opportunities for direct cost optimization

Opportunities identified for potential direct cost optimization from **interviews and data analysis**

- 1 **Consolidate offices and buildings** in close geographic proximity across centers
- 2 **De-commission and consolidate underutilized tangible research assets** (labs, equipment, germplasm); outsource services, where required
- 3 **De-commission underutilized intangible assets** i.e., platforms, applications and websites to reduce maintenance costs
- 4 Provide **3rd party research services** to increase lab utilization and do full cost recovery
- 5 **Localize resources** (HQ, labs, people), closer to areas of implementation

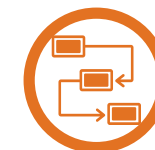
 Potential to bring cost efficiency and/or revenue generation in the long run



Investment in existing or new assets

Investment in assets **proposed by centers in the data collection tool**, some can bring cost efficiency and revenue generation

- 6 Invest in **decarbonization of facilities** to bring down energy cost and carbon emission 
- 7 Build **new strategic tangible and intangible research assets** (e.g., genebank, germplasm health unit, fish breeding facility, water data hub)
- 8 **Upgrade and refurbish existing offices / buildings and conference rooms** to maintain day-to-day operations
- 9 **Upgrade critical infrastructure** (such as electrical, water, roads and generator systems) to maintain day-to-day operations 
- 10 **Modernize research labs and equipment** to make them fit for purpose and deliver on identified research outcomes 
- 11 Invest in **upgrade and interoperability of datasets and data models** to help consolidate and reduce maintenance costs in the long run 
- 12 Build **new office spaces in existing facilities** to host CGIAR/non-CGIAR partners for better utilization of campus space 
- 13 Invest in a **common ERP system** to drive shared services across centers 

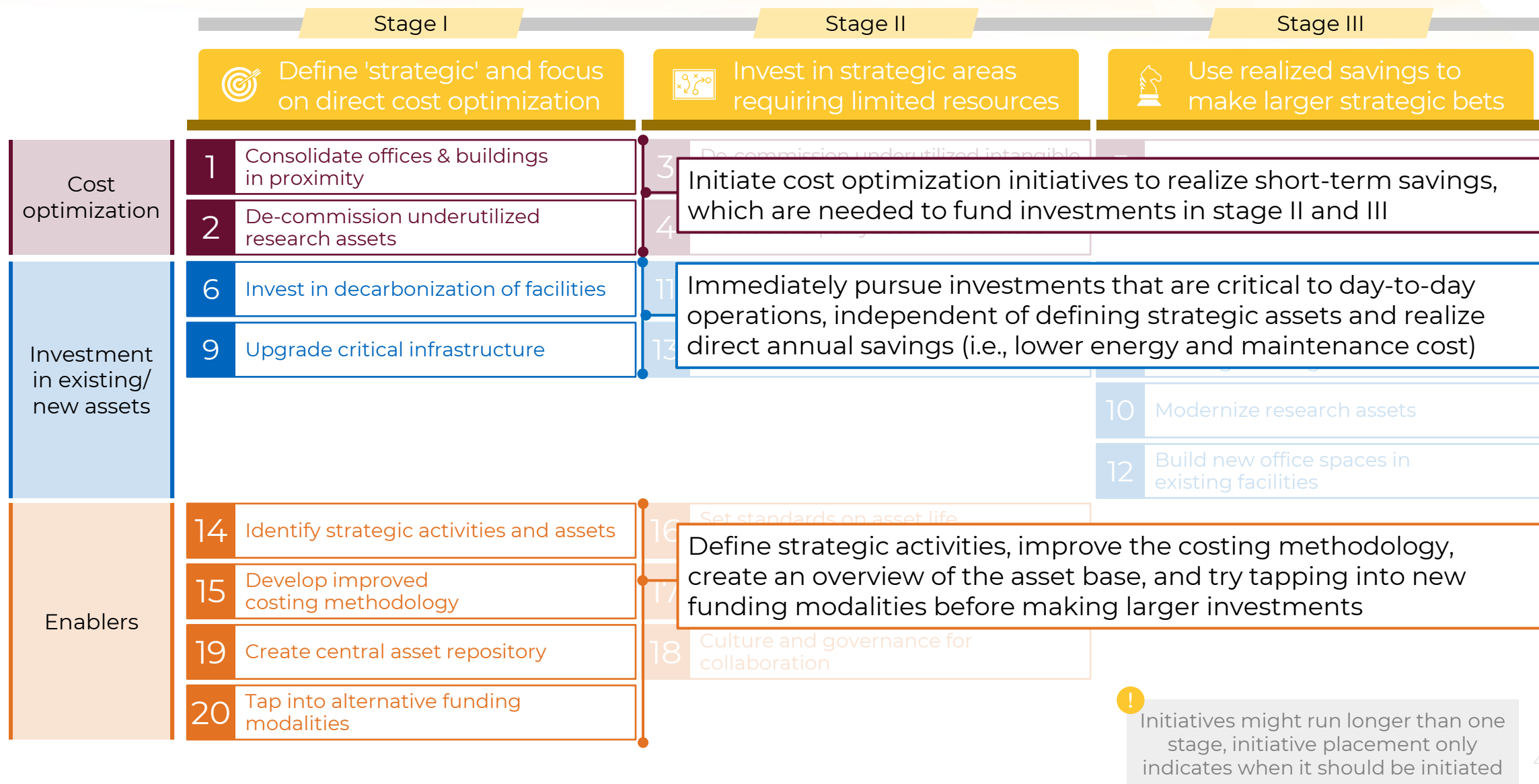


Enablers for holistic asset management

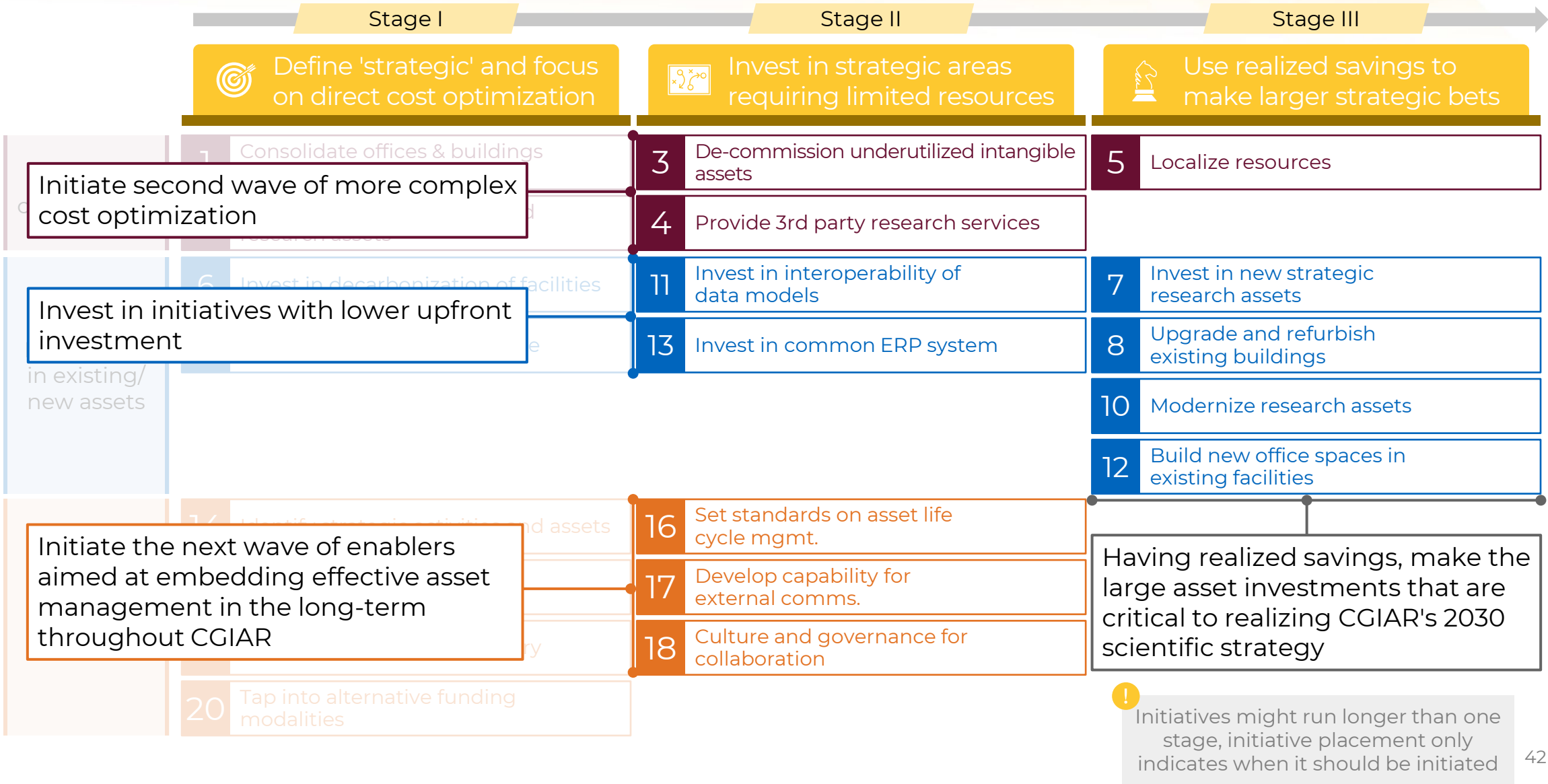
Enablers for holistic asset management from **BCG asset management framework**, **pre-requisites for to capture other opportunities**

- 14 Develop **framework to identify strategic vs non-strategic activities** and assets, to identify strategic assets that need to be invested in and maintained
- 15 Develop improved **costing methodology** for internal and external purposes to identify true costs of assets across lifecycle (maintenance, upgrade)
- 16 Set **standards on asset life cycle management** including preventive maintenance and quality control
- 17 Invest in **capability building for external communication and advocacy with funders and donors** (communication, grant writing, advocacy)
- 18 Implement **culture and governance structure** to incentivize cost efficiency and drive collaboration
- 19 Create **central repository for all assets** (tangible and intangible) to avoid duplication of work and assets (including IPs and licenses)
- 20 Identify and tap into **alternative funding** to maintain long term critical assets (e.g., long term study trial, germplasm, data model)

... however, in the long run financial and other resource constraints demand a stage-wise implementation (II)



... however, in the long run financial and other resource constraints demand a stage-wise implementation (III)



Opportunity scoring (I/V)

Opportunity	Impact	Ease of implementation	Rationale:
1 Consolidate offices and buildings in close geographic proximity across centers	Medium to high	Medium to high	<p>Impact: 10-15% in potential overhead cost savings, driven by decreases in lease costs; as well as non-financial benefits, including more centralized operations and potential reductions in duplication of work</p> <p>Ease: Medium to long-term implementation timeline, given the potential need for both inter- and intra-Center alignment (thus increasing complexity). However, this initiative benefits from a limited need for additional resources when considering implementation</p>
2 De-commission and consolidate underutilized tangible research assets (labs, equipment, germplasm); outsource services, where required	Medium to high	Medium to high	<p>Impact: Decommissioning underutilized research assets would ensure in-house research processes focus on core expertise (non-financial benefit), as well as allow a reprioritization of maintenance spend amongst strategic/ core assets (financial benefit)</p> <p>Ease: While internal complexities around are relatively high, this initiative can be aligned with the development of CGIAR's Mega Programs to increase stakeholder buy-in. Resources required for implementation would be limited, and a short timeline</p>
3 De-commission underutilized intangible assets i.e., platforms, applications and websites to reduce maintenance costs	Low to medium	Medium to high	<p>Impact: Financial benefits from maintenance cost savings, as well as non-financial benefits from less time spent maintaining under-utilized and outdated intangible assets</p> <p>Ease: While internal complexities around are relatively high, this initiative can be aligned with the development of CGIAR's Mega Programs to increase stakeholder buy-in. However, there is an additional layer of complexity, given external use of these assets</p>
4 Provide 3rd party research services to increase lab utilization and do full cost recovery	Medium to high	Low to medium	<p>Impact: Greater 3rd party access allows research outcomes to potentially be achieved faster and wider - meeting CGIAR strategic goals and helping to achieve societal impact. Financial impact limited to extent to which pricing and cost recovery is successful from 3rd parties without overutilising existing assets</p> <p>Ease: Likely to require upgrades to existing labs and equipment to attract and retain 3rd parties. Will also need to create greater awareness of offerings to build steady pipeline of interested 3rd parties. Requires stakeholder management across centres as in-house and 3rd party researchers will need to share facilities</p>

Opportunity scoring (II/V)

Opportunity	Impact	Ease of implementation	Rationale:
5 Localize resources (HQ, labs, people), closer to areas of implementation	Medium to high	Low to medium	<p>Impact: Given the higher costs associated with maintaining core operations in Europe or North America, centers can benefit from 20-25% cost savings in operations by relocating to core areas of geographic focus and in turn lowering lease & administrative costs. In addition to cost savings, centers would benefit from streamlined research and administrative operations through localization (non-financial benefits)</p> <p>Ease: While localization has a high level of impact, ease of implementation is more challenging, given likely elevated levels of political complexity and probable resistance to change within centers, in addition to extended timelines and resources tied to relocating not only staff, but also tangible assets like research labs and equipment</p>
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Medium to high	Medium to high	<p>Impact: ROI of 10-15%, while simultaneously providing non-financial benefits (improved energy reliability, and reduction in carbon emissions). Less strategic value due to only indirect contribution to research objectives, but applicable to most centers</p> <p>Ease: High upfront investment of \$14-20Mn proposed, successful implementation in the past and can be done in <2 years</p>
7 Build new strategic tangible and intangible research assets (e.g., genebank, germplasm health unit, fish breeding facility, water data hub)	Medium to high	Low to medium	<p>Impact: Crucial to deliver on long-term research objectives in new strategic geographies, which will also facilitate the attraction of new funding in the longer term</p> <p>Ease: High upfront investment of +\$50Mn proposed, requires extensive planning across centers to ensure it maximizes strategic value in line with megaprograms and time to realization expected to be >5 years</p>
8 Upgrade and refurbish existing offices / buildings and conference rooms to maintain day-to-day operations	Low to medium	Medium to high	<p>Impact: No direct financial benefits, but high priority for several centers as outdated working space lead to reduced workforce productivity</p> <p>Ease: High up-front investment of +\$50Mn proposed, but individual centers have extensively developed ideas for implementation</p>

Opportunity scoring (III/V)

Opportunity	Impact	Ease of implementation	Rationale:
9 Upgrade critical infrastructure (such as electrical, water, roads and generator systems) to maintain day-to-day operations	Medium to high	Medium to high	Impact: Critical replacements to continue gene banks and long-term trials operations, while strongly reducing preventive and corrective maintenance cost from current outdated equipment (\$0.1-0.3Mn annual savings) Ease: Investment of \$3-4Mn required, but investment plans are made, contractors identified and <1 year to implementation
10 Modernize research labs and equipment to make them fit for purpose and deliver on identified research outcomes	Medium to high	Low to medium	Impact: Low direct financial return from maintenance avoidance, but delivers high impact by improving quality of research, R&D workforce effectiveness and attracting the 'best-in-class researchers'. Opportunity was proposed by majority of centers and upgrade of equipment will be crucial to deliver on megaprograms Ease: High investment would be required and it would be highly dependent on alignment with the megaprograms
11 Invest in upgrade and interoperability of datasets and data models to help consolidate and reduce maintenance costs in the long run	Medium to high	Low to medium	Impact: Hard to size direct financial benefits, significant non-financial benefits (e.g., enhanced collaboration and improved research effectiveness), limited strategic importance Ease: High investment requirement \$5-10Mn, complex to implement since it involves large set of centers and has long implementation timeline
12 Build new office spaces in existing facilities to host CGIAR/non-CGIAR partners for better utilization of campus space	Low to medium	Low to medium	Impact: Aimed at realizing direct financial benefits, but across CGIAR these are limited as it is only relevant for limited number of locations Ease: Construction and renting out office space expected to take >2 years, and large amount of upfront capital required

Opportunity scoring (IV/V)

Opportunity	Impact	Ease of implementation	Rationale:
13 Invest in a common ERP system to drive shared services across centers	Medium to high	Low to medium	<p>Impact: ~10% ROI mainly driven by reduction in support staff (e.g. Finance, IT & HR) costs in the long-run due to shared support staff serving multiple centers. Also resulting in improved data management across CGIAR, unlocking co-ordinated procurement and greater efficiency for staff. This all enables CGIAR to better deliver on its strategic ambition – the ERP is a key asset underpinning overall research delivery</p> <p>Ease: Substantial financial investment needed to obtain licensing across all centers. Critical to try address as soon as possible due to requirement to migrate to existing provider's specific cloud version by end of 2024; however ERP implementation are generally complicated to execute swiftly, especially across multiple organisations. The pilot with IRRI, IWMI and WorldFish could provide learnings to assist in driving faster implementation for rest of CGIAR</p>
14 Develop framework to identify strategic vs non-strategic activities and assets, to identify strategic assets that need to be invested in and maintained	Medium to high	Medium to high	<p>Impact: Conditional for new long-term investments in assets and merging, outsourcing, or decommissioning for existing assets. High potential benefits by ensuring investment are indeed strategic and realizing large asset base cost savings</p> <p>Ease: Requires only internal resources and critical to solve for in short term as it enables decision on what is strategic (invest and maintain) vs non-strategic (outsource, sell and decommission). Would require alignment across centers and linking to megaprograms.</p>
15 Develop improved costing methodology for internal and external purposes to identify true costs of assets across lifecycle (maintenance, upgrade)	Medium to high	Medium to high	<p>Impact: Improved costing drives direct financial benefits by increasing ability to effectively recover charges for maintenance and upgrade from research initiatives. Will also stimulate collaboration between centers and is strategically important as it is applicable to all centers</p> <p>Ease: Only requires internal resources for implementation, significant organizational complexity involved as it requires input and alignment from all centers</p>
16 Set standards on asset life cycle management including preventive maintenance and quality control	Medium to high	Low to medium	<p>Impact: Direct financial benefits by reducing operational cost resulting from best practice sharing on operating a particular asset. Additionally, defining and implementing an effective maintenance strategy per asset will reduce deferred maintenance and corresponding corrective maintenance cost and depreciation. Non-financial benefit includes improved quality control and research effectiveness</p> <p>Ease: Extensive alignment and cooperation required for stakeholders operating similar assets to establish standards. To implement for strategic assets, this will involve all CGIAR centers. Although it requires only internal resources, from design to implementation is expected to require >2 years</p>

Opportunity scoring (V/V)

Opportunity	Impact	Ease of implementation	Rationale:
17 Invest in capability building for external communication and advocacy with funders and donors (communication, grant writing, advocacy)	Medium to high	Low to medium	<p>Impact: Financial impact can be significant as this directly impacts the funding (amount and mix) that is raised. Non-financial benefits include generating better capabilities and skills within the CGIAR team, ensuring internal up-skilling and succession planning</p> <p>Ease: Given the diverse and continuously evolving nature of the funder landscape, this will likely require iterative work to ensure that internal capabilities in this space remain fit-for-purpose. There are also limited levers that CGIAR can pull internally, as funders will have their own mandates and limits</p>
18 Implement culture and governance structure to incentivize cost efficiency and drive collaboration	Medium to high	Low to medium	<p>Impact: Financial impact can be significant as this has the potential to drive long-term improvements to costs that can be sustained going forward. Non-financial benefits include a cultural shift that is more aligned towards meeting research outcomes in as cost-effective manner as possible, thereby improving both CGIAR's and donors' ROI.</p> <p>Ease: Complex to successfully implement given the different types of centers within CGIAR and legacy cultures remaining from the past. Likely to need a few years to fully embed across the organisation and requires substantial stakeholder buy-in across all centers</p>
19 Create central repository for all assets (tangible and intangible) to avoid duplication of work and assets (including IPs and licenses)	Medium to high	Medium to high	<p>Impact: A central repository enables streamlined system maintenance across all centers, leveraging economies of scale to reduce costs. It also reduces duplication allowing for more efficient resources allocation, enhancing productivity and speeding up analysis and promotes collaboration among researchers to improve outcomes (non-financial benefit)</p> <p>Ease: Although it requires significant coordination, alignment and transparency among centers, it is possible to implement with limited additional resources and within a relatively short timeframe using data collection tools as the basis</p>
20 Identify and tap into alternative funding to maintain long term critical assets (e.g., long term study trial, germplasm, data model)	Medium to high	Medium to high	<p>Impact: Funds raised has a direct financial impact on CGIAR. Critical for CGIAR to ensure the mix and amount of funding they raise can meet both specific research goals but also enable deployment of funding that maximises asset usefulness and achievement of strategic goals</p> <p>Ease: Essential to address in near-term to ensure sustainability of organisation, in conjunction with cost optimisation where possible. Existing task teams such as FMRC (Financial Model Reference Group) and Innovative Funding & Resource Mobilization (IFRM) have been set up to expedite progress on this topic. Complex implementation however due to variety of donors involved, each with their own unique mandates and restrictions</p>

Appendix VI: Long list of investment opportunities by centers

List of investment opportunities (1/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Renovate administrative and operations buildings and to also make the PPS workshop function effectively support research activities and to house all the admin and finance staff currently in Abidjan	AfricaRice	Critical infrastructure	\$75,000
10 Modernization of research labs and equipment to make them fit to purpose	Upgrade Breeding and Agronomy laboratories in Ndiaye Station in St Louis, Senegal to enhance the research quality and bring the Station up to its full potential		Supports strategic plan	\$75,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Implement use of solar energy in Mbe Station and introduction of electric vehicles to reduce the center's carbon footprint		Decarbonization	\$175,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Pave the 7 km access road to the Mbe Center and the internal Campus dusty road to enhance mobility, prolong the vehicles life and reduce maintain costs		Critical infrastructure	\$175,000
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Acquire a 5 tonne truck and a 30-seater bus for the staff and modernize the conference rooms in Mbe and St. Louis		Optimization	\$375,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Transform Alliance Columbia campus into a green, digital and robotized campus incorporating AI, regenerative agriculture strategies, climate change considerations, and good governance	Alliance	Supports strategic plan	\$2,250,000

List of investment opportunities (2/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Invest in tangible research (e.g., gene bank in Uganda) and tangible support (e.g., work facilities) assets in Africa to secure the implementation of current projects and future projects and improve attractiveness for funders	Alliance	Critical infrastructure	\$2,250,000
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Invest in refurbishing and increasing working space in Alliance HQ in Rome, while renting out meeting space to third parties. We also envision the Montpellier office as a great hub for Digital and Data Services, creating a great synergy with the CGIAR System Office.		Supports strategic plan	\$1,250,000
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Scale operations of the Cacao of Excellence by investing in facilities in Italy and other regions to evaluate cacao bean samples for farmers to improve quality and price. It will serve as a research and development centre, as well as a processing and sensory training centre for producers and interested stakeholders.		Supports strategic plan	\$875,000
10 Modernization of research labs and equipment to make them fit to purpose	Case 1b: GENE BANK --UPGRADE INVESTMENT	CIMMYT	Critical infrastructure	\$12,500,000
10 Modernization of research labs and equipment to make them fit to purpose	Case 2b: NETWORK OF LONG TERM TRIALS -UPGRADE Land & management (e.g. stations) Research outputs		Critical infrastructure	\$3,750,000

List of investment opportunities (3/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
10 Modernization of research labs and equipment to make them fit to purpose	Case 3: Phenotyping platforms for: (i) Maize Quality Lab (ii) Wheat quality lab (iii) Seed health lab (iv) Pathology lab (v) Molecular lab (vi) DCP Phenotyping infrastructure	CIMMYT	Critical infrastructure	\$6,000,000
10 Modernization of research labs and equipment to make them fit to purpose	Case 4: Rapid generation advanced infrastructure I. Double Haploid facilities (Kenya/India) ii. Speed breeding Toluca (Mexico)		Critical infrastructure	\$4,500,000
13 Cost reduction through ERP integration and shared services across centers	Case 5: Data Management Systems		Critical infrastructure	\$3,750,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Solar Power provisions globally- Supporting all other infrastructure and facilities areas across the globe (HQ, including Genebank, Biocience lab, Seed Health lab, maize/wheat quality lab/molecular lab, hostel), and Research sites in Kenya, Ethiopia, Zimbabwe, India) and experimental stations in Mexico (Obregon, Toluca, Agua Fria)		Decarbonization	\$3,750,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Renew the refrigeration system of the Genebank as the existing systems are out of date and not environmentally friendly	CIP	Critical infrastructure	\$175,000

List of investment opportunities (4/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Renew electrical infrastructure in San Ramon which is unreliable and presents safety hazards	CIP	Critical infrastructure	\$125,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Renew 3000 sq. metres of screenhouses and net houses as they are not fit for purpose and jeopardize the quality of research		Critical infrastructure	\$375,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Renew 5 Generator systems (3 in La Molina, 1 in San Ramon and 1 in Huancaayo) which are critical to ensuring uninterrupted power for Genebank and other research activities and genetic material storage		Critical infrastructure	\$375,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Construct new well/boreholes and supporting pumps and pipes for La Molina to replace existing structures that are deteriorated		Critical infrastructure	\$375,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Lebanon: Installation of solar energy	ICARDA	Decarbonization	\$1,000,000

List of investment opportunities (5/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Lebanon: Facility/station infrastructure upgrade together with NARS partner	ICARDA	Critical infrastructure	\$200,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Morocco: Installation of solar energy		Decarbonization	\$250,000
10 Modernization of research labs and equipment to make them fit to purpose	Morocco: Low-cost (in terms of water and electricity) irrigation systems and techniques		Supports strategic plan	\$250,000
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Morocco: Nutritional Quality Lab for the region (machinery, optimisation of processes, data, modelling)		Supports strategic plan	TBC
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Upgrade ICT infrastructure (server rooms and network) and audio-visual connectivity at the headquarters and country stations e.g. Cameroon, Mali, Cote D'Ivoire.	ICRAF/ CIFOR	Critical infrastructure	\$8,750,000
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Upgrade physical infrastructure to global standards at the headquarters and some country field stations e.g. Rwanda field station		Critical infrastructure	\$12,500,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Install solar lighting project to reduce on energy consumption at the headquarters		Decarbonization	\$75,000

Source: CGIAR

Note: data as of 01.05.2024

List of investment opportunities (6/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Construct a modern genebank facility at the Kenya headquarters	ICRAF/CIFOR	Supports strategic plan	\$17,500,000
10 Modernization of research labs and equipment to make them fit to purpose	Upgrading of core research equipment		Supports strategic plan	TBC
<i>This opportunity is a request for annual funds to fill a funding gap and is aimed to be solved through enablers</i>	Support the budget for general maintenance of 1,390ha campus (HQ) as the campus area is very large and requires regular maintenance irrespective of research land use	ICRISAT	Critical infrastructure	\$375,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Enclose field research areas for very critical research trials (2.00ha each in Red soils & Black soils and 0.50Ha in Plant quarantine area at HQ) to reduce damage to animals and birds during research trials		Supports strategic plan	\$625,000

List of investment opportunities (7/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Invest in Solar Power-both maintenance of existing solar and purchase of additional solar power plants (with priority given to locations where genebank cold storage are available and locations where power supply is unstable leading to excessive use of generator power	ICRISAT	Decarbonization	\$1,750,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Divert polluted (sewage) water entering the Lakes from external township/commercial center through storm water drain.		Critical infrastructure	\$375,000
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Controlled Environment Research Facilities Upgrade and Maintenance (Across Locations)		Critical infrastructure	\$625,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Irrigation installation/refurbishment/upgrade		Critical infrastructure	\$625,000
10 Modernization of research labs and equipment to make them fit to purpose	Upgrade, refurbishment and maintenance of laboratories across locations		Critical infrastructure	\$4,500,000
<i>This opportunity is a request for annual funds to fill a funding gap and is aimed to be solved through enablers</i>	Support in the maintenance budget of research fields used for long-term trials		Critical infrastructure	\$375,000

List of investment opportunities (8/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
11 Invest in upgrading and interoperability of data models to help consolidate and reduce maintenance costs in long run	Case 1: CGIAR Modeling and Data Systems (Intangible Research Asset Bundle). CGIAR is home to some of the world's most advanced modeling and data systems. They are unique because they are global public goods and because collectively they cover the food, land and water systems that affect most of the world's poor, malnourished, and marginalized populations. The CGIAR's modeling capabilities play a vital role in helping achieve our shared mandate and objectives. At IFPRI, modeling systems (1) underpin leading bodies of research into agricultural growth and transformation, international trade, climate change, environmental sustainability, and social inclusion; (2) generate future development scenarios and agricultural outlooks that governments and development partners routinely use to guide their operations and investments; (3) anticipate potential benefits, trade-offs, and priorities across alternative policies, technologies, and innovations; (4) evaluate the past and projected benefits of CGIAR research and public policies, programs and investments; and (5) conduct rapid response analysis during sudden global crises (e.g., pandemics, conflicts, and climate shocks). Moreover, governments and researchers in many developing countries lack the resources and expertise to develop and use their own modeling systems, and so they look to IFPRI and the CGIAR to transfer modeling assets and strengthen local capabilities. A notable share of IFPRI's impacts on national policies and institutions have involved its modeling systems and associated national partners, often in combination on non-model-based analysis conducted by other researchers. Modeling and data systems are a core component of IFPRI and the CGIAR's operations and a cornerstone of our comparative advantage. [Note: This Investment Case is a coordinated submission across all Centers. Each Center has submitted their own assets under the common bundle name "Modeling and Data Systems", but not all Centers may have included this bundle as an Investment Case]	IFPRI	Supports strategic plan	\$6,250,000

List of investment opportunities (9/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
11 Invest in upgrading and interoperability of data models to help consolidate and reduce maintenance costs in long run	Case 2: System for Causal Impact Evaluation in CGIAR (Intangible Research Asset Bundle). SCIE consolidates CGIAR's capability in causal impact evaluation. In any given year, IFPRI alone is conducting at least a dozen impact evaluations, and CGIAR as a whole is conducting far more. SCIE will build efficiency and ensure quality for both IFPRI impact evaluations and CGIAR impact evaluations as a whole. [Note: This Investment Case is a coordinated submission across multiple Centers. Each Center has submitted their own assets under the common bundle name "System for Causal Impact Evaluation in CGIAR", but not all Centers may have included this bundle as an Investment Case]	IFPRI	Supports strategic plan	\$875,000
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Case 1: Genebank and Germplasm Health Unit	IITA	Critical infrastructure	\$3,750,000
<i>This opportunity is a request for annual funds to fill a funding gap and is aimed to be solved through enablers</i>	Case 2: Maintenance of older infrastructure in HQ and Hubs (buildings)		Critical infrastructure	\$3,750,000
9 Upgrade critical infrastructure electrical, water, roads and generator systems for maintaining day-day operations	Case 3: Fencing/walling some of our Stations and farms		Critical infrastructure	\$625,000
10 Modernization of research labs and equipment to make them fit to purpose	Case 4: Replace old research lab equipments with modern equipments		Supports Strategic Plan	\$3,750,000

List of investment opportunities (10/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Case 5: Alternative energy and energy saving equipment	IITA	Decarbonization	\$3,750,000
12 Build new office spaces in existing facilities to host CGIAR/non-CGIAR partners and ensure cost recovery for maintenance of overall facility	Case 1: Construction of new office building along with conference facilities at Nairobi Campus	ILRI	Optimization	\$6,250,000
12 Build new office spaces in existing facilities to host CGIAR/non-CGIAR partners and ensure cost recovery for maintenance of overall facility	Case 2: Construction of new office building and conference facilities at the Addis Ababa Campus		Optimization	\$6,250,000
10 Modernization of research labs and equipment to make them fit to purpose	Case 3: Upgrade of BSL 3 laboratory		Optimization	\$1,250,000
10 Modernization of research labs and equipment to make them fit to purpose	Case 4: Transfer of live animal research facilities from Nairobi Campus to Kapiti Research Station		Optimization	\$8,750,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Case 5: Solar facilities for both the Ethiopia and Kenya Campuses.		Decarbonization	\$3,750,000

List of investment opportunities (11/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
10 Modernization of research labs and equipment to make them fit to purpose	Modernization/Upgrade of Research labs facilities	IRRI	Critical infrastructure	\$17,500,000
10 Modernization of research labs and equipment to make them fit to purpose	Seed Storage and support services enhancements		Critical infrastructure	\$12,500,000
11 Invest in upgrading and interoperability of data models to help consolidate and reduce maintenance costs in long run	Improve interoperability between databases		Optimization	\$6,250,000
11 Invest in upgrading and interoperability of data models to help consolidate and reduce maintenance costs in long run	Modelling Support		Optimization	\$6,250,000
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Upgrading HQ and Regional Campuses		Supports Strategic Plan	\$17,500,000
8 Upgrade and refurbish existing offices/buildings and conference rooms to maintain core operations	Upgrading other facilities	IWMI	Supports Strategic Plan	\$17,500,000
13 Cost reduction through ERP integration and shared services across centers	Case 1: New ERP. Seeking funding to co-share expense with IRRI and WorldFish under the IWMI-WorldFish-IRRI Tripartite Agreement		Critical infrastructure	\$3,750,000

Source: CGIAR

Note: data as of 01.05.2024

List of investment opportunities (12/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Case 2: Establishment of a AI Water Data Hub in India (in partnership with IIT in India). This Hub would become the main platform for internal and open access global water data. Opportunity to develop this with IRRI-WorldFish-IWMI Tripartite Agreement	IWMI	Supports Strategic Plan	\$8,750,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Case 3: Greening IWMI Offices (Sri Lanka, Pakistan, Lao PDR, India and Ghana)		Supports Strategic Plan	\$875,000
6 Invest in decarbonization of facilities to bring down energy cost and carbon emission	Case 4: Transitioning IWMI's vehicle fleet to EV		Supports Strategic Plan	\$875,000
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Case 1: Immediate requirement for fish breeding facilities (GIFT strain) upgrade at HQ campus (new fish holding facility next to the ARC; Water storage system (building and fish); setting up of the aquarium room. In a medium term however, we need to relocate to a new site with pond, controlled-environmental facilities elsewhere (estimated \$15Mn to \$20Mn).	WorldFish	Critical infrastructure	\$8,750,000
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Case 2: Fish Breeding Facilities (Abbassa strain) at Egypt campus (new fish holding facility; Water storage system (building and fish); setting up of the aquarium room		Critical infrastructure	\$8,750,000

Source: CGIAR

Note: data as of 01.05.2024

List of investment opportunities (13/13)

Opportunity categorization	Description	Center	Investment purpose (defined by center)	Investment estimate
7 Build new strategic tangible and intangible research assets (genebank, germplasm health unit, fish breeding facilities, water data hub)	Case 3: Fish Breeding Facilities (carp program) at Bangladesh (new fish holding facility; Water storage system (building and fish); setting up of the aquarium room	WorldFish	Critical infrastructure	\$8,750,000
13 Cost reduction through ERP integration and shared services across centers	Case 4: Enterprise Resource Planning (ERP) system upgrade, cost-effective and eco-friendly infrastructure, and machine learning		Optimization	\$3,750,000
10 Modernization of research labs and equipment to make them fit to purpose	Case 5: Upgrading the genebank facility to make it the unique aquatic food-specific genebank in the world		Optimization	\$6,250,000

Appendix VII: Survey results

Survey results show strong correlation to current prioritization, but focus more on impact compared to ease of implementation

115

Participants

69

Reponses

60%

Response rate

As of 23rd May, 6:00pm EAT

Opportunities for direct cost optimization

- | | | |
|---|--|-----|
| 1 | Consolidate offices and buildings in proximity | 26% |
| 2 | De-commission underutilized research assets | 23% |
| 4 | Provide 3rd party research services | 21% |
| 5 | Localize resources | 17% |
| 3 | De-commission underutilized intangible assets | 13% |

Top survey results fully align to current prioritization



Investment in existing/new assets

- | | | |
|----|--|-----|
| 10 | Modernize research assets | 19% |
| 7 | Invest in new strategic research assets | 18% |
| 11 | Invest in interoperability of data models | 18% |
| 6 | Invest in decarbonization of facilities | 14% |
| 9 | Upgrade critical infrastructure | 12% |
| 13 | Invest in common ERP system | 11% |
| 8 | Upgrade and refurbish existing buildings | 6% |
| 12 | Build new office spaces in existing facilities | 3% |

Top survey results, while high on impact, were de-prioritized on ease of implementation in current prioritization



Enablers for holistic asset management

- | | | |
|----|--|-----|
| 20 | Tap into alternative funding modalities | 26% |
| 15 | Develop improved costing methodology | 20% |
| 14 | Identify strategic activities and assets | 17% |
| 18 | Culture and governance for collaboration | 13% |
| 19 | Create central asset repository | 10% |
| 16 | Set standards on asset life cycle management | 8% |
| 17 | Develop capability for external comms. | 7% |

Top survey results mostly align to current prioritization (culture and governance was de-prioritized due to ease of implementation)

 Current prioritization



Distribution by principal group

As of 23rd May, 6:00pm EAT



Principal group	% of total
Science Leaders (DDGRs+ ¹)	32%
Steering Group	28%
Mega Program	16%
Institutional Leadership	13%
Business Operations and Finance	12%

1. Deputy Director General Research

As of 23rd May, 6:00pm EAT

	Science Leaders (DDGRs+ ¹)	Steering Group	Mega Program	Institutional Leadership	Business Operations and Finance
Consolidate offices and buildings in proximity	23%	23%	27%	30%	33%
De-commission underutilized research assets	26%	26%	24%	15%	17%
Provide 3rd party research services	23%	21%	12%	30%	17%
Localize resources	11%	18%	21%	19%	29%
De-commission underutilized intangible assets	18%	12%	15%	7%	4%

Current prioritizationTop ranked opportunities

1. Deputy Director General Research



Analysis by principal group | Investment in existing or new assets

As of 23rd May, 6:00pm EAT

	Science Leaders (DDGRs+ ¹)	Steering Group	Mega Program	Institutional Leadership	Business Operations and Finance
Modernize research assets	27%	16%	9%	22%	13%
Invest in new strategic research assets	21%	19%	24%	15%	4%
Invest in interoperability of data models	20%	14%	30%	11%	13%
Upgrade critical infrastructure	15%	11%	3%	11%	17%
Invest in decarbonization of facilities	9%	19%	15%	11%	13%
Invest in common ERP system	5%	7%	12%	19%	25%
Upgrade and refurbish existing buildings	2%	11%	3%	4%	13%
Build new office spaces in existing facilities	2%	4%	3%	7%	4%

Current prioritization

Top ranked opportunities

1. Deputy Director General Research

As of 23rd May, 6:00pm EAT

	Science Leaders (DDGRs+ ¹)	Steering Group	Mega Program	Institutional Leadership	Business Operations and Finance
Tap into alternative funding modalities	30%	21%	27%	22%	29%
Develop improved costing methodology	23%	23%	12%	19%	17%
Identify strategic activities and assets	12%	21%	18%	22%	13%
Culture and governance for collaboration	14%	9%	12%	15%	17%
Create central asset repository	8%	11%	18%	4%	8%
Set standards on asset life cycle management	11%	9%	9%	4%	4%
Develop capability for external comms.	3%	7%	3%	15%	13%

Current prioritization

Top ranked opportunities

1. Deputy Director General Research

Distribution by center

As of 23rd May, 6:00pm EAT



Center	% of total
AfricaRice	7%
Alliance Bioversity-CIAT	12%
CGIAR (System Organization)	13%
CIMMYT	12%
CIP	10%
ICARDA	7%
ICRAF/CIFOR	0%
ICRISAT	4%
IFPRI	4%
IITA	6%
ILRI	10%
IRRI	3%
IWMI	7%
WorldFish	4%

	Africa-Rice	Alliance Bioversity-CIAT	CGIAR (System Organization)	CIMMYT	CIP	ICARDA	ICRAF/CIFOR	ICRISAT	IFPRI	IITA	ILRI	IRRI	IWMI	World-Fish
Consolidate offices and buildings in proximity	40%	21%	22%	21%	24%	40%	N/A	0%	33%	17%	24%	33%	33%	33%
De-commission underutilized research assets	20%	25%	26%	29%	24%	27%	N/A	33%	11%	33%	19%	17%	7%	22%
Provide 3rd party research services	13%	25%	19%	29%	24%	13%	N/A	33%	0%	8%	24%	17%	33%	11%
Localize resources	20%	17%	15%	8%	19%	13%	N/A	0%	22%	17%	24%	33%	27%	22%
De-commission underutilized intangible assets	7%	13%	19%	13%	10%	7%	N/A	33%	33%	25%	10%	0%	0%	11%

Note: "N/A" indicates that there was no data

Current prioritization

Top ranked opportunities

Analysis by center | Investment in existing or new assets

As of 23rd May, 6:00pm EAT

	Africa-Rice	Alliance Bioversity-CIAT	CGIAR (System Organization)	CIMMYT	CIP	ICARDA	ICRAF/CIFOR	ICRISAT	IFPRI	IITA	ILRI	IRRI	IWMI	World-Fish
Modernize research assets	13%	21%	22%	13%	33%	27%	N/A	33%	0%	17%	19%	17%	0%	22%
Invest in new strategic research assets	13%	29%	19%	25%	19%	13%	N/A	0%	11%	8%	14%	0%	27%	33%
Invest in interoperability of data models	27%	21%	22%	25%	5%	13%	N/A	0%	33%	17%	10%	33%	20%	11%
Upgrade critical infrastructure	13%	4%	7%	8%	33%	7%	N/A	33%	11%	25%	5%	17%	0%	0%
Invest in decarbonization of facilities	13%	4%	7%	17%	0%	20%	N/A	33%	22%	25%	10%	17%	33%	0%
Invest in common ERP system	0%	8%	15%	8%	5%	13%	N/A	0%	11%	0%	19%	0%	20%	33%
Upgrade and refurbish existing buildings	13%	8%	7%	4%	5%	0%	N/A	0%	11%	8%	5%	17%	0%	0%
Build new office spaces in existing facilities	7%	4%	0%	0%	0%	7%	N/A	0%	0%	0%	19%	0%	0%	0%

Note: "N/A" indicates that there was no data

 Current prioritization
 Top ranked opportunities

Analysis by center | Enablers for holistic asset management

As of 23rd May, 6:00pm EAT

	Africa-Rice	Alliance Bioversity-CIAT	CGIAR (System Organization)	CIMMYT	CIP	ICARDA	ICRAF/CIFOR	ICRISAT	IFPRI	IITA	ILRI	IRRI	IWMI	World-Fish
Tap into alternative funding modalities	7%	25%	22%	29%	33%	27%	N/A	22%	33%	25%	29%	17%	33%	33%
Develop improved costing methodology	20%	25%	22%	17%	24%	27%	N/A	22%	0%	25%	14%	33%	20%	0%
Identify strategic activities and assets	13%	21%	11%	25%	19%	20%	N/A	11%	22%	8%	24%	17%	7%	11%
Culture and governance for collaboration	7%	13%	22%	8%	5%	13%	N/A	11%	22%	8%	14%	17%	13%	11%
Create central asset repository	13%	4%	11%	4%	5%	13%	N/A	11%	0%	8%	5%	17%	27%	22%
Set standards on asset life cycle management	33%	0%	7%	17%	5%	0%	N/A	0%	0%	17%	5%	0%	0%	22%
Develop capability for external comms.	7%	13%	4%	0%	10%	0%	N/A	22%	22%	8%	10%	0%	0%	0%

Note: "N/A" indicates that there was no data

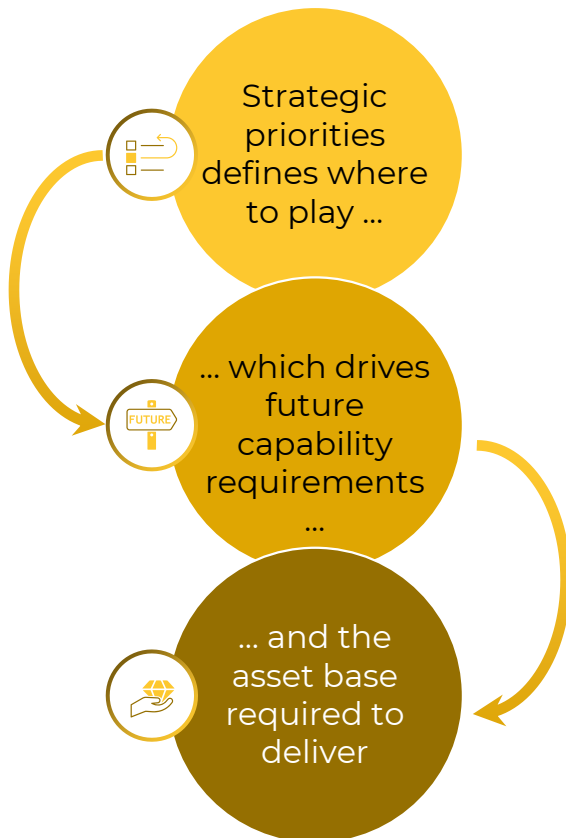
Current prioritization

Top ranked opportunities

Appendix VIII: Enablers deep-dive

External example | Having defined strategic priorities, organizations employ a categorization tree to review assets

Strategic priorities inform the required asset base



Context: A dairy company formulated their 2030 organization strategy and identified gaps in R&D capabilities
Question: How to transition from our legacy R&D assets to an asset base needed to achieve our 2030 strategy?

Categorization questions

Is the asset used for strategic activities?

(e.g., critical to strategy 2030 and links to megaprograms and accelerators, high interest for funders)

Are there benefits for keeping it in-house?

(e.g., synergies with other capabilities, IP creation, organizational obligations)

Are true user costs effectively recovered?

(e.g., sufficient utilization and effective cost recovery to cover both maintenance and upgrade costs)

How to proceed

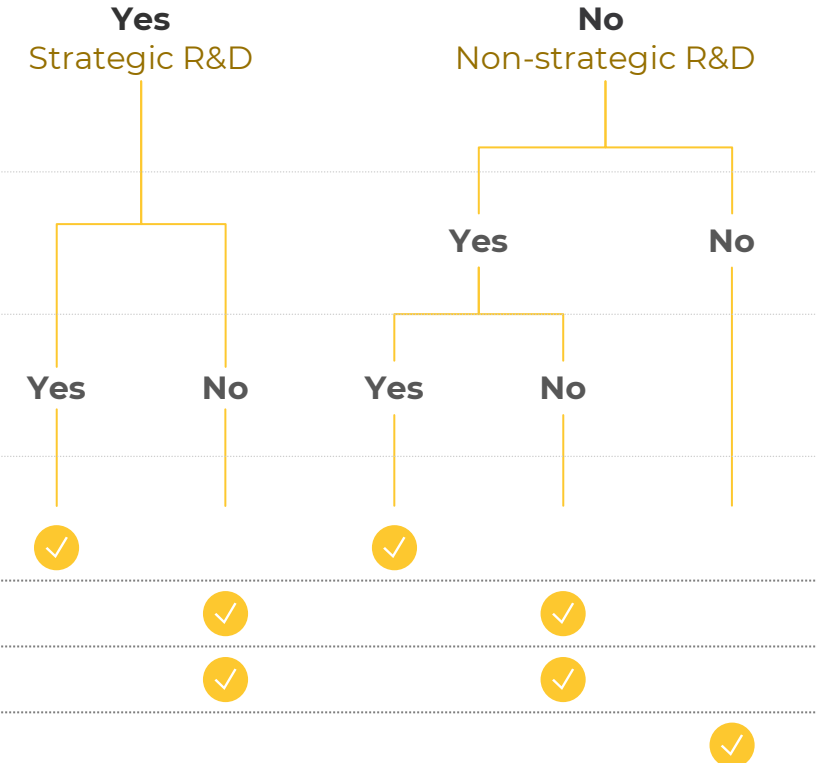
Invest, maintain and keep

Consolidate with other centers (CoE¹)

Provide 3P² services to increase utilization

Outsource or decommission

Asset categorization tree



1. Center of excellence; 2. Third party research services

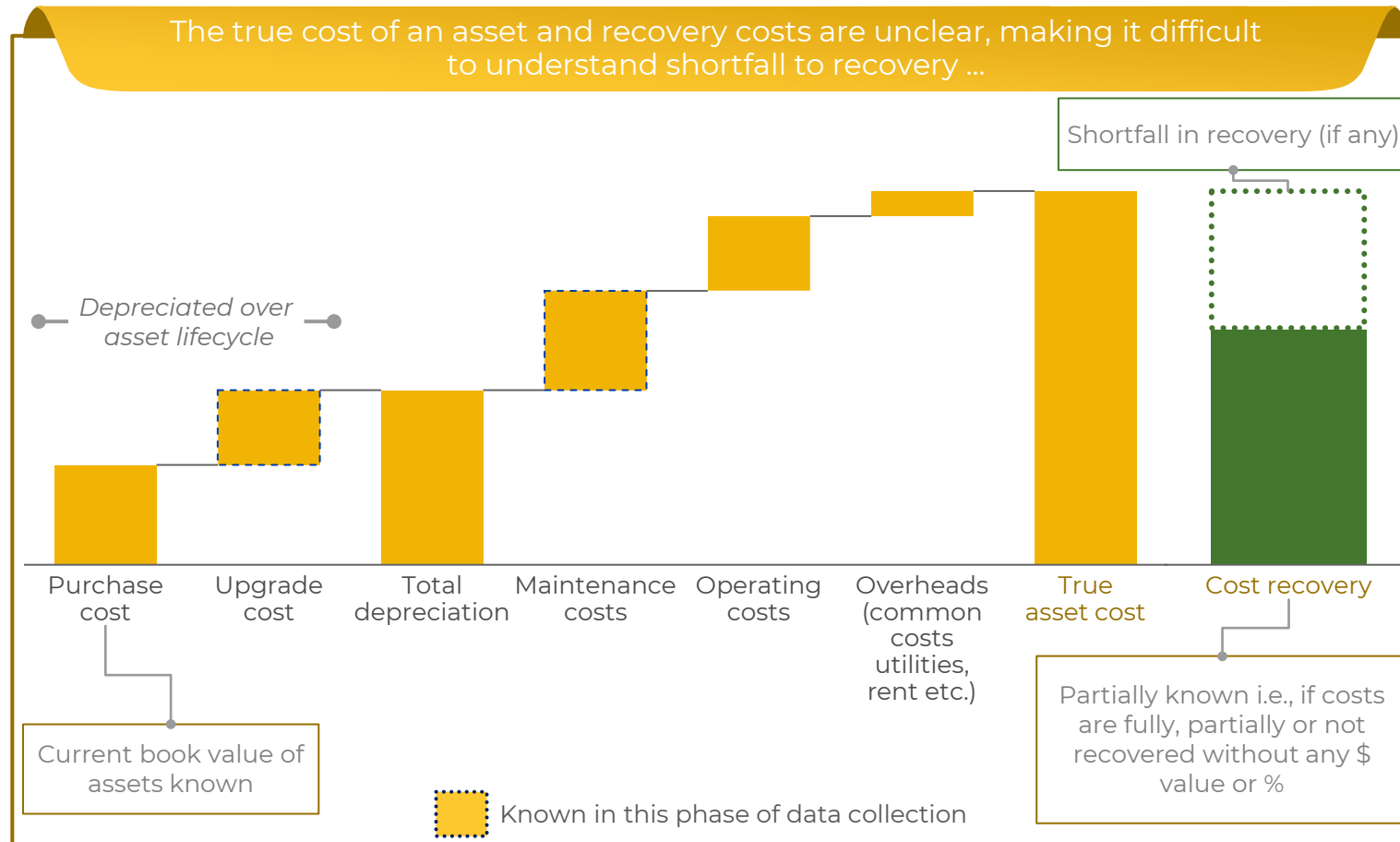


Case Study | Dairy R&D company used a categorization tree to determine the necessity to retain a capability in Country Y

Categorisation		Metrics / facts to be considered (not exhaustive):	Core R&D Only	Non-Core R&D
In Country Y	Is the capability required to maintain Client X's core business?	Relevance of the related line of business (e.g., ingredients), ...	YES	NO
	Can the capability be partnered / outsourced effectively?	# of potential offshore partners, examples of other companies outsourcing the capability ...	YES	YES
	Are there benefits to retaining the capability in-house (inc. flexibility / optionality)?	Competitive advantage created, IP generated, synergies with other parts of the business, ...	NO	NO
	Does Client X <u>need</u> this capability in Country Y?	Financial/operational impact of cap. offshoring, incl. 'must have' bundling considerations	YES	YES
	Is it preferable (and reasonable) to access this capability overseas?	Overseas vs. Country Talent availability, accessibility, cost, fit in the Client X ecosystem, ...	NO	NO
Out of Country Y	Are there synergies from co-location with another capability/ asset in Country Y?	'Should have' and 'could have' bundling considerations	YES	YES
	Is there an existing Client X international site or partner / outsourcing partner that does this well for Client X (and expected to in the future)?		YES	YES
	Are there potential partners / outsourcing providers 'near' existing Client X global locations that could do this well for Client X (and expected to in the future)?		NO	NO
	What are the 'top 2-3' (likely) global hubs for this capability going forward, and how can Client X access it in the most cost-efficient manner?		YES	YES
	Are there synergies from co-location with another capability/ asset?		NO	NO

A costing methodology needs to be formulated, to ensure assets are funded for their full lifecycle

Illustrative for research assets



Best practices

- Ensure all lifecycle costs, including purchase, upgrade, maintenance, operating, and overheads, are identified and recorded
- Clearly define and communicate the methodology for cost allocation, especially for shared assets and overhead expenses (e.g., rent, utilities)
- Regularly compare costs against industry standards to identify potential efficiencies or anomalies
- Develop comprehensive plans for cost recovery, including identifying appropriate funding sources and financial support mechanisms



DRAFT - to be refined in Phase 2

A central repository with all assets in one database can reduce redundancy and improve asset utilization



External example 1 | USDA ARS¹ Agricultural Collaborative Research Outcomes System

USDA ARS's AgCROS² has **integrated multiple agricultural data networks** across its research facilities, **centralizing research, data access, and management**, thus minimizing duplication and streamlining processes

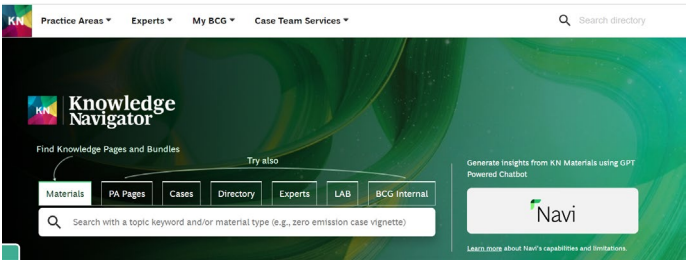
This central repository **enhances collaboration** and **increases efficiency** by making **data easily findable, accessible, interoperable, and reusable** across projects



External example 2 | BCG Knowledge Navigator

BCG's Knowledge Navigator **connects various knowledge domains and data assets across a global network**, providing access to previous project insights while incorporating AI (Navi) for quicker and more efficient searches

This system **reduces work duplication** and **facilitates expert collaboration**, enhancing overall productivity and cooperation



Non-exhaustive

Non-financial impacts to be realized

A central repository offers significant non-financial advantages:

- **Reduced redundancy** as overlapping data entries and repetitive efforts are effectively eliminated
- **Improved asset utilization** as resources are optimized for strategic deployment, enhancing overall operational efficiency



Existing repositories offer a good starting point and can feed into the newly created central repository

1. United States Department of Agriculture Agricultural Research Services 2. Agricultural Collaborative Research Outcomes System

The overall funding position can be increased through three levers

Increase funding from current donors



Establish and communicate true asset lifecycle costs (e.g., upgrade, maintenance, common costs) to increase the current caps being placed on overheads by donors (i.e. 15% for CGIAR vs 30-50% for other research institutions and INGOs)



Drive efficiencies via a collaborative approach to funding and advocacy across centers to reduce overheads within CGIAR and for donors



Increase the amount & proportion of 'unrestricted' funding by maximising engagement with donors, measuring impact delivered, marketing these effectively etc.

Focus on untapped funding sources that are growing



Tap into growing foundations - e.g. IKEA, Buffett, Nova Nordisk, etc. that are seeking opportunities to drive impact, given traditional sources (e.g. govt.) expected to remain flat



Access more Donor-Advised Funds (DAFs) which can provide a greater share of unrestricted funding and are gaining in popularity due to their tax benefits for contributors - e.g. Fidelity Charitable, Schwab Charitable, National Philanthropic Trust etc.



Consider recently established funds for topical areas such as the Climate Reparations Fund & its applicability to the geographies and work that CGIAR covers

Explore alternative funding mechanisms



Private sector partnerships – e.g. cause marketing, checkout charity, CIAT's partnership with the local energy company



Subscription/ membership fees – e.g. UK Biobank has various fee structures based on user type, geography etc.



Patents and licence fees – e.g. CSIRO¹ and Gates Ag One licenses tech to businesses that want to commercialise these



Endowment investments – e.g. CDEF² established to fund a costs of CGIAR's network of genebanks (receiving ~\$5Mn/annum)



Subsidized financial liabilities – e.g. social impact bonds, loans via dev. banks & state financing programs

Underpinned by 2 other enablers:



- 15. Develop improved costing methodology** for internal and external purposes to identify true costs of assets across lifecycle (maintenance, upgrade)
- 17. Invest in capability building for external communication and advocacy with funders and donors** (communication, grant writing, advocacy)

1. Commonwealth Scientific and Industrial Research Organisation; 2. Crop Diversity Endowment Fund



Case Study | CSIRO uses public private partnerships and a licensing model to generate funds over and above govt. grants

CSIRO: Australia's national science agency, funded through **govt grants, public private partnerships (PPPs) and licensing; working across multiple disciplines & the value chain** from basic research to translation/commercialization domestically/internationally

Located at 49 sites across **Australia and 2 sites overseas** (Montpellier and Santiago) - **#1 in Australia for patents filed**

Total CSIRO revenue by funding mechanism (\$Mn)²

Year	Govt grants	Licence	PPPs	Other ¹	Total
2019	605 (61%)	314 (32%)	25 (3%)	-	989
2020	582 (61%)	300 (31%)	20 (2%)	-	960
2021	692 (66%)	285 (27%)	28 (3%)	-	1,051
2022	683 (63%)	306 (28%)	36 (3%)	-	1,085
2023	669 (60%)	309 (28%)	34 (3%)	-	1,118

PPPs

PPPs for CSIRO involve **co-investments and technical & consulting services**

Co-investment / matching funds includes **shared financial contributions** covering private companies, industry bodies, state agencies and academic institutions, with **mutual benefits & outcomes** provided across all these contributors

Technical & consulting services includes:

- **Mobilizes talent for research via researcher placement** for SMEs/startups and expert recruitment for businesses
- **Leases laboratories, conducts workshops & designs** programs
- Supports **business strategic planning/market entry**

Licence

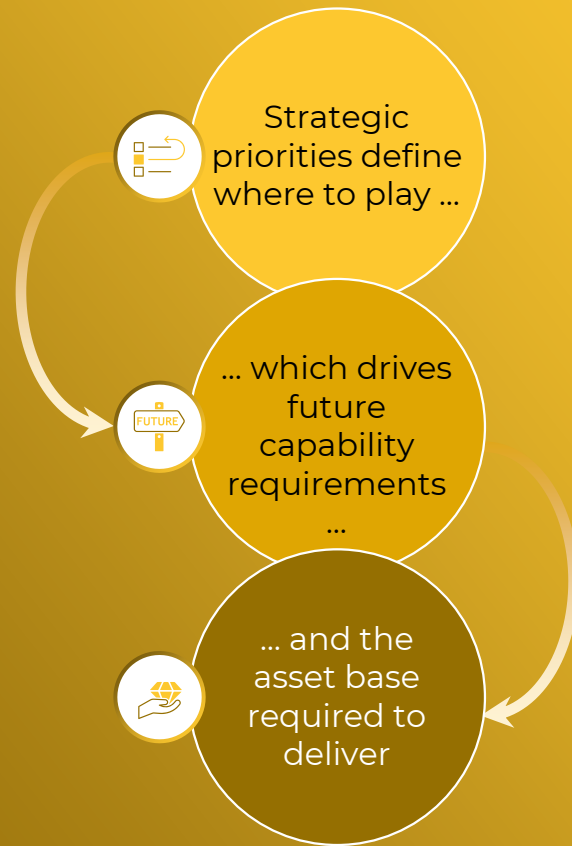
License revenue as part of CSIRO's strategy to remain financially sustainable as this revenue is **also used to fund opex and new research** projects. Licensing portfolio grew to **662 licences in-force** with **79 new licences in 2023** financial year (~15% growth in 2023)

CSIRO also focused on **creating spin-off entities** (e.g. Hadean, MRead and OmnisOva) where **equity positions are held** with the aim of **generating returns to help fund CSIRO operations**

Potential learnings for CGIAR

- **PPPs** can take **many forms, including matching funds** to pool funds from many donors
- **Technical and consulting services** (not-for-profit) may be explored given **deep expertise of in-house CGIAR staff** (intersection of technical knowledge & pragmatism)
- **Licensing** requires a **robust approach towards patenting & IP** generation, together with **strong commercialization capabilities** whilst balancing fairness

Appendix IX: Assets that need to be maintained



After completion of Megaprograms (still under development till September '24), a comprehensive asset classification of strategic vs non-strategic needs to be conducted

As detail on strategic priorities are still being defined, we have used interviews and data analysis to identify 5 critical long-term asset types

For this rapid assessment centers have reported ~2,740 strategic assets – each with a respective estimated annual recurring maintenance cost and one-off upgrade costs

- 1,310 tangible research assets (e.g., labs and equipment)
- 640 intangible research assets (e.g., datasets and models)
- 790 tangible support assets (e.g., buildings)

Through interviews with center stakeholders, megaprogram writers and analysis of center reported data, we have pinpointed five asset types that are critical but are facing funding challenges:

1. Germplasm collections (excl. seedbanks)
2. Long-term trials
3. Lab and research equipment
4. Datasets and models¹
5. Tangible support assets

Note: Research fields, Greenhouses, Original research methodologies and protocols, Digital knowledge repositories (e.g., digital libraries), Novel inventions and Digital tools and research software were considered less critical due to lesser issue of full cost recovery as highlighted in the data

¹. Includes Unique datasets and Specialized databases
Source: CGIAR asset database; Note: data as of 01.05.2024

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