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WORKING DOCUMENT

*Supporting CGIAR Open Access & Data
Management Implementation*

Submitted by:
Consortium Office

Supporting CGIAR Open Access & Data Management Implementation

I. EXECUTIVE SUMMARY

CGIAR has committed to making its research outputs as widely accessible as possible as a reflection of its work as global public goods, and in an effort to increase the pace of innovation and impact. In 2012, the CGIAR Consortium Board of Trustees approved “The CGIAR Principles on the Management of Intellectual Assets” requiring prompt and broad dissemination of research results. Since then, the CGIAR Consortium has collaborated to develop an Open Access Policy which was approved by the CGIAR Consortium Board on October 2, 2013, and was endorsed by all 15 Research Centers in November 2013. That policy, to be phased in over 5 years, is now mandatory. CGIAR donors have been key to providing encouragement for this movement towards Open Access with both proverbial carrots and sticks. Several CGIAR investors have expressed interest in supporting this effort in a coordinated manner. The Fund Council has requested this proposal from the CGIAR Consortium in response to a Concept Note submitted to them in November 2013.

This project’s purpose is to set up – after a preliminary assessment of the types of data and information already existing in the CGIAR system that should be open – different processes and interoperable tools to store, curate, manage and make openly accessible to anyone who could benefit from it, including scientists, policy-makers, farmers, donors, NGOs, SMEs, the private sector, and innovators. **Through this process we will responsibly unlock data and information from CGIAR Centers and its CRPs to fuel the innovation that grows the global agricultural research while also advancing CGIAR efficiency and accountability to its donors and stakeholders.** The project will last for 5 years and will be divided into two phases. The first (2-year) phase will involve establishing an inventory of Open Access (OA) eligible information products, including journal articles and high-value datasets; baselines, standards, tools, approaches, metrics, and initial Center- and CRP-based repository pilots; and an overall metadata repository to expose these information products. The second (3-year) phase will see full scaling up of the project. As a direct result of this project:

- Centers and the CRPs they support will have the knowledge, expertise, policies, incentives and appropriate technologies to be fully compliant with the CGIAR Open Access Policy.
- A distributed model of interoperable repositories will be established at Centers and for the CRPs they support, which will feed into an overall metadata repository at the CGIAR level.
- Data and information produced by CGIAR research will be available to partners, innovators, and the general public for faster innovation and improved collaboration.
- Donors will be able to see that the results of the research they are funding is available without limitations as truly Global Public Goods.
- CGIAR will be widely recognized as one of the leaders in the Global Open Data for Agriculture and Nutrition (GODAN) effort, and recognized for its Open Access leadership.

We propose that the funding be provided in a staged, performance-based manner. Phase 1 investment is requested of \$4.1M for year 1; based on milestones being hit, \$6.1M will be needed for year 2; and a further investment for Phase II – currently estimated to be \$5.2M – will be

requested for years 3-5 – based on performance, as agreed to between the Consortium and the Fund Council.

II. RATIONALE

Each year CGIAR Research Programs and Centers invest hundreds of millions of dollars generating scientific data, information, and knowledge products; and while some Centers and CRPs have promoted openness for their organizations, not much investment of time or resources have been put into making such research outputs openly discoverable, accessible and used in a unified way across CGIAR. This represents a high opportunity cost in terms of the learning and innovation foregone, as well as a failure to fully render the generation of public goods funded by the donors of the CGIAR system. This project aims to address this challenge head-on and to accelerate the transformation of the CGIAR into an Open Access organization.

Recognizing the opportunity to leverage changing scientific norms and the growing pressure from donors to deliver the full public-good benefits of their investments, the CGIAR Consortium has committed to making its research outputs as widely accessible as possible. Additionally, this project will allow CGIAR to take a leadership role in the sector-wide effort, highlighted by the G8 Summit on Open Data for Agriculture in April 2013, to play a pivotal and catalytic role in developing an entire “open” ecosystem for agricultural research and data, which is now morphing into the GODAN Initiative.

This is not to say that CGIAR Consortium Centers and their Research Programs have not already been making progress towards Open Access. A number of Centers, CRPs, and collaborative initiatives already make many publications and datasets available for free. ILRI stands out as a model Center, and CCAFS as a model CRP. CGIAR’s Consortium for Spatial Information (CSI) is a good example of this for GIS data; Genesys for genebank information is another; and the use of DSpace for publications across a number of Centers and CRPs is a third. But an additional and Consortium-wide (dare we say, Sector-wide) challenge is the lack of the use of common standards to ensure a well-functioning distributed model of interoperable repositories; without this, a high-level metadata repository of all CGIAR information products and datasets is not possible. Therefore identifying, agreeing to, and adopting such standards will be a key step forward to ensure unified discovery of all open resources. A number of factors have contributed to these past and persistent barriers to Open Access. These include:

1. **Geographical dispersal/Governance:** A highly fragmented governance structure of the Consortium and its 15 Research Centers, exacerbated by a wide geographical dispersal of researchers and (typically small) research teams in locations where computer and web-based systems have presented logistical challenges. Each of the Centers has its own processes, policies, ICT standards, and IT systems. The location of each Center was strategically chosen to be most relevant for its research mandate, but often these locations present challenges in supporting appropriate IT support. Establishing data and knowledge sharing standards, as well as common workflows, will go a long way to changing this.



2. **Culture:** There exists among many scientists a tradition of data being the intellectual property of individual researchers, coupled with job performance reviews that place high value on publications and technology releases (e.g. varieties) but do little or nothing to rate or reward performance with regard to curation and accessibility of the underlying data resources (nor of the methodological tools and workflows that generated them). (A notable exception is ILRI, where specific language is written into each contract.) Even where policies are in place, most researchers lack the skills and tools to effectively document and curate data and for which tasks, in any case, no resources are provided. Success will, in part, be measured as a percentage of information products – and associated data – that have been made open access (with specific measurement of datasets uploaded into repositories). Specific training programs for researchers, data/knowledge managers, librarians, ICT, HR and legal personnel will be developed and implemented. At the same time, less data-centric processes that are specifically designed to be Open access, are not as highly valued or recognized.
3. **Data Standards:** Even where research teams or Centers hold themselves to higher account, the lack of agreed standards of data formats, coding, and vocabularies prevents data from different sources within the CGIAR Consortium being integrated without significant, and often prohibitive, data manipulation efforts.
4. **Human Capacity:** historically, research has not invested enough in the human resources necessary for good data and information management. This capacity will need to be built across the Consortium in the next few years.
5. **Persistent storage and archives:** A growing, well-curated persistent repositories of CGIAR data and knowledge assets would represent, second only to its staff, the CGIAR Consortium's most strategic resource in providing a springboard for future innovation.
6. **Metadata:** A major constraint to sharing knowledge and data is the overhead involved in making some datasets and other information products interpretable by users outside the collecting project. This will not go away unless we train staff, put in place tools and best practices which imbed the metadata annotation of research data as a natural part of the research process.
7. **Intellectual property rights and policy incentives:** Publishing of journal articles has its own set of challenges, not the least of which is the power of the major journal publishers. There are significant challenges to address copyrights with publishers. Even for Open Access journals somebody needs to pay substantial amounts for open access rights. There is a clear need to develop a common strategy to negotiate better conditions with publishers.

At the same time, there are considerable opportunities to be created with this project. These include:

1. **Demonstrating the promise of the CGIAR Reform,** where the 15 Centers that are members of the CGIAR Consortium are truly working together, sharing information across Centers and Research Programs, and with the wider world.



2. The development and adoption of common meta-data (“ontology”) standards for all data types¹. This is arguably the most critical activity (at the early stage of the project) to ensure that all data, information, knowledge in the system has Metadata documented and published, so that it can be accessed and read by a metadata repository at the CGIAR level, as well as by partners. Before even giving access to the raw information, we need to make sure that at least all material is documented with metadata. This is the first step to assess the volume the project will need to address in its lifetime.
3. Cost-efficiency is a key consideration. In 2012, nearly 1,300 journal articles were published. Currently, researchers – if they want to make their articles Open Access, pay an average of \$3,000 per article. The cost of this so-called “gold” Open Access for 2012 would have been nearly \$4M, and that does not start to take into consideration the costs of collaboratively developing standards, or for Centers to build compliant repositories, let alone for new technical and human capacity to be developed. But if we can create a system that includes building the capacity of researchers to understand their options (there are “green” open access mechanisms that do not require such author fees, as an example); or identify good models of repositories that other Centers and CRPs can leverage; or build the overall metadata repository that pulls from this distributed model, we can spend our funding more wisely.
4. Truly changing the culture of this sometimes less-forward-thinking organization from one of information hoarding to information sharing. In knowledge management parlance, secured knowledge can lead to power; shared knowledge can lead to impact.
5. More valuable than the culture change is the potential to expose decades of Global Public Goods that have never been properly put into the public domain, not to mention hundreds of millions of dollars of research results to the larger scientific community, to help drive faster innovation and adoption. Instead of keeping data locked up, it becomes something that others can leverage.
6. The profile of donors, because of the valuable work they’ve funded, is raised, and people begin to understand the true value of agricultural research. Core to our requirements will be metadata that includes which donors or funding mechanisms helped underwrite the research. Building awareness of the results of donor funding will help donors be able to continue to justify their investments.
7. Reduction of duplication, competition, and misaligned research projects and a corresponding saving in future investments and overheads. The estimated cost of a good GIS-visualization platform is approximately \$250,000, as quoted to us by two separate

¹ For example, applying the Dublin Open standards and limited set of fundamental metadata. Additional work will be needed to work out subject-specific methods for automated extraction of meaningful ontologies.



vendors. By developing it once and then making it available to all Centers and CRPs, we reduce the chance that multiple versions – and unnecessary funding is wasted. Similarly, we have found that a number of our African partners – FARA, CORAF, ASARECA, and others – as well as donor partners – such as GIZ – are interested in leveraging what we develop rather than building it themselves.

8. Facilitation of reproducible research through access to data, workflows and code integration of data over time. This is most effectively done through what is known as Linked Open Data (LOD) and external services that connects distributed repositories to provide solutions to specific domains and be able to visualize solutions with the association of different sources of data.
9. Significant harmonization of software and database development efforts throughout the CGIAR informatics communities of practice, coupled with a focused system-wide project on LOD technology and ontology development, would build CGIAR capacity for LOD publication.
10. Better long term preservation of CGIAR and donor intellectual assets. Just as CGIAR puts explicit value on, and investment in, the preservation of genetic, genomic, and germplasm data in its genebanks, CGIAR also needs to invest in making sure that its data, information, and knowledge is available into perpetuity. Establishing a system that relies on the establishment of a distributed set of interoperable repositories that are machine-readable at the CGIAR level as well as by partners – such as the USDA library, FAO, DFID, etc. – helps make that commitment.
11. With better access to better data comes the potential for improved investment decision-making. For example, the Bill and Melinda Gates Foundation is interested in mapping its investments in agricultural research and development. If such a system were developed and all other donors adopted the same standard (the principle behind IATI), then donors would be able to make better decisions about where to invest, and where not to (because it may already be being covered). Similarly, understanding where CGIAR Research Programs are operating already will help CRPs avoid tripping over each other and distributing their research more effectively. Of course, just having access to a metadata listing of all past research may save years of time in research if one can more readily find relevant prior research.

III. THE SOLUTION

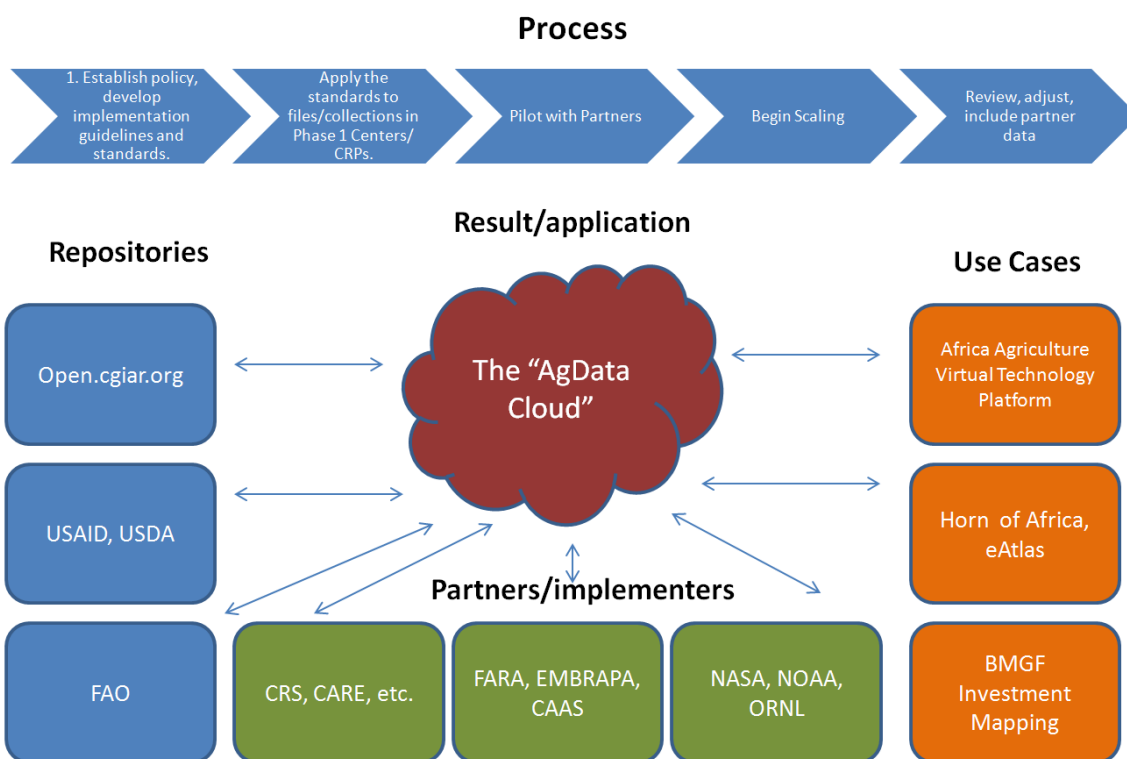
The solution is one that should have widespread impact on the agricultural research for development sector, namely turning CGIAR into a truly “Open Access” entity, and adopting and supporting open standards. Progress has already been made. In addition to the April 2012 *CGIAR Principles on the Management of Intellectual Assets*, the CGIAR Consortium has developed an Open Access and Data Management Policy that has undergone widespread review with Centers, CRPs, Fund Council Members, the ISPC, and partners; the Policy was approved by the CGIAR Consortium Board on October 2, 2013 and received approval of all 15 CGIAR Consortium Research Centers in November 2013. That Policy is now mandatory. (The Policy is available at www.cgiar.org/open).

But Principles and Policies are not enough. Now is the time for action. With appropriate resources to match the commitment of CGIAR Consortium members, we aim to make all of our information products openly accessible, universally harvestable, and completely interoperable within 5 years. These resources will be stored in a distributed set of interoperable Center-based open repositories using a common set of metadata standards, so that they can be found easily via a single meta repository by partners, scientists, policymakers, innovators and the public. Through this project CGIAR – Research Programs, Centers, the Consortium Office, the Fund Office, and ISPC – will implement the Open Access policy. The project will facilitate cross-CGIAR/cross-partner dialogue and agreement on the adoption of coherent, Open Access standards and best practices; facilitate improved approaches for incentivizing scientists to better document, curate and share their research outputs; develop robust platforms; and build capacity in CRPs and Centers.

The CGIAR Open Access project will put the foundational pieces in place to make all CGIAR research outputs freely open and accessible, and increasingly interoperable, with various tangible milestones in place along the way. The external result will be the global availability of research outputs from CGIAR and non-CGIAR partners through an easy-to-use Web-based portal that harvests data and information from across the CG System and its partners, thanks to interoperable standards, and links to already existing open data resources such as Genesys. This portal, dubbed the “Knowledge Commons”, and available at open.cgiar.org, will harvest all open access content from Centers and Research Programs, tagged and searchable across a broad variety of categories; in addition, working collaboratively with organizations such as FAO, USDA, CABI, GBIF, PANGAEA, and others, we will be able to share, harvest, and display each other’s’ related content as well as re-mixing and cross-annotating content. Key subsets of this Knowledge Commons will be inter-related “Commons” spaces for a variety of data that are collected as part of CGIAR research, including: open and queryable access to all available data from CGIAR and its partners on: spatial data; biological data (including crop, livestock, forestry and fish); socio-economic data; and agricultural investment data². Spatial data layers (as well as other spatial data available through partnerships we intend to establish). Transforming the accessibility, consistency and interoperability of CGIAR’s data and knowledge products will similarly transform opportunities for easy manipulation, custom application, and – ideally – improved decision-making by scientists, analysts, and practitioners.-

² Issues with sensitivity, confidentiality, farmers’ rights and traditional knowledge, and other such issues will be explicitly addressed within the Implementation Guidelines.

Throughout the process, we will be looking to learn from developments, identify additional sources of funding, and line up other data partners with whom we can establish reciprocal data sharing agreements. This project will provide the seed funding to develop core infrastructure for sectorial initiatives, which could then leverage additional funding for more sectorial specific activities (e.g. crop breeding with ICIS and similar systems). The end result should be free and open web-based repositories, platforms and portals where all CGIAR research outputs and data – as well as those outputs from partners – are available to all – through open.cgiar.org.



The Consortium Office, with broad input from CRPs, Centers, and Partners, is already in the process of developing a comprehensive version 1.0 of its Implementation Guidelines, expected to be approved in April or May 2014 for initial piloting with early-adopter CRPs.

The successful implementation of this project will mean interoperability to these sets of decision-making data and tools providing the capability of presenting/displaying the information in multiple ways and sites that will benefit a number of target groups including:

- **CGIAR Researchers and Research Programs**, who will benefit from understanding what research is already being conducted across the Consortium, have access to a foundation of key data and results, promising practices, scalable technologies, data management and publishing tools, as well as mechanisms to ensure CGIAR research is compliant with donor



Open Access policies. Researchers within CGIAR will have an effective, direct communication channel with a broader research community, who will be encouraged to provide feedback, which will eventually contribute to the higher quality of research products.

- **Donors**, who will be able to leverage the aggregated data from CGIAR research to make better grant-making decisions. If a grant manager can visually see where the most pressing agricultural interventions are needed, overlaid with who is working where, along with what promising practices and interventions have helped address similar challenges, they can better make targeted funding decisions to address unmet needs. The Open Access and Data Management Policy itself, in addition to leading to the end result of complete availability of research results, will also ensure that CGIAR Consortium components are compliant with donor Open Access policies. Incentives for adoption will include researcher performance management incentives, CRP requirements, funding opportunities, and compliance monitoring.
- **Policy-makers**, who will be able to have direct and immediate access to the full collection of CGIAR research outputs through the CG aggregator or other sites they use. They can display CGIAR and other leading organizations up-to-date agricultural development priorities identified by specific regions or countries, or will be able to see geospatial representation of lands most impacted by drought. All these representations and visualizations can be produced through the use of a technological framework and interoperability of the research collections, helping to provide more informed decisions.
- **NGOs and implementers of agriculture-related interventions, and extensionists**, who will benefit from direct access to all of the latest research and data, to better inform their work and also develop new tools to be use by farmers, policy makers and others. The ability to be able to view and understand – through easily-customizable mapping tools – agricultural challenges, hot spots, scenario-based priorities, and to track where other projects are doing what, is a critical resource for those working directly with interventions. (It is also a critical tool for donors, grant managers, and policy-makers.)
- **The farmer, including the less-than-effectively addressed female farmer**, who will benefit because CGIAR has made its research and data available to those who will be helping them. Better, faster, access to data will help speed up adoption of new technologies and practices. In less than five years we can imagine a mobile version of a farmer-friendly tool that draws on the data from the Knowledge Commons tools to provide immediate input, guidance, and feedback to a farmer directly in her field (e.g. on suitable varieties and intercropping strategies). And the standards and platforms developed as part of this project will directly benefit regional needs, such as the African Agriculture Technology Platform (AATP), and its virtual component, the Virtual Information Portal (VIP).

CGIAR knowledge resources and output will be part of the bigger world; CGIAR data can be used and remixed with that of other research and development organizations, thus providing new ways to visualize data that can increase and accelerate the generation of new ideas and resources to address better priority development issues. As this happens, however, we will need to work closely

within CGIAR and with partners to ensure that – like Genebanks – our data is available into perpetuity.

IV. IMPLEMENTATION

In the context of CGIAR reform, the intent is that resources provided by this project neither substitute for, nor crowd-out, funds allocated to improved curation and open access approaches being formulated within each CRP and Center, but rather provide impetus and complementary resources that promote and facilitate Consortium-wide standards and best-practices in order to ensure that the individual Center and CRP efforts are delivering harmonized and interoperable products and services.

In a phased approach the project will first engage with and facilitate coordination amongst “early adopter” CRP Lead Centers (and their partner Centers) who are already making strides to transform accessibility of their own outputs. The initial plan aims to engage at least 9 Centers and all CGIAR Research Programs by the end of 3 years, with a goal of having all 16 CGIAR Research Programs implementing by the third year (2016) and all 15 Centers successfully implementing the Open Access Policy within 5 years. At the same time, by providing lessons-learned and open platforms, we will also be able to support the growth and participation of Open Access partners in developing countries, including NARS, SROs, and many other partners (including through efforts such as the African Agriculture Technology Platform’s Virtual Information Portal [VIP]).

We also understand that this project is not inventing Open Access, and that there are already successful OA efforts underway, which must be taken into consideration but not slowed down or hampered. The key will be ensuring interoperability of data (e.g., CCAFS, Genesys, CSI, IBP, etc). Rather, we see this as an opportunity for such initiatives to get access to more complimentary content while increasing discoverability of its own content. We clearly don’t want to reinvent the wheel when we don’t have to; but we can make those proverbial wheels stronger.

The project will be managed through the CGIAR Consortium Office and the Open Access Implementation Team, in partnership with a CGIAR Consortium Open Access Implementation Working Group, and counseled by an Advisory Panel comprising broad representation from CGIAR and non-CGIAR representatives.

Operationally, implementation will be the responsibility of CRP Lead Centers and their collaborating Centers, with guidance from a small core technical Implementation Team of funded staff from the Consortium office and CRPs. Salaries of the Technical Team would be met from project funding as would the logistical and meeting costs associated with the activities of the larger Project Team. The initiation of an annual Agricultural Open Data Conference (partnering with an organization such as GODAN) will be a hallmark event that this project commits to help facilitate both to promote innovation in this area and to monitor its own progress, as well as to step into the commitment made by the larger Open Data for Agriculture community supported by G8 Commitments in April 2013.

Communication and advocacy of the benefits of open access will be a key part of this project. Incentives, by way of ‘physical benefits’ (and, if appropriate, sanctions) will include additional personal performance metrics in researcher contracts; and opportunities for performance-related grants to implement the policy. Additional incentives may be included in the implementation phase.

An adoption scale will be defined during the first three months of the project, premised upon the numbers of research outputs and associated data sets that have been or will be placed in appropriate repositories. This baseline study to take stock of eligible resources will also be started within 3 months of funding.

The CGIAR Open Access and Data Management Roadmap focuses on 7 key elements. Potential Monitoring and Evaluation (M&E) metrics for each are included in section V, below.

1. **Drawing the Map: Guidelines and Standards.** The foundation for implementation begins with collaboratively developing Implementation Guidelines and identifying – and adding to, as necessary – the appropriate sector-wide standards to use that will best enable interoperability. This will involve establishing the core team from across the Consortium, working closely with them, and collaborating with other key agricultural data partners. Different standards will be recognized as valuable by different communities (e.g., GIS standards are different from genetic and genomic). But all of these will need to be identified and made available. We are already close to releasing a draft of core metadata standards that will be required to ensure interoperability; we are also in discussions with FAO about taking a leadership role in the curation and ongoing stewardship of AGROVOC.
2. **Making the Case: Awareness and Culture Change.** One challenge to moving towards Open Access is the need to create an Open Access culture, one that incentivizes researchers to make their data and information openly accessible. Academic institutions and research organizations around the world are struggling with this challenge. A strong campaign that focuses on the “what” and “why” of Open Access will be critical, as will working with HR leaders to change the way that researchers are assessed and incentivized; these may include updating contracts, public recognition or an annual award for most viewed/downloaded open publications, tracking and reporting of downloaded data.
3. **Building Capacity: Center/CRP Human and IT capacity:** The Implementation Guidelines, already in draft, posted on our website for widespread consultation, will require each CRP and Center to have adequate staffing to comply with the Policy, including dedicated data managers. They will also require building and managing compliant repositories that will allow for open harvesting of the deposited information products. Staffing up and building this capacity will require resources not currently budgeted for, as well as time to build that capacity. But “capacity” is not the only challenge; identifying appropriate incentives, highlighting positive deviance, showcasing those who are having success and partnering them with those experiencing challenges – these all need to be done. Appropriate and consistent incentive ideas will be generated within the first year of this project to be reviewed and piloted with HR managers.
4. **Building the Delivery Mechanism: Knowledge Discovery Platforms.** Once open standards have been agreed to, and the CRPs and Centers will have the capacity to deposit information products into their own repositories and then automatically duplicated on the Cloud for easy access to all the community. Then there needs to be a single metadata repository into which such data, as well as

those of partners using the same standards, can be harvested, interrogated and displayed through APIs. We envision a portal at open.cgiar.org which will serve that purpose. It will be a searchable listing for publications, associated data, as well as spatial, crop, weather, and landscape metadata. We will work with data management partners and contractors to identify the right solution for this portal. Also from this portal, other portals can draw content that will help build new tools for their users. This means that CGIAR content will reach other audiences through other providers. This system of distributed repositories, whose metadata is available at a top level, will allow connection to already-existing initiatives on spatial data, germplasm data, and publications. Leaders from all of these communities have been actively engaged in the overall process of developing the policy, the guidelines, and this proposal, and they are committed to this project.

5. **Pulling it all together: Implementation.** As Table 1 below indicates, we envision an implementation ramp-up that starts with at least 4 early-adopter Centers working with 4 different CRPs in the first year, based on a competitive proposal process. We envision 10 Centers and 16 CRPs by the end of the third year, and all Centers within 5 years. By the end of the third year, 60% of all eligible information products (IPs) will be open access compliant, with 80% of eligible IPs available within 5 years. Implementation will include working closely with partners to make sure our data and theirs is interoperable, and available on open.cgiar.org.
6. **Leading the Way: Sector Leadership.** The agricultural research for development sector has galvanized around the concept of Open Data, Open Access, and Open Knowledge, and CGIAR now has the opportunity to step into a leadership role. Working with partners and across CGIAR including the Independent Science and Partnership Council (ISPC) and the Independent Evaluation Arrangement (IEA), and across the sector (including through FAO and GODAN), we can demonstrate the value of our research by making it available and keeping the momentum going. As part of this, we propose to be a lead partner for an annual Open Data for Agriculture conference which would pick up the mantle of the 2013 G8 Summit, in partnership with GODAN. Already, CGIAR is being looked to by GODAN to provide leadership, lessons-learned, and momentum.
7. **Testing the Theory: Impact Assessment.** Underpinning all of this effort is the theory that more open and accessible data and information will lead to better decision-making, more effective investments, and improved eventual impact. We would like to conduct a serious impact assessment study in parallel with this project, in partnership with CGIAR's ISPC and IEA. Implementation of Altmetrics³ directly from the commons page will help to provide some measurement at the level of the publication or data. We firmly believe that this project has the potential to change the way that AR4D results are leveraged into specific impact. If this work is successful, we hope to be able to help birth new scientific workflows across various data types that have never been possible before.

³ Altmetrics, or "alternative metrics," are an emerging field of new methods for measuring the use and importance of scholarly articles, particularly in the sciences. As opposed to more traditional bibliometrics, such as Impact Factor, altmetrics provide article-level data and are based on new electronic sources of information, such as number of downloads and page views from a publisher, repository or online reference manager like Mendeley, or the amount of discussion generated in online venues such as Twitter or blogs.

V. OUTCOMES/OBJECTIVES

Our intended intermediate outcomes (in the first 3 years):

- CGIAR Centers and the CGIAR Research Programs they support have the knowledge, expertise, policies, incentives and appropriate technologies to be fully compliant with Open Access Policy.
- Donors will be able to see how the results of the research they are funding is available without limitations.
- Data and information produced by CGIAR research will be available to partners, innovators, and the general public.
- CGIAR will be widely recognized as one of the leaders in the Global Open Data for Agriculture and Nutrition (GODAN) effort, and recognized for its Open Access leadership.

Our intended impacts (5-10 years) include:

- Results from CGIAR research will be leveraged by partners, innovators, and the private sector to speed up innovation for the agricultural research for development world.
- Less-developed countries will be reaching their national agricultural investment plans more swiftly due to ready access to decision-making tools based on openly available data, and associated analytical tools.
- The impact of agricultural research for development will be more easily demonstrated and quantifiable.
- The connection between Open Access/open data and improved development impact will be quantifiable.

To achieve this, our contribution is to ensure that at least 80% of all known eligible CGIAR information products are discoverable through a central metadata repository that harvests from a decentralized infrastructure of interoperable data/knowledge repositories, and is integrated with other global, regional and national initiatives (e.g. FAO, USDA, GEOSS, etc.).

Table 1 lays out a timeline for, and metrics to measure progress towards, 5-year objectives. More specifically, we envision achieving these outputs within 5 years through these deliverables:

1. Guidelines established, adopted, and periodically reviewed.
2. Open Access becomes business as usual for CGIAR; CGIAR is known as a leader in transparent, openly accessible Agricultural Research for Development (AR4D)
3. 16 CRPs and 15 Centers have the human and technological capacity to comply with the Open Access Policy and Guidelines.



4. Open.cgiar.org is developed, and becomes one of the most visited, trusted, and interoperable Open Data for Ag resource on the Web.
5. 16 CRPs and 15 Centers are fully compliant with OA Guidelines. 60% of all eligible Information Products are openly accessible within 3 years, 80% within 5 years.
6. AR4D data widely interoperable across the sector; decision-making based on better, more available data is improved.
7. The impact of the connection between open data and development outcomes is assessed, and tracking us conducted through Altmetrics.

Performance-based Milestones

Below are a series of performance-based milestones suggested for this project.

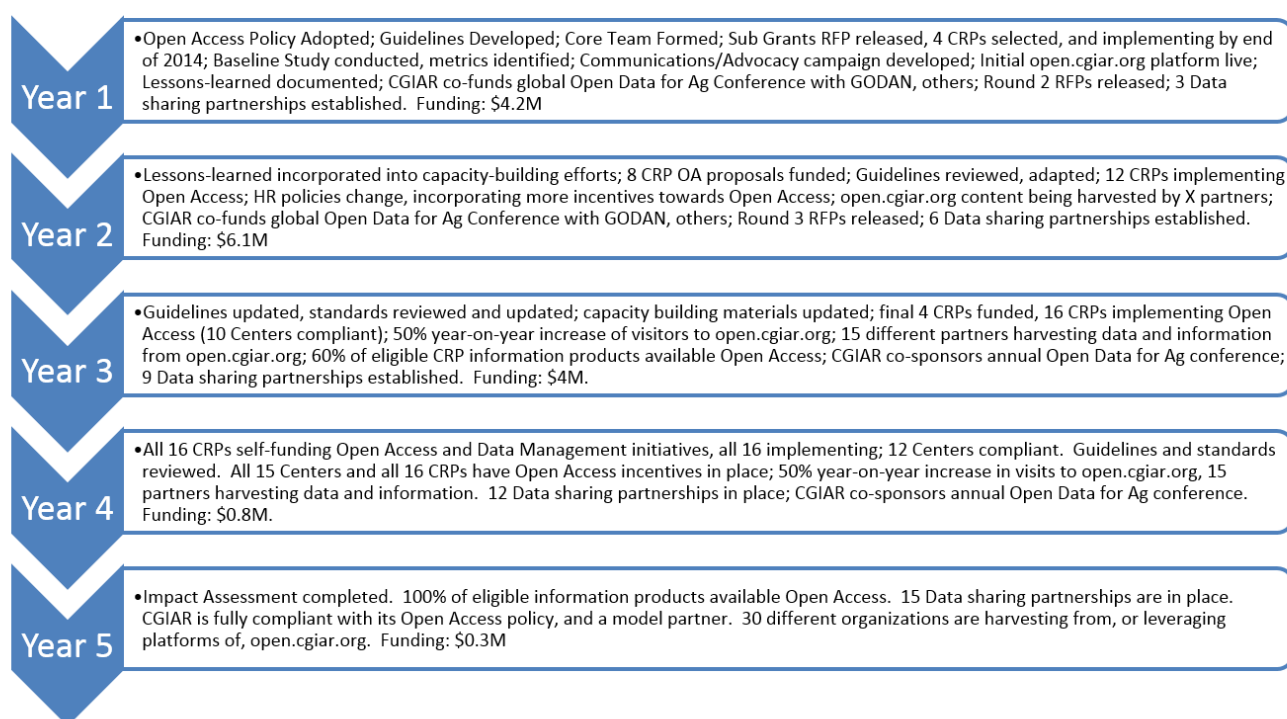


TABLE 1: High Level Activities, Targets, and Intended Outcomes

Activities	Outputs	Targets					Outcomes (Within 5 Years . . .)
		Y1 (2014)	Y2 (2015)	Y3 (2016)	Y4 (2017)	Y5 (2018)	
1. Guidelines and Standards	Implementation Guidelines developed	Established	Reviewed	Updated	Reviewed	Updated	Guidelines established, adopted, and periodically reviewed. Sector-wide standards adopted, reviewed, adjusted as necessary.
	Standards adopted	Identified, Adopted	Reviewed	Updated	Reviewed	Updated	
2. Awareness and Culture Change	Communication/ Advocacy campaign	Established	Reviewed	Updated	Reviewed	Updated	Open Access is business as usual; CGIAR is known as a leader in transparent, openly accessible AR4D
	Cap Dev Materials	Developed	delivered	Updated	Reviewed	Updated	
	# Centers/CRPs receiving Capacity Building training	2 Centers 4 CRPs	8 Centers 12 CRPs	15 Centers 16 CRPs	15 Centers 16 CRPs	15 Centers 16 CRPs	
	# Centers, CRPs with OA HR incentives/metrics	2 Centers 4 CRPs	8 Centers 12 CRPs	15 Centers 16 CRPs	15 Centers 16 CRPs	15 Centers 16 CRPs	
3. Center/ CRP Human/ IT Capacity	# Centers, CRPs with OA-dedicated staff	2 Centers 4 CRPs	6 Centers 12 CRPs	10 Centers 16 CRPs	12 Centers 16 CRPs	15 Centers 16 CRPs	15 Centers and 16 CRPs have full OA compliance capacity.
	# Centers, CRPs w/ OA policies/ standards	2 Centers 4 CRPs	6 Centers 12 CRPs	10 Centers 16 CRPs	12 Centers 16 CRPs	15 Centers 16 CRPs	
4. Repositories	Center/CRP repositories developed	2 Centers 4 CRPs	6 Centers 12 CRPs	10 Centers 16 CRPs	12 Centers 16 CRPs	15 Centers 16 CRPs	Open.cgiar.org is most visited, trusted, and interoperable Open Data for Ag resource on the Web.
	Open.cgiar.org portal and metadata repository	Develop, pilot	Scale	Review	Upgrade	Review	
	% downloads increase from open.cgiar.org	Baseline	50%	50%	50%	50%	
	# partners harvesting from open.cgiar.org	0	5	15	25	30	
5. Implementation	# CRPs/Centers implementing Guidelines	4 CRPs 2 Centers	6 CRPs 6 Centers	16 CRPs 10 Centers	16 CRPs 12 Centers	16 CRPs 15 Centers	15 Centers, 16 CRPs are fully compliant with OA Guidelines. 100% of all eligible Information Products are openly accessible.
	% of eligible IPs openly available.	25%	50%	60%	70%	80%	
	# Data sharing partnerships established	3	6	9	12	15	
6. Sector Leadership	# Open Data for Ag Conferences held	1	1	1	1	1	AR4D data widely interoperable; decision-making improved.
7. Impact Assessment	IA Study Conducted	Design	Track	Track	Track	Assess	Impact of connection between open data and impact assessed

VI. BUDGET and BUDGET NARRATIVE

The estimated budget for this 5-year initiative is shown in Table 2 Below (a full breakdown is available in a separate spreadsheet, submitted with this document). The budget has been reviewed and reduced (based on feedback from the Fund Council), while new elements have been added in (based on input from participants at the November Open Data Summit). In an effort to more clearly explain the budget and implementation, a more detailed budget narrative follows the budget table.

Key summary points

- While the full implementation of Open Access across the Consortium is expected to take 5 years, the vast majority of the activities – and funding – are front-loaded in the first three years (leading up to the second round of CRPs).
- **Each Year's budgeting will be directly associated with specific milestones**, so the funding organizations can assess the success of their investment and the progress of the project.
- The budget breakdown by spending category is as follows:
 - 58% on sub grants to CRPs and partners
 - 15% on staffing for key leaders at CRPs and the Consortium Office
 - 11% on consultancies/vendors
 - 11% on other direct costs
 - 5% on travel
- The budget breakdown over the 5 years by recipient is as follows:
 - 60% to CRPs
 - 22% to outsourced vendors and consultants
 - 7% to Partners
 - 6% to the Consortium Office
- The major assumption in keeping this budget down is that CRPs will budget for ongoing Open Access and Data Management activities for the second round of CRPs. However, given that the Fund Council has recently approved the extension for CRPs such that the new round will not start until January 1 2017, additional costs had to be accounted for.
- While taking into account an additional year before the second round of CRPs, as well as new items for consideration, the budget has been cut by about 10%, down from \$16.9M to \$15.4.

Outcomes-based Funding

In accordance with the performance-based milestones noted in Section V, we propose that a sum of \$4.1M be provided for the first year of activities, which will be assessed in July 2015 to assess whether – and to what degree – the second tranche of funds be provided. Funding will flow through the Consortium Office, under the guidance of the Open Access Advisory Panel for disbursement according to the breakdowns suggested above.



TABLE 2: Budget Summary (detailed budget available in spreadsheet)

Budget Summary		Year 1 (2014)	Year 2 (2015)	Year 3 (2016)	Year 4 (2017)	Year 5 (2018)	Centers/ CRPs	Partners	CO	Vendors/ Consultants	Totals	
Personnel												
	CRPs/Centers	455,000	468,650	482,710	-	-	1,406,360					
	Partners	-	-	-	-	-						
	CO	264,000	271,920	280,078	-	-			815,998			
	Subtotals	719,000	740,570	762,787	-	-					2,222,357	14%
Travel												
	CRPs/Centers	184000	144000	108000	0	0	436,000					
	Partners	60000	60000	0	0	0		120000				
	CO	64000	64000	36000	20000	0			184,000			
	Subtotals	308000	268000	144000	20000	0					740,000	5%
Sub-Grants												
	CRPs/Centers	2000000	4000000	2000000	0	0	8,000,000					
	Partners	250000	250000	250000	250000	0		1,000,000				
	CO	0	0	0	0	0			-			
	Subtotals	2250000	4250000	2250000	250000	0					9,000,000	58%
Consultancies/Vendors												
	Open Access Implementation	75000	75000	75000								
	OA/IA Policy/Legal	90000	90000	90000								
	Knowledge Commons	100000	100000	100000	50000	50000						
	Spacial Commons	100000	100000	100000	50000	50000						
	Germplasm Commons	100000	100000	100000	50000	50000						
	Subtotals	465,000	465,000	465,000	150,000	150,000				1,695,000	1,695,000	11%
Other Direct Costs												
	Hosting for K Commons	50,000	50,000	50,000	50,000	50,000						
	OD4Ag Annual Conference	50,000	50,000	50,000	50,000	50,000						
	Computers and peripherals	5,000										
	KM Impact Research	50,000	50,000	50,000	50,000	50,000						
	Publisher Subsidies	250,000	250,000	250,000	250,000							
	Subtotals	405,000	400,000	400,000	400,000	150,000				1,755,000	1,755,000	11%
TOTALS		4,147,000	6,123,570	4,021,787	820,000	300,000	9,842,360	1,120,000	999,998	3,450,000	15,412,357	
							64%	7%	6%	22%		100%

Budget Narrative

As described earlier in the document, the success of the Open Access and Data Management Roadmap is the degree to which CRPs – and the Centers that implement them – have the capacity to comply with the Open Access and Data Management Policy, and its accompanying Guidelines document. The budget above attempts to provide appropriate funding to help kick-start the process; specific categories of funding are described below.

Sub-Grants to CRPs and Partners

The bulk of the funding requested (58%) is designed to be delivered to Centers and the CRPs they support– in response to an RFP process managed by the Open Access Implementation Team – in the form of sub-grants. Each Center will be eligible for up to \$500,000 to implement Open Access for the CRPs they support. The call for RFPs will be designed in the second quarter of 2014. We anticipate a competitive process, and plan to select at least 4 lead Centers in the first year. Learning from their efforts, we anticipate a second round of RFPs to be released in late 2014 for funding in 2015, and we expect at least 8 Lead Centers to be funded. In the third year, 2016, we anticipate funding the remaining Centers.

While some are concerned that \$500,000 is not “enough” to fully implement, it is our firm belief that this will be enough of an injection to be able to either hire appropriate staff or develop internal processes, capacity, and infrastructure in combination with other budgeting and capacity development initiatives. At the same time, we also believe that few CRP lead Centers will have to develop processes and technologies from scratch. There is already a strong case to be made for investing in scaling up the well-advanced and well-thought-through Open Access and Data Management process developed by CCAFS, which already cuts across all CGIAR Consortium Members, and could then be leveraged and implemented by others, with appropriate adaptation.

Box 1: Guiding communities, decision makers and investors towards better returns on investments into farming in Sub-Saharan Africa

There are many appropriate interventions used to manage rainfall for agriculture efficiently and productively. Yet, successful targeting and scaling-out of these interventions remains a challenge. This is particularly the case in Sub-Saharan Africa where a number of environmental, social and infrastructure challenges make targeting of appropriate technologies essential. The CGIAR Water, Land and Ecosystems Program will focus on improving access to appropriate technologies to communities, decision makers and investors by merging a number of different GIS based databases and decision support systems developed partly with support of BMGF, such as the FAO Country Investment Briefs (AgWater Solutions Project), the [CPWF/SEI online tool for Targeting AGwater Management Interventions \(TAGMI\)](#) as well as databases developed by CIAT/ICRAF, IITA and ICRISAT. The on-line system would also aim at a [GIS interface with IFDC's value chain management tool funded by AGRA](#) to provide market information e.g. through mobile phone-based mechanisms in West Africa.

External funding will end after the third year, when it is expected that CRPs (and their implementing Centers) will budget for Open Access and Data Management capacity moving forward, in their second call proposals.



We also firmly believe that there is the need for an “Innovation Fund” that could provide seed funding to partners who also want to be engaged in the process. CGIAR cannot do this alone, and it needs to ensure interoperability. A small innovation fund that could provide grants to partner organizations in less developed countries – such as FARA, SROs, NARS, and other country/regional programs – to help leverage and adopt our standards and tools could go a long way to ensuring that our efforts expand well beyond the walls of CGIAR. For example, FARA, CORAF, ASARECA, etc. could receive funding and technical support to build their capacity to implement repositories and processes that are consistent with CGIAR’s open standards, thereby extending the reach of not only our data, information, and knowledge, but theirs too.

Personnel

Personnel costs will account for approximately 15% of the proposed budget. The Governance Structure described earlier in this document includes operational leadership from the Open Access Implementation Team. This team will include two positions at the Consortium Office: the Data and Knowledge Manager, and a Knowledge Management Associate; and four positions staffed full-time by CRP lead centers. A competitive selection process will help identify the individuals (already existing, in many cases) to fill the roles of: Data Czar, to help coordinate across all data domains; a Knowledge Commons coordinator, to help lead the efforts around publications and the Knowledge Commons; a Spatial Commons coordinator, to help lead the development of the Spatial Commons and coordinate spatial data efforts; and a Germplasm Commons coordinator, who will help lead genetic, genomic, and crop data coordination. This team, along with strategic consultancies for legal, open access implementation, and technology platform and standards development, will be the engine that helps build capacity and champion the efforts across the Consortium. They will work closely with the Consortium Director of Knowledge Management and Communication to help develop a strong communication and advocacy campaign, as well as the Open Access Governance Council and the Open Access Advisory Panel.

Box 2: Leveraging the work already done by CRPs

One of the major challenges faced by CRPs as they attempt to implement Open Access is understanding when they need to create new processes and platforms from scratch, and when and where they can leverage existing processes and technologies.

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) has already done significant work to design a complete workflow for open access and open data. For example, their Data Management Support Pack (<http://ccaafs.cgiar.org/data-management-support-pack>) guides researchers to produce high quality, reusable data from CCAFS research activities. It consists of documents, templates and videos covering the different aspects of data management and ranging from the overarching concepts and strategies through to the day-to-day activities.

With some initial seed funding, CCAFS could produce a version of their open access and data management workflow that could be scaled out and adopted – and appropriately branded – by other CRPs, thereby avoiding reinventing the proverbial wheel.

By the end of the third year, we anticipate that Open Access will effectively have been mainstreamed, meaning that the need for such personnel will not disappear, but that they will have been built into ongoing operational budgets, both at the CRP and the CO level.

Box 3: Strategic Staffing

CGSpace is an excellent example of an open repository structure being used by many CGIAR Centers and CRPs. Yet the capacity to truly support these repositories is lacking. But a strategic placement of a full-time staffer – such as the Knowledge Commons Coordinator – could go a long way to building the necessary capacity for support and interoperability.

Consultancies and Vendors

Consultancies and out-sourced vendors represent 11% of the budget. Certain capacities will need to be outsourced through consultants and vendors. Based on feedback from those engaged in the process so far, we anticipate the need for a consultant to support Open Access Policy and Guidelines interpretation and implementation, and the connection with the IA/IP efforts underway across the Consortium. We also anticipate the need for experts on Open Access implementation and capacity building.

While we intend to leverage existing technologies, there is no doubt that funds will be needed to build or adapt platforms and repositories that can be effectively interoperable, especially when it comes to connecting publications and their data (the Knowledge Commons), with spatial and GIS data and layers (the Spatial Commons), and germplasm work (crop, genetic, and genomic data). Such platform developers exist, but not within the CG system. We will work to ensure that those consultants selected have good experience within the sector, and that they are working when possible to scale up existing platforms.

While we expect that the consultants for guidance and capacity building will no longer be required after the third year, we do anticipate that some assistance will be required in years 4 and 5 to manage and provide updates to the Open Access and Data Management platforms.

Other Direct Costs

This category, which accounts for approximately 11% of the budget, includes elements such as hosting the data and the platforms, which we intend to be cloud-based. We have already begun talks with vendors such as Amazon Web Services to help host our data for free, but the actual manipulation and modeling – whether it be for spatial, crops, or other types of datasets – are where such vendors generate revenue. We have included a baseline item for such costs.

We are also setting aside funds for other components to support Open Access. One area is to help support the growing movement towards Open Access and Open Data for Agriculture. Picking up the challenge posed in April 2013 at the G8 Open Data for Agriculture Summit in Washington DC, and working closely with the newly established GODAN initiative, we anticipate being able to provide content and leadership for annual conferences on the topic. Another key initiative we are working on is establishing deals with large publishers who currently earn revenues off CGIAR Centers and Research Programs in two ways; the first is through subscriptions to their journals, and the second is through “gold” open access publishing fees. We are exploring a new type of

agreement that would see us providing a set amount of funds to help offset the cost of gold open access publishing while taking into consideration subscription fees.

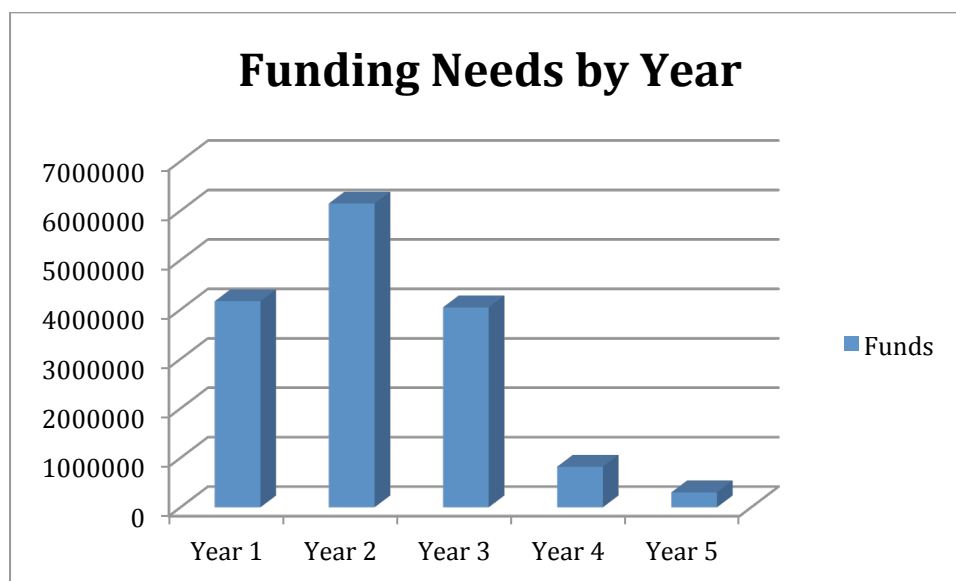
Finally, we would like to leverage this initiative to conduct a real impact assessment study over the course of the five years, to track the progress of Open Access and Data Management efforts, and try to make the connection to increased impact on development outcomes down the line.

Travel and meetings

While more and more communication and interaction is possible now virtually, it is also true that we cannot do away with face-to-face meetings to handle complex discussions, negotiations, and capacity building. We have tried to keep this to a minimum – approximately 5%. Often times, key staff are missing from watershed meetings because they do not have the budget to travel. We have therefore built in a budget to support a conservative number of trips to key meetings over the five years. There will be the need for key groups to meet and collaborate, particularly in the first couple of years. We have also added in some funds to support the travel of key partners in less developed countries.

Funding Trajectory

As indicated above, and shown below, the first three years of the project are where the bulk of funding will be needed; once the second round of CRPs are up and running, support to CRPs through this project will drop off sharply.



VII. CONCLUSION

The CGIAR Commitment towards Open Access through its adoption of the Open Access and Data Management Policy; sector-wide momentum towards Open Data; a shifting landscape in research funding; and current information and communication technology have all converged to provide a moment in time that needs to be capitalized. Now is the time to invest in opening up CGIAR's research assets. This funding will allow for the development and adoption of standards and the development of a metadata repository within 2 years, and full implementation within 5.

But while the will is there, implementation of the Open Access and Open Data roadmap will be a serious endeavor. In fact, while other organizations have produced Open Access policies and Implementation Guidelines, these are mostly focused on Open Access publishing; what CGIAR is proposing to do is actually a groundbreaking effort: producing a policy and implementation roadmap that addresses not only Open Access publishing, but openly accessible data. What's more, the effort will require a complete culture shift within and across CGIAR. Incentives will be carefully explored with all CGIAR Centers and implemented. Taking this leadership role will position CGIAR to help guide the global effort towards Open Data for Agriculture, to improve decision-making, research and, ultimately, impact. Lessons learned, clear standards and tools, and access to platforms will all be made available to partners. Finally, to help bolster this effort, we will conduct an accompanying impact assessment to understand the degree to which increased access to information leads to greater impact on the ground.

This project will devote 60% of its budget to CRPs and their implementing Centers to build capacity and implement the policy; 22% to outsourced vendors and consultancies; 7% to partners for capacity building, collaboration, and harmonization; and approximately 6% to the CGIAR Consortium Office to coordinate and lead. With appropriate focus and drive, CGIAR can be a truly "Open Access" organization within five years. It is planned that by the end of 5 years, capacity, culture, and platforms for Open Access will be business-as-usual and will not require additional Fund Council support outside of what is built into the operations of CRPs and their implementing Centers.

This project will require bold action, a clear roadmap, commitment to collaboration, and measurable metrics (see Appendix A). Key partners will be central to the process, including donor agencies such as USAID, DFID, GIZ, the Bill and Melinda Gates Foundation; key global data partners such as the World Bank, FAO and GODAN; national and regional agricultural organizations such as USDA, FARA, AUC, Embrapa, and CAAS; and universities and other research hubs. CGIAR has now signed onto the GODAN initiative, which includes more than 70 partners committed to opening up data, information, and knowledge for agriculture and nutrition.

The Team stands ready to mobilize, contingent upon approval of the first year's funding (\$4.1M).

APPENDIX 1: Monitoring and Evaluation Metrics

The following is a set of draft M&E metrics that will be reviewed with CRPs and Centers to assess the degree to which they are complying with the Open Access and Data Management Policy and Implementation Guidelines. A baseline assessment will need to be conducted first.

1. Percent of OA-eligible Information Products made Open during the calendar year.
 - a. Journal articles in OA
 - b. Datasets associated with journal articles
 - c. Non-journal article-associated datasets
 - d. Reports
 - e. Videos
 - f. Photographs
 - g. Films
 - h. Software products
 - i. Other information products
2. Percent of final Information Products eligible under CGIAR Open Access Policy (total number, minus Information Products that are justifiably excluded/aggregated or protected by intellectual property contract language, or not covered under the SRF)
3. Percent of eligible Information Products that are Open Access (See Table 4 below):
 - a. % that meet 3 Star rating (number of 3-star Information Products divided by Number of eligible Information Products under CGIAR Open Access Policy)
 - b. % that meet 2 Star rating.
 - c. % that meet 1 Star rating.
4. Number of downloads of Open information products.
5. Number of citations of Open information products (traditional print media and data).
6. Number of partners harvesting Open information products.

Table 3: Monitoring and Evaluation Targets over 5 Years

	Year 1	Year 2	Year 3	Year 4	Year 5
# of IPs produced	#	#	#	#	#
# of IPs produced that are OA eligible	60%	65%	70%	75%	80%
% of OA IPs produced that are available	25%	50%	60%	70%	80%
# downloads of Open IPs	Baseline	50% increase	50% increase	50% increase	50% increase
# citations of Open IPs	Baseline	50% increase	50% increase	50% increase	50% increase
Partners harvesting Open IPs	0	5	15	25	50

Table 4: The Draft “CGIAR Open Access Star Rating System”

1 Star	2 Star	3 Star
The Information Product (IP) sits on a website that doesn’t require credentials, but does not comply with any data management standards.	The IP complies with CGIAR OA Guidelines in that it is stored in an openly accessible repository, uses a set of data standards, but it does not yet utilize agreed-upon metadata elements and adopted Common vocabulary.	The IP in question complies fully with CGIAR’s Open Access Implementation Guidelines, including the use of agreed-upon metadata elements and adopted Common Vocabulary, and thereby available on open.cgiar.org .



APPENDIX 2: Logic Model

Goal	Objectives	Activities	Outputs	Outcomes	Impacts
Overall purpose	High-level Objectives	Specific tasks	Immediate results (direct products of activities)	Intermediate results (1-3 years)	Long-term results (3-10 years)
<p>This project's goal is to responsibly unlock data and knowledge from the vaults of CGIAR Centers and its CRPs to fuel the innovation that grows the global agricultural research while also advancing the CGIAR efficiency and accountability to its donors and stakeholders.</p>	<p>CGIAR Centers will develop internal policies, procedures, capacity and technology to comply with the CGIAR Open Access Policy.</p>	<p>Draft, negotiate, and get approval for Open Access Policy.</p>	<p>CGIAR Open Access Policy approved and adopted.</p>	<p>CGIAR Centers and the CGIAR Research Programs they support have the knowledge, expertise, policies, incentives and appropriate technologies to be fully compliant with Open Access Policy.</p>	<p>Results from CGIAR research will be leveraged by partners, innovators, and the private sector to speed up innovation for the agricultural research for development world.</p>
	<p>Within 5 years, more than 10,000 information products that would otherwise have been unavailable will be openly accessible.</p>	<p>Draft, negotiate, and get approval for Open Access Implementation Guidelines.</p>	<p>Open Access Guidelines approved; 8 Centers, 8 CRPs implementing within 2 years; all Centers/CRPs within 5.</p>	<p>Donors will be able to see how the results of the research they are funding is available without limitations.</p>	<p>Less-developed countries will be reaching their national agricultural investment plans more swiftly due to ready access to decision-making tools based on openly available data, and associated analytical tools.</p>
	<p>Centers and the CRPs they support will have their own suitable repositories from which metadata can easily be accessed by humans and harvested by machines.</p>	<p>Secure funding, and establish a process for CRPs and CGIAR Centers to receive seed funding support to implement the OA Policy.</p>	<p>Funding approved by CGIAR Fund Council; processes/ templates established for sub-grants; all CRP 2nd Calls proposals include OA funding.</p>	<p>Data and information produced by CGIAR research will be available to partners, innovators, and the general public.</p>	<p>The impact of agricultural research for development will be more easily demonstrated and quantifiable.</p>
	<p>CGIAR's open metadata repository, and its data visualization platforms will be recognized as industry standard, and available to be leveraged by partners for their own purposes.</p>	<p>Work with CGIAR members to establish standards for Open Access and data management inter-operability.</p>	<p>Common standards accepted and adopted; processes established for updating and maintaining.</p>	<p>CGIAR will be widely recognized as one of the leaders in the Global Open Data for Agriculture and Nutrition (GODAN) effort, and recognized for its Open Access leadership.</p>	<p>The connection between Open Access/open data and improved development impact will be quantifiable.</p>
		<p>Establish a metadata repository capable of exposing CGIAR information products and datasets in interoperable formats.</p>	<p>Baseline assessment of OA-eligible info products conducted across CGIAR; metadata repository established; 2000 files by June 2016; 5000 by June 2019.</p>		
		<p>Work with CGIAR HR Leaders to establish protocols and procedures to incentivize Open Access/open data.</p>	<p>All Center HR policies include incentives for Open Access/ open data compliance.</p>		
		<p>Contribute to and collaborate with global efforts related to Open Access/open data for agriculture.</p>	<p>CGIAR becomes signatory partner to GODAN; CGIAR co-leads annual Open Data conference. CGIAR contributes to AATP Virtual Information Platform.</p>		

Budget Summary		Year 1 (2014)	Year 2 (2015)	Year 3 (2016)	Year 4 (2017)	Year 5 (2018)	Centers/ CRPs	Partners	CO	Vendors/ Consultants	Totals	
Personnel												
	CRPs/Centers	455,000	468,650	482,710	-	-	1,406,360					
	Partners	-	-	-	-	-						
	CO	264,000	271,920	280,078	-	-			815,998			
	Subtotals	719,000	740,570	762,787	-	-					2,222,357	14%
Travel												
	CRPs/Centers	184000	144000	108000	0	0	436,000					
	Partners	60000	60000	0	0	0		120000				
	CO	64000	64000	36000	20000	0			184,000			
	Subtotals	308000	268000	144000	20000	0					740,000	5%
Sub-Grants												
	CRPs/Centers	2000000	4000000	2000000	0	0	8,000,000					
	Partners	250000	250000	250000	250000	0		1,000,000				
	CO	0	0	0	0	0			-			
	Subtotals	2250000	4250000	2250000	250000	0					9,000,000	58%
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	Open Access Implementation	75000	75000	75000								
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	Germplasm Commons	100000	100000	100000	50000	50000						
	Subtotals	465,000	465,000	465,000	150,000	150,000				1,695,000	1,695,000	11%
Other Direct Costs												
	Hosting for K Commons	50,000	50,000	50,000	50,000	50,000						
	OD4Ag Annual Conference	50,000	50,000	50,000	50,000	50,000						
	Computers and peripherals	5,000										
	KM Impact Research	50,000	50,000	50,000	50,000	50,000						
	Publisher Subsidies	250,000	250,000	250,000	250,000							
	Subtotals	405,000	400,000	400,000	400,000	150,000				1,755,000	1,755,000	11%
TOTALS		4,147,000	6,123,570	4,021,787	820,000	300,000	9,842,360	1,120,000	999,998	3,450,000	15,412,357	
							64%	7%	6%	22%	100%	

Personnel Cost, Total Project (cash portion only)															
Summary Data					Average Total Annual Compensation (incl. benefits & increases)						Number of Full-Time Employees (FTEs)				
	Annual Base Salary	% Annual Increase	% Benefit		2014	2015	2016	2017	2018		2014	2015	2016	2017	2018
Total (or average)	80,833	3%	47%		205,429	211,591	217,939	-	-		5.00	5.00	5.00	-	-
					Annual Compensation per FTE (including benefits and increases)						Number of Full-Time Employees (FTEs)				
Position Description	Annual Base Salary	% Annual Increase	% Benefit		2014	2015	2016	2017	2018		2014	2015	2016	2017	2018
Director, KM & Communication															
Data/Knowledge Manager (CO)	100,000	3%	80%		180,000	185,400	190,962	-	-		1.00	1.00	1.00		
KM Associate (CO)	60,000	3%	40%		84,000	86,520	89,116				1.00	1.00	1.00		
Data Czar (CRP)	100,000	3%	40%		140,000	144,200	148,526				1.00	1.00	1.00	-	-
Knowledge Commons Coordinator (CRP)	75,000	3%	40%		105,000	108,150	111,395				1.00	1.00	1.00	-	-
Spatial Commons Coordinator (CRP)	75,000	3%	40%		105,000	108,150	111,395				1.00	1.00	1.00	-	-
Germplasm Commons Coordinator (CRP)	75,000	3%	40%		105,000	108,150	111,395								
				719,000	740,570	762,787	-	-							

Travel Cost, Total Project (cash portion only)										
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Summary Data	Cost per Trip	Number of Trips per Year					Total Travel Cost (including inflation)				
		2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Total (or average)	17,667	36	35	19	5	-	308,000	268,000	204,000	20,000	-

Trip Description	Cost per Trip	Number of Trips per Year					Total Travel Cost (including inflation)				
		2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Kickoff Meeting Travel (CRP/Center Reps)	40,000	1.0					40,000	-	-	-	-
Open Data Group Travel (CRP/Center Reps)	40,000	1.0	1.0	1.0			40,000	40,000	40,000	-	-
CSI Meeting (CRP support to attend)	40,000	1.0	1.0	1.0			40,000	40,000	40,000	-	-
Data Czar (CRP)	4,000	6.0	6.0	1.0			24,000	24,000	4,000	-	-
Knowledge Commons Coordinator (CRP)	4,000	4.0	4.0	2.0			16,000	16,000	8,000	-	-
Spatial Commons Coordinator (CRP)	4,000	4.0	4.0	2.0			16,000	16,000	8,000	-	-
Germplasm Commons Coordinator (CRP)	4,000	2.0	2.0	2.0			8,000	8,000	8,000	-	-
OD4Ag Annual Conference (travel for 15 Partners)	60,000	1.0	1.0	1.0			60,000	60,000	60,000	-	-
Capacity Building trips (consultant to CRPs)	4,000	6.0	6.0	4.0			24,000	24,000	16,000	-	-
Director, KM & Communication (CO)	4,000	4.0	4.0	2.0	2.0		16,000	16,000	8,000	8,000	-
Data/Knowledge Manager (CO)	4,000	4.0	4.0	2.0	2.0		16,000	16,000	8,000	8,000	-
KM Associate (CO)	4,000	2.0	2.0	1.0	1.0		8,000	8,000	4,000	4,000	-

Sub-Grants, Total Project (cash portion only)													
Summary Data	Number of Sub-Grants		Average Cost per Sub-Grant, per Year (all inclusive)						Total Sub-Grant Cost (all inclusive)				
			2014	2015	2016	2017	2018		2014	2015	2016	2017	2018
	Total (or average)		17	-	-	-	-		-	4,000,000	4,000,000	-	-
Sub-grantee and Description	Number of Sub-Grants		Cost per Sub-Grant, per Year (all inclusive)						Total Sub-Grant Cost (all inclusive)				
			2014	2015	2016	2017	2018		2014	2015	2016	2017	2018
	Year 1 Center/CRP OA Infrastructure Subgrants		4	500000						2,000,000	2,000,000	-	-
Year 2 Center/CRP OA Infrastructure Subgrants	8		500000				4,000,000	-	4,000,000	-	-	-	
Year 2 Center/CRP OA Infrastructure Subgrants	4			500000			2,000,000			2,000,000			
Innovation Fund for Partners	1		250000	250000	250000	250000		1,000,000	-	-	-	-	
							9,000,000	2,000,000	4,000,000	2,000,000			

Consulting, Total Project (cash portion only)

Summary Data	Number of Contracts	Average Contract Cost (excluding inflation)				
		2014	2015	2016	2017	2018
Total (or average)	5	-	-	-	-	-

Contract Description	Number of Contracts	Contract Cost (excluding inflation)					TOTALS
		2014	2015	2016	2017	2018	
Open Access CD Consultant	1	75000	75000	75000			225,000
OA/IA Policy/Legal Counsel	1	90000	90000	90000			270,000
Knowledge Commons Developpment	1	100000	100000	100000	50,000	50,000	400,000
Spacial Commons Development	1	100000	100000	100000	50,000	50,000	400,000
Germplasm Comms Development	1	100000	100000	100000	50,000	50,000	400,000
		465,000	465,000	465,000	150,000	150,000	1,695,000

Other Direct Costs: Non-Capital Equipment, Supplies, and Other Costs DIRECTLY Attributable to the Project, Total Project (cash portion only)

Summary Data		Number of Items					Total Other Direct Costs (excluding inflation)				
		2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Total (or average)		11	7	7	7	7	420,000	400,000	400,000	400,000	150,000

Item Description	Number of Items						Cost per Other Direct Cost Item (excluding inflation)				
	2014	2015	2016	2017	2018		2014	2015	2016	2017	2018
Hosting for K Commons	1	1	1	1	1		50000	50000	50000	50000	50000
OD4Ag Annual Conference	1	1	1	1	1		50000	50000	50000	50000	50000
Computers and peripherals for new staff	4						20000				
KM Impact Research	1	1	1	1	1		50000	50000	50000	50000	50000
Publisher Subsidies	4	4	4	4	4		250000	250000	250000	250000	