



Rice Agri-Food System CRP, RICE



Addendum to RICE proposal
Responses to ISPC and CO

July 2016

Addendum to the Rice Agri-Food System CRP proposal (RICE)

July, 2016

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This addendum provides clarifications and responses to reviews of the RICE proposal as submitted on 30 April 2016, by the Independent Science and Partnership Council (ISPC) and by the CGIAR Consortium Office (CO). First, we quote from and respond to the ISPC and CO review summaries and overall recommendations. Next, we respond to the individual recommendations.

1. Overview changes in full proposal

The following changes were made in the full proposal in response to the review comments and/or based on RICE-internal deliberations:

Change location in RICE proposal	Page number of this addendum for clarification of change
More explanation is provided on the priority setting process, and its implications in program design, in section 1.0.2 of the RICE proposal.	Page 5, this addendum
A conceptual framework for RICE enabling environment is provided in section 1.3 Impact pathway and theory of change	Page 15, this addendum
The cross-cutting budgets of the FPs of the RICE proposal, have been verified and, where necessary, corrected, Sections 2.1.2.5, 2.2.2.5, 2.3.2.5, 2.4.2.5, and 2.5.2.5.	Page 16, this addendum

The CapDev budget information provided in the RICE proposal (Section 1.0.10 [new numbering]) is now fully aligned with the CapDev budget information provided for the whole CRP in Section 1.1.6 and for each individual flagship project in sections 2.1.2.5, 2.2.2.5, 2.3.2.5., 2.4.2.5, and 2.5.2.5.	Page 16, this addendum
Strengthened Annex 6 on Results-based management and ME&L	RICE-internal deliberations

2. ISPC review of the RICE proposal

ISPC review summary: RICE is a conceptually sound, compelling and articulate proposal that addresses the issue of improving rice production across the developing world. It is founded on clear comparative advantage for the CCIAR. Historically, investment in rice research has a proven track record of contributing to the goals of the CGIAR. The RICE proposal builds on the successful GRiSP CRP; it maintains a large emphasis on genetic improvement while making the case, through its foresight studies, of a broadening of the CRP to an “agri-food system”. RICE has a very strong partner base and looks at further strengthening the CRP, in particular by seeking additional ARI partners. The proposal offers a scientifically rigorous case to deliver measurable impacts on the SLOs. The research activities of RICE range from upstream/basic research to plant level research (variety selection), through to the delivery of new varieties and management practices to the end users, including farmers and processors of rice. The theory of change and impact pathway are logical and plausible. The ISPC considers that RICE CRP has reached an advanced stage of development and scores well against each of the criteria used by the ISPC to review the full proposals.

ISPC review recommendations: There is of course always room for improvement and the ISPC requests the CRP proponents to submit an addendum which responds to the points made below, alongside the full proposal to be submitted to the System Office by 31 July 2016:

1. Indicate how a priority-setting process will be incorporated into the CRP rationale and can contribute to maintaining a focused research program even as boundaries expand.
2. Revisit the feasibility of meeting planned targets for the FPs given budget constraints, using the priority setting exercise to reduce the number of activities/outputs where needed.
3. Provide a strategic analysis of focus areas for FP5 based on opportunities to generate public goods. Since the pre-proposal, the mention of hybrid rice activities in FP5 has been dropped. Is this intentional or an inadvertent omission?
4. Clarify and provide some classification of how RICE plans to manage the approximately 900 partners at different activity and thematic levels/geographic locations.

Further specific recommendations were provided in the review document; the most important ones were indicated in bold. Below, we respond to these recommendations.

2.1 Priority setting

Overall recommendation 1. Indicate how a priority-setting process will be incorporated into the CRP rationale and can contribute to maintaining a focused research program even as boundaries expand.

A systematic framework underlies the various steps of RICE's priority setting process (Fig. 1).

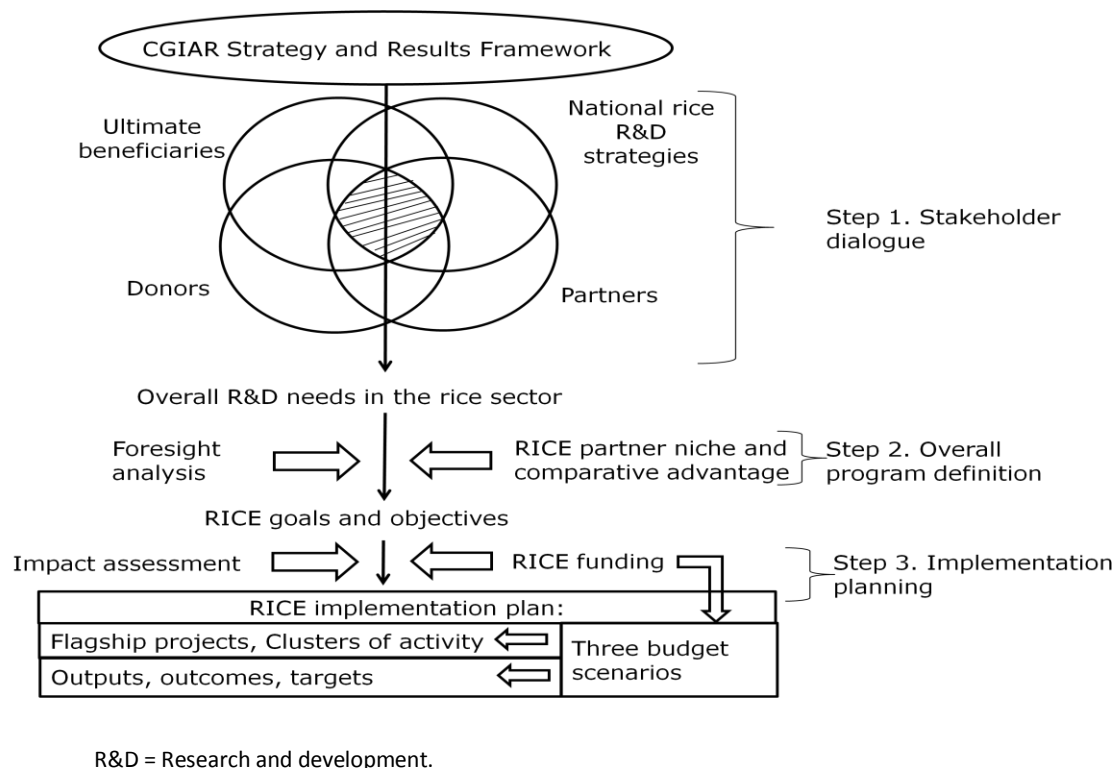


Figure 1. Conceptual framework of priority setting in RICE; steps are explained in the text.

Priority setting in RICE is a continuous process of political dialogue, infused with science-based evidence of impacts of research investments. The dialogue involves RICE's stakeholders, such as ultimate beneficiaries, local and national governments, program partners (public, private, civil society), donors, and others with a stake in the geographic areas where RICE operates (step 1 in Fig. 1). Each of these stakeholders has its own interests and priorities as expressed in strategy and policy documents and—importantly for RICE—in national rice research and sector development strategies. The Strategy and Results Framework expresses the overall priorities of the CGIAR (funders and research providers) in terms of SLOs, IDOs, subIDOs, targets, and 'grand challenges'. The intersection of the various stakeholders' interests and priorities delineates out of the SRF the overall space for research and development in the rice sector. A combination of foresight analysis and assessment of the comparative advantage of the RICE partners and of alternative suppliers (such as other CRPs, private sector, advanced research institutes, and national partners), focuses this space on those areas where RICE can make significant and unique contributions and defines the program's overall goals and objectives (step

2). Next, within that space, scenario analyses, foresight studies, and ex-ante and ex-post impact assessments provide guidance on when and where research investments are expected to contribute most to the realization of the identified goals and objectives (step 3).

Based on these analyses, a RICE ‘implementation plan’ was developed in the form of flagship projects (FPs) with clusters of activities and specific outputs and outcomes. As funding is a relatively uncertain parameter, RICE constructed three sets of outputs (and underlying activities), outcomes, and development targets that correspond with three investment levels (RICE proposal, Section 1.0.2). Budgets are constructed by activity, by natural classification, and by outcome, IDO and subIDO, SLO, and SRF targets. In its proposal, RICE presents details for a work plan under a medium funding level as requested in the call for proposals, with additional outcomes for a the high funding level (called the ‘uplift budget’ in the call for proposals). Each FP also has a detailed set of activities, outputs, and outcomes corresponding to the ‘low investment’ scenario. The different sets of output/activities and outcomes reflect the priorities of the FPs and of the RICE CRP; having these sets at hand is a main mechanism for maintaining focus in the program and for minimizing the risk of drifting into nonpriority topics as horizons expand. The RICE program will maintain consistency and coherence within the lower and upper investment scenarios. Priorities will be revisited, and new planning of activities, outputs, and outcomes undertaken when actual funding drops below the lower scenario or exceeds the upper scenario.

RICE’s research and development priorities, and their derived activities, outputs, and outcomes are estimated and developed to cover the next six years. However, RICE operates in a dynamic and rapidly changing world (RICE proposal, Section 1.0.2), and needs to continuously monitor such changes and adapt its priorities when and where needed. RICE has various mechanisms by which it monitors and anticipates changes, ranging from foresight and scenario analyses (done in FP 1) to formal and informal interactions with beneficiaries and stakeholders. Besides potentially shifting priorities by our stakeholders and partners, new research breakthroughs and opportunities may warrant reorientation of program priorities or activities. A case in point is the rapid advancement in genome sequencing techniques and associated reduction in its costs, which opens up new mechanisms for developing novel and improved rice germplasm. Such needs and opportunities will be discussed at annual planning meetings of RICE, and work plans adjusted as appropriate.

Specific recommendation, page 6: Under such large financial changes, greater clarity on how the results of the priority setting analysis were used to determine which research activities were excluded should be included in the addendum.

RICE’s priority-setting framework identifies activities both for inclusion and exclusion. Table 1 presents examples of excluded research activities and the reasons derived from the priority setting process for excluding them. Within the CGIAR CRP portfolio, a number of priority activities that were initially included in GRiSP have been—or will be—moved into other CRPs where they are more appropriate, with selected joint activities to retain connection and provide added value through cross-CRP collaboration (see RICE proposal, Annex 7 ‘Linkages with other CRPs and site integration’ for details).

Table 1. Examples of research activities excluded from RICE.

Research activity excluded from RICE	Justification arising from priority-setting considerations
Landscape-level research activities, such as basin-level (hydrological) impacts of adoption of water-saving technologies in rice cropping systems, large-scale migrations of insect pests (e.g., brown plant hopper swarms), or landscape-level ecosystem services and ecological sustainability—as suggested by the ISPC reviewers on p. 4 <i>“there is insufficient attention to effects at landscape level. The RICE rationale would have been stronger if it had highlighted the research discovery aspects of understanding ecological processes underlying long-term sustainability of the agri-food systems”</i>	Though these landscape-level research questions are important, they are not among the comparative advantages of the RICE partners and are (better) addressed by alternative suppliers such as the CRP Water, Land and Ecosystems (WLE). RICE interacts with WLE on some of these issues (landscape-level hydrology and ecosystem services), as explained in the Rice proposal, Annex 7 ‘Linkage with other CRPs and site integration’.
Research into single-component technologies of crop management (e.g., fertilizer, pesticides).	GRiSP developed many international public goods (IPGs) on single-component technologies, such as site-specific nutrient management and alternate wetting and drying, which are in the process of dissemination. Many national partners now have sufficient capacity to continue research into single component technologies and turn these into local applications. RICE’s comparative advantage lies in the development of more complex and integrated crop and farm management solutions (such as ecological engineering). Hence, RICE will invest in the integration of component technologies to provide holistic field-specific guidelines, and in making use of modern ICT tools such as cell phones and tablets for large-scale dissemination and to capture farmer feedback (‘information crowd sourcing’).
Advanced, cutting edge, upstream research in such areas as genomics, proteomics, biochemistry, nanotechnology, etc.; e.g., in the development of C4 rice.	This is typically an area of expertise of advanced research institutes (ARIs). In the C4 project, upstream research activities are sourced to such ARIs, while the RICE center IRRI uses its convening power to bring the parties together and conduct research activities related to its comparative advantage (field screening, access to genetic diversity, etc.).
Hybrid rice	Development and dissemination of hybrid rice is a priority of many of RICE’s partners and target countries, and has great potential to contribute to genetic gain increase, yield increase, and food security. However, all hybrid rice activities currently under GRiSP are now completely funded by the rice industry (private sector, public partners) through two well-functioning hybrid rice consortia, and no longer require the use of

	international public funding (W1,2). RICE will interact with the hybrid rice consortia to ensure that any discoveries and innovations that RICE produces in inbred varieties that may be relevant for hybrid rice, are transferred—and vice versa. Thus, RICE will collaborate with the hybrid rice consortia, but they will not be part of RICE.
Downstream adaptation, extension, and dissemination of improved technologies, including production and large-scale dissemination of seeds of improved rice varieties.	Though these are hugely important activities to obtain impact at scale, they are not—as noted in the IEA evaluation of GRiSP (IEA report, p. 24)—the comparative advantages of the international RICE centers. Local adaptation and large-scale dissemination of improved technologies to end users such as farmers are the remit of local institutions (including the private sector) and knowledge providers. The RICE CG centers will focus their efforts on <u>facilitating</u> the adaptation, dissemination, and scaling-out process, by forging partnerships with the right partners, developing novel dissemination tools (ICT) as IPGs, fostering conducive policy environments, facilitating multistakeholder platforms, and capacity development (see Rice proposal, FP1). It will also conduct research into effective dissemination and scaling-out mechanisms. Some of the adaptation and scaling-out activities will be conducted by partners <u>within</u> RICE, but the majority of the activities will lie with external partners <u>of</u> RICE.

2.2 Output and outcome targets

Overall recommendation 2. Revisit the feasibility of meeting planned targets for the FPs given budget constraints, using the priority setting exercise to reduce the number of activities/outputs where needed.

Specific recommendations:

Page 8, on FP1: The question arises as to whether this budget is realistic for what is being proposed.

Page 10, FP 2: It remains to be seen if all the activities, outcomes and deliveries can be carried out with the proposed budget. As with FP1, revisiting the feasibility of delivering planned outputs with the budget allocated is recommended.

Page 11, FP 3: After six years, can RICE realistically expect to make a significant contribution in all the planned areas?

RICE spent a lot of time developing its proposed activities, outputs, and outcomes for each FP, and carefully scrutinized their feasibility in relation to expected availability of budgets. Key RICE staff convened for 10 days in December 2015 to do so, and worked with partners in Africa during the week-long AfricaRice science week in early 2016 (among others). As explained in the response to ISPC review recommendation #1, RICE constructed three sets of outputs (and underlying activities), outcomes, and development targets that correspond with three annual investment scenarios: \$65 million, \$85 million,

and \$105 million. In its proposal, RICE presented details for the medium funding level (\$85 million) as requested in the call for proposals. RICE is convinced that the presented outputs and outcomes are realistic and achievable with this annual budget. But, to accommodate any shortfall in funding, each FP prepared a detailed set of activities, outputs, and outcomes corresponding to the low annual investment scenario (\$65 million).

The following additional clarifications are provided to support our case that the proposed outputs and outcomes are realistic:

1. The presented outcomes are formulated for action sites in specified target countries, but the number and scale of action sites will depend on the amount of funding available.
2. There is certain complementarity in a number of outcomes, which will lead to efficiency gains. For example, outcomes in Rice proposal FP3: “Improved management practices that reduce yield gap by 10-15% developed and disseminated at eight action sites” and “Improved management practices that increase input use efficiency by 5% developed and disseminated at eight action sites,” activities will be carried out in the same sites (Nigeria, Senegal, Tanzania, Madagascar, Vietnam, Indonesia, Bangladesh, Myanmar), and a number of improved management practices, such as site-specific nutrient management, impact positively on both outcomes. Another example in FP3 is “Options to diversify rice farms with other crops, animals, or trees developed and disseminated at six action sites (Côte d’Ivoire, Madagascar, Tanzania, India, Bangladesh, Myanmar) (together with other CRPs)” and “Diversified on-farm diets sourced through diversified farming systems at four action sites (Côte d’Ivoire, Madagascar, Bangladesh, Myanmar) (together with other CRPs).” In this case, the hypothesis is that the outcome of ‘diversified on-farm diets’ is realized through the outcome of ‘diversified farming systems’—a hypothesis specifically made explicit in cluster of activity 3.3 (RICE proposal, Section 2.3.1.6) and tested in four of the six countries in the ‘diversified on-farm diets’ outcome.
3. The budget of RICE only includes the funds flowing through the CGIAR centers (Windows 1-3, and bilateral grant projects). However, the three nonCGIAR centers (Cirad, IRD, and JIRCAS) contribute their own rice programs and activities to RICE, though this is not specified in monetary terms. For example, Cirad employs around 60 scientists involved in rice research, IRD around 25–30, and JIRCAS over 20.
4. The SLO targets of RICE (PIM Table A, Table 2) will be reached through uptake and dissemination of RICE-developed technologies by scaling and development partners external to—but facilitated by—RICE. These partners have access to far more resources than those available to RICE. Some GRiSP examples of the activities of such scaling partners that contribute to the realization of its targets are given in Table 2.

Table 2. Examples of dissemination of improved technologies by GRiSP partners.

Distribution of seeds of stress-tolerant rice varieties in South Asia (source: GRiSP annual report, 2015) Around 500–600 partners of GRiSP from the public and private sector in South Asia produced and distributed to farmers 125,500, 42,750, and 15,250 t of seed of Swarna-Sub1 (submergence-tolerant), Sahbhagi Dhan (drought-tolerant), and salt-tolerant varieties, respectively. In addition, breeder, foundation, and “truthfully labeled” seed was produced of drought- and submergence-tolerant rice varieties released in 2013–14 in Bangladesh (15 t), India

(586 t), and Nepal (16 t). Partners who used their own funds included 402 small and medium private seed companies, 95 NGOs, and 26 farmer organizations and seed producers, with the remainder from universities, government programs, and international organizations. As a consequence of such activities over time, by 2015, submergence-tolerant rice varieties covered approximately 2.2 million ha and 4.9 million farmers; drought-tolerant rice varieties, 0.65 million ha and 1 million farmers; and salt-tolerant rice varieties, 0.2 million ha and 0.4 million farmers. Since 2010, one million farmers have received stress-tolerant rice varieties in Bangladesh. The GRiSP program, in particular the CGIAR centers, provided original improved germplasm, capacity development and training (seed multiplication, quality seed, seed storage, business model development), forged the partnerships and linkages among public and private sectors, and interacted with policymakers and donors to support the seed delivery process.

Distribution of seeds of new rice varieties in Africa (source: GRiSP annual report, 2015)

In 2015, AfricaRice linked GRiSP with the second phase of the Emergency Rice Initiative for the production and distribution of quality seed of improved rice varieties to rice farmers in 27 sub-Saharan African countries; 53 t of breeder seed were produced, along with 343 t of foundation seed and 8,212 t of certified seed. Support from the GRiSP program was similar to that in the example above in Asia. As a result of partner activities in seed distribution over the years, the adoption rate of economically important improved varieties in sub-Saharan Africa by 2009–10 was 30%.

Distribution of improved postharvest technologies (funded) by the private sector in Asia (source: GRiSP annual report, 2015)

For postharvest and mechanization technologies, the production or sale of products is the easiest-to-collect indicator for adoption by both partners and end-users. Laser leveling is becoming well known in Vietnam where [first adopters](#) have invested in the technology. In Cambodia and Vietnam, where IRRI demonstrated the first combine harvesters in 2007, major rice-growing provinces are already almost completely harvested by around 6,000 combine harvesters; similar trends can be observed in Indonesia, Myanmar, the Philippines, and Sri Lanka. Flatbed dryers are already produced by local manufacturers in all partner countries. Improved [rice husk furnaces](#) are locally produced in Cambodia, Indonesia, and the Philippines. Around 100 solar bubble dryers have been sold, mostly to government programs for verification. Hermetic storage systems show a slowly increasing trend of sales. The company GrainPro sold 2.5 million Super bags in 2015, but no data are available on how many of those went to rice farmers. It also created a new bag that sells for only \$0.99. Preliminary results of the analysis of 12,000 farm households in Asia found that 18–31% of the respondents in Bangladesh, India, and Myanmar used hermetic bags for seed storage. Increasing sales to farmers are reported in Ethiopia, India, Kenya, the Philippines, Rwanda, Uganda, and Zimbabwe.

2.3 Breeding focus areas FP5

Overall recommendation 3. Provide a strategic analysis of focus areas for FP5 based on opportunities to generate public goods. Since the pre-proposal, the mention of hybrid rice activities in FP5 has been dropped. Is this intentional or an inadvertent omission?

Specific recommendation, page 12, FP 5: The question needs to be posed, even with such a large team of researchers, how feasible is it to address in depth such a large range of variables in a breeding program? Does an effective plant selection program need to be more focused and can RICE select for

it all? Surprisingly, compared to the pre-proposal, the RICE full proposal does not mention any activity related to hybrid rice.

In the RICE proposal, not all variables are addressed in equal depth everywhere, and neither are they addressed in one single large breeding program. RICE involves a number of product-oriented breeding subprograms alongside cross-cutting and supporting activities. The product-oriented breeding subprograms are region-specific, i.e., there are separate programs targeting priority traits in Africa, Asia, and Latin America (though there is cross-cutting flow of information, products, services, staff, and knowledge across the continents). Some traits, such as high yield and resistance to the major abiotic stresses of drought, submergence, and salinity, are rather ‘universal’ and feature in all continents, while others, such as diseases and insect pests, quality traits, and minor abiotic stresses like iron toxicity are more region- and site-specific; they do not feature in all programs and are of lower overall priority.

RICE’s comparative advantage is the production of breeding tools and genetic diversity that have global reach; provision of leadership on modern, effective, and cost-effective breeding programs; identification and mobilization into new germplasm of priority traits/genes with wide applicability across target domains; provision of leadership on definition, identification, and mobilization of quality trait parameters into breeding programs; and provision of leadership (convening power, research involvement) in future, high-risk but high pay-off products such as C4 rice. The costs of outcomes in the RICE proposal PIM Table B indicate the priorities in these five focus areas, based on the program’s comparative advantage:

- Cross-cutting development of breeding tools, increasing the genetic diversity base, and modernization of rice breeding programs for global application: ≈ \$60 million
- Increasing resistance to stresses caused by climate change (especially drought, submergence, salinity, heat; emerging pests and diseases): ≈ \$48 million
- Increasing yield potential through increased genetic gain (including tolerance of mainstream pests and diseases): ≈ \$46 million
- Increasing quality and nutrition (highly site-specific): ≈ \$8 million
- Breaking yield barrier through C4 rice: ≈ \$4 million

At the next level, priority traits for variety development are set in so-called ‘product profiles,’ which are site/region-specific and are derived by combining trait preferences from farmers, millers/traders, and consumers with biophysical information on prevalent biophysical and socioeconomic constraints and opportunities (biotic and abiotic stresses, favorable or unfavorable climate, and labor market characteristics that impact on crop management opportunities such as manual or mechanical transplanting and direct seeding). In collaboration with their partners, the RICE CGIAR centers will harness the results of their IPG investments in the development of new rice varieties based on these product profiles. These partners can be local or international, and public or (increasingly so) private. Product profiles include so-called ‘must-have traits,’ ‘range traits’ (which make them fit into prevalent or novel cropping systems according to climate regimes), and ‘win traits,’ which provide the variety with a competitive market advantage or with a tolerance to a particular but localized risk in the target

environment (such as periodic submergence). An example of a product profile for the rainfed lowlands of Vietnam is shown in Table 3.

Table 3. Rice product profile for rainfed lowlands in Vietnam.

Seasons	Main crop – Summer Autumn (June/July-Oct)
Must Traits 1. Grain yield 2. Grain quality 3a. Stress tolerance (abiotic) 3b. Stress tolerance (biotic)	High (>10% over high yielding check - OM 4900var) Soft rice (Amylose – low to Inter; GT- low to Inter; GC >60 mm); Chalk <10%; LS-MS; <u>Q-check:</u> Bay Nui Submergence tol./stagnant water Problem soils (salinity, acid soils, Fe toxicity) Cold tolerance (north Vietnam) BPH tolerance, BLB
Range Traits 1. Duration (days) 2. Plant height (cm) 3. Lodging 4. HRR	95–120 (North), ≤90 (Central and South) 100–125 < 10% >50 % (high)
Value Addition (win traits)	1. Stagnant water 2. Drought tolerance 3. Blast tolerance (durable type), panicle blast 4. AG tolerance 5. Aroma (going to be ‘must trait’)

It should also be noted that the available resources for the breeding programs are larger than presented in the RICE proposal, which captures only the resources flowing through the CGIAR centers. The majority of the staff of Cirad, IRD, and JIRCAS who contribute their own resources to RICE, contribute to FPs 4 and 5. For example, in the GRiSP program, important traits and gene discoveries related to tolerance to phosphorus deficiency and to spikelet formation were contributed by collaborators from JIRCAS.

The dropping of hybrid rice is intentional. As noted in Table 1 of this addendum, development and dissemination of hybrid rice is a priority of many of RICE’s partners and target countries, and has great potential to contribute to genetic gain increase, yield increase, and food security. However, all hybrid rice activities currently under GRiSP are now completely funded by the rice industry (private sector, public partners) through two well-functioning hybrid rice consortia, and no longer require the use of international public funding (W1,2). RICE will interact with the hybrid rice consortia to ensure that any discoveries and innovations that RICE produces in inbred varieties that may be relevant for hybrid rice, are transferred—and vice versa. Thus, RICE will collaborate with the hybrid rice consortia, but they will not be part of RICE.

2.4 RICE partnership arrangements

Overall recommendation 4. Clarify and provide some classification of how RICE plans to manage the approximately 900 partners at different activity and thematic levels/geographic locations.

Specific recommendation, page 7: A clearer elaboration of how the 900 partnerships are managed and what the decision making structures are at the different activity and thematic levels/geographic locations would be very useful.

Elaboration of GRiSP/RICE's partnership arrangements is found in the [GRiSP Partnership report](http://www.grisp.net/uploads/files/x/000/08f/c98/GRiSP%20Partnership%20in%20Motion.pdf?1361448350) (<http://www.grisp.net/uploads/files/x/000/08f/c98/GRiSP%20Partnership%20in%20Motion.pdf?1361448350>). That report explains partnership mechanisms in GRiSP (RICE from 2017 onward) at thematic and geographic levels of organization, and clarifies decision-making structures (management and governance; role of partners versus role of CGIAR centers). In the RICE proposal, Table A2.1 of Annex 2 provides a nonexhaustive list of key examples of four modes of multistakeholder partnerships as proposed by the ISPC in 2015.

Here, three important regional mechanisms for coordination among partners are highlighted:

1. The [Council for Partnership on Rice Research in Asia](#) (CORRA) was established in 1996 to enhance the effectiveness of the various partnership mechanisms employed in meeting the challenges of the global rice research system. The Council is committed to promote and support interdependence, reduce barriers, and collectively change perspectives of all partners: research workers and administrators, policymakers, and donors—both inside and outside the region, as they become full partners in the global rice research community. The main objective of CORRA is to guide, facilitate, support, and thereby strengthen the partnership among NARES in Asia, and between NARES and IRRI and other relevant institutions, in an effort to meet rice research needs of the Asian region. Member countries are represented by senior officials of selected NARES in Asia (currently, there are 16 member countries). CORRA representatives meet every year to discuss issues and challenges facing the Asian rice industry. The meeting is also a forum in which country representatives provide important inputs into the policies that influence the livelihood of rice farmers and consumers and the rice R&D agenda in the region. Since 2013, CORRA has acted as an advisory body for GRiSP in Asia, and will continue to play this role for RICE.
2. [The Latin American Fund for Irrigated Rice](#) (Fondo Latinoamericano para Arroz de Riego; FLAR) was established in 1995 by the concerted efforts of various rice producers' associations from Brazil, Colombia, Venezuela, and CIAT—which hosts the coordinator and the secretariat. In FLAR, rice producers' associations, milling and seed companies, and national public research programs come together with the objective of providing innovative and technological solutions to the needs of rice farmers and the rice industry, and to improve the production of irrigated rice in Latin America. Its main objective is to increase irrigated rice production in a sustainable way, considering parameters of equality, genetic diversity, economical and technical efficiency,

profitability, and lower unit costs. FLAR does not only work on rice breeding and germplasm exchange, but also on the development of other integral parts of the system, including—but not limited to—crop management technologies, postharvest, alternative uses, and quality grain. FLAR involves all those entities that share the mission of the fund. Each new member country is represented by one institution of the rice sector. This institution is responsible for ensuring the participation of other entities working to promote rice research, technology transfer, rice production, and marketing. Besides the representatives of the rice institutions, those rice research organizations that share FLAR's mission and activities related to support for rice development are welcome to join FLAR. FLAR comprises 27 institutions from both the private and public sectors, from Argentina, Bolivia, Brazil, Colombia, Chile, Costa Rica, Ecuador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, the Dominican Republic, Uruguay, Venezuela, and CIAT.

3. In 2008, the Alliance for a Green Revolution in Africa (AGRA) and the Japan International Cooperation Agency (JICA) took the lead to develop the [Coalition for African Rice Development](#) (CARD), whose aim is to set out an overall strategy and a framework for action to contribute to achieving an African green revolution through one increasingly important crop—rice. CARD aims to respond to the increasing importance of rice production in Africa, not by ‘re-inventing the wheel,’ but by building on existing structures, policies, and programs such as the national agricultural research organizations of Africa, the Africa Rice Center (AfricaRice), the Comprehensive Africa Agriculture Development Programme (CAADP) and the Africa Rice Initiative (ARI). CARD Steering committee members include three of GRiSP’s coordinating institutes: AfricaRice, IRRI, and JIRCAS (others are AfDB, AGRA, FAO, FARA, IFAD, JICA, NPCA, and the World Bank). GRiSP works closely with CARD to support the development and implementation of national rice development strategies in the CARD priority countries, and RICE will continue to do so from 2017 onward. JICA will be a key partner for development of the rice sector, particularly in Africa, with an emphasis on extension capacity building and small-scale mechanization. RICE will provide technical support to CARD projects or will implement them on behalf of or with JICA and national partners.

Specific recommendation, page 7: further, an indication of national and local institution involvement and commitment would be beneficial. These should be included in the addendum.

Indications of the commitment of Cirad, IRD, and JIRCAS are: (i) Cirad contributes around 60 scientists involved in rice research, IRD around 25–30, and JIRCAS over 20; (ii) inclusion of representatives of these centers in the RICE program planning and management team; and (iii) leadership by these centers of a number of clusters of activity listed in the RICE proposal, Section 1.0.11 ‘Program management and governance.’ Financial or human resources commitments of the ≈ 900 partners in RICE are not made explicit. However, their commitment is illustrated by the examples of their efforts to contribute to RICE’s objectives and targets given in Table 2 of this addendum.

2.5 Other recommendations

Specific recommendation, page 6: “... a definition of the characteristics that create an enabling environment relevant in rice based farming systems in the different production areas would improve the proposal and could be included in the addendum.”

Not much literature exists in the agricultural R&D arena on the concept of ‘enabling environment.’ In the intersection of civil society organizations (CSO) and development, a definition of enabling environment is provided by Thindwa, 2002¹: “*An enabling environment is a set of interrelated conditions – such as legal, organisational, fiscal, informational, political, and cultural – that impact on the capacity of development actors such as CSOs to engage in development processes in a sustained and effective manner*”. Clearly, many of these conditions are beyond a CRP to influence, but some are, such as organizational, informational, and sometimes even political conditions (or rather ‘policy support’). In the R&D arena, Environment Canada concludes that “*Well-aligned, well-connected and excellent R&D depends on a strong enabling environment, which includes financial resources, world-class infrastructure, highly-skilled people and strong leadership*”². Most of these elements are pertinent to CRPs, though one can argue that they are more relevant to CGIAR center management and governance.

In RICE, the enabling environment refers to the set of conditions that facilitate the scaling-out of products and services derived from agricultural research. Successful scaling-out depends on the (inter)actions and policies of all actors involved—from research to development—in developing and bringing to scale novel products and services that contribute to the realization of development outcomes. Building on relevant components of enabling environments listed above, we propose a set of six actionable and interconnected elements of the enabling environment for RICE:

1. **Monitoring, Evaluation, and Learning (ME&L).** To foster an impact pathway culture, a strong ethos is required of collective monitoring and evaluation of progress and of using learning data for continuous improvement. The collective effort is required in order to create a common vision that will strengthen linkages among partners along the whole impact pathway (from researchers to development agents and to end-users) (RICE proposal, Annex 7 has more details).
2. **Communication.** Good communication along the whole impact pathway is critical for RICE to deliver its development impacts. Good communication contributes to the achievement of research outcomes at different scales, enhances program visibility, and demonstrates accountability by widely sharing program results. The RICE communication strategy has six activities that interconnect with—and support—other elements of the enabling environment such as ME&L, capacity development, partnership building, and policy support. These activities are: 1) communicate and engage with partners; 2) promote learning and sharing of information; 3) engage with actors on the ground to scale-out technologies and practices; 4) communicate about the program, the science, results, and progress; 5) engage in policy dialogue to scale-up

¹ Referenced in open Forum for CSO Development Effectiveness, Issue paper 8 – Enabling Environment (http://www.ccic.ca/_files/en/what_we_do/osc_open_forum_wkshop_2009-10_paper_8_e.pdf)

² http://www.ec.gc.ca/doc/scitech/mecrdp_e.html

results; and 6) make research program information and resources open and accessible. (See RICE proposal, Annex 13 for more details.)

3. **Gender Awareness.** ‘Culture’ is an important dimension of enabling environments. An important aspect of culture in the agricultural R&D arena is that of gender (in)equalities—and the perceptions of these—within and among all actors along the impact pathway (see RICE proposal, references in Section 1.0.4). RICE aims to contribute to positive and transformative changes on gender perceptions and gender equalities among its partners and its beneficiaries, especially farmers. (See RICE proposal, Annex 4 and FP1 [cluster of activity 1.2] for more details.)
4. **Capacity Development.** RICE adopts the CGIAR capacity development framework as a comprehensive structure to systematically strengthen capacity among partners and actors along its impact pathway. The nature of capacity development varies with the location of the partner/actor on the impact pathway, from strengthening individual and institutional capacity for research to strengthening the capacity for partner formation (e.g., the creation of learning alliances and other multistakeholder platforms), adaptive research, ME&L, communication, knowledge dissemination, and policy engagement. Especially important for strengthening the enabling environment to support the process of scaling-out, are actions to develop space for innovation among research partners, development partners, and local communities. (See RICE proposal, Annex 3 for more details.)
5. **Partnership Building.** RICE actively engages with partners along its whole impact pathway, from upstream research to downstream scaling-out. The private sector is increasingly recognized as a key player in bringing new technologies to markets/end users, and features prominently in RICE’s partnership strategy. Of special importance are RICE’s efforts in the development and fostering of multistakeholder platforms and outreach/scaling mechanisms, including seed systems, which are addressed specifically in clusters of activities 1.3 and 1.4 of FP 1. (See RICE proposal, Annex 2 and the [GRiSP Partnership report](#) for more details.)
6. **Policy Support.** Like culture, ‘policy’ is an important dimension of enabling environments in the development arena (see references above). In the CRP II portfolio, the CRP ‘Policies, Institutions and markets (PIM)’ is the main avenue for developing and disseminating policy support to facilitate scaling-out and uptake of new technologies, products, and services. Through FP1, RICE collaborates with PIM, but also undertakes its own efforts on policy support in the rice sector.

This proposed set of six actionable elements is a first attempt at a systematic framework for the concept of ‘enabling environment.’ Its description is rather generic and has wide applicability in agri-food systems. However, each of RICE’s FPs has identified a number of specific ‘enabling actions’ to develop the right products and services in the rice sector, and to bring them to scale.

Specific recommendation, page 7: When looking at specific budgets for each FP, the ISPC has noted that the FTE costs varied significantly across the “Personnel” classification categories: from US\$ 413,922/FTE in FP1, US\$ 200,326/FTE in FP2, US\$ 621,274 in FP3, US\$ 223,448 in FP4 to US\$ 465,673 in FP5. There does not seem to be a logical explanation of why personnel costs should differ so widely between FPs. An explanation should be given in the covering letter to the addendum.

Using the totals for personnel costs and the listed FTEs in our FP budget sheets, we were unable to reproduce the unit FTE costs calculated by the ISPC. Table 4 presents the average unit FTE cost per FP, computed from the RICE FP budget sheets.

Table 4. Personnel totals and costs and average personnel cost per RICE flagship project; data for 2017.

Flagship project	Total personnel cost (\$)	Total FTE	Cost (\$)/FTE
FP1	6,229,536	23.25	267,937
FP2	1,352,203	16.28	83,059
FP3	9,505,485	49.59	191,681
FP4	4,535,987	51.30	88,421
FP5	11,222,716	97.40	115,223

Discrepancies among unit FTE costs among FPs are explained by the fact that the listed FTEs are mostly international staff and senior national staff (these categories needed to be listed by individual, and are given in the FTE totals), whereas most support staff are grouped into support categories and not listed as individual FTEs (though they do contribute to total personnel costs). The average FTE cost of FPs 1 and 3 is relatively high because these FPs use many support staff (FP1 for conducting surveys and data processing; FP 3 to conduct field experiments and process raw data) that are all placed in one category. FP1, with the highest average unit FTE cost, listed only 0.55 technician staff of their total of 23.5. In contrast, FPs 4 and 5, which also employ many support staff, listed many of them separately, which depressed the average FTE cost: roughly half of the 97.4 FTE listed for FP5 in Table 4 are field technicians with unit costs of \$4,000–8,000/year. The RICE budget tables for each FP provide the details of staff costs.

Specific recommendation, page 7: Resource allocation for capacity development is estimated at 10 to 15%. The budget narrative shows a total of US\$ 14 million dedicated to CapDev, which equals approximately 16.5%. However, the PIM tables show budget amounts for CapDev sub-IDOs as 21% of the total budget. These inconsistencies should be resolved (although it may be that budget allocations to sub-IDOs, as shown in PIM tables, are not exclusive, i.e. the same resource allocation is expected to result in more than one sub-IDO. Therefore CapDev related sub-IDOs could show higher percentage of resource allocation than that of estimated CapDev activities). A response to this question should be given in the covering letter to the addendum.

We are grateful for your pointing out these inconsistencies and those below, which have been rectified in the revised RICE submission. The CapDev budget information provided in the RICE proposal (Section 1.0.10 [new numbering]) is now fully aligned with the CapDev budget information provided for the whole CRP in Section 1.1.6 and for each FP in sections 2.1.2.5, 2.2.2.5, 2.3.2.5, 2.4.2.5, and 2.5.2.5, as follows:

Budget for CRP	14% (\$11,757,283/year on average)				
Average annual budget for Flagship Projects	FP1: 20% (\$3,062,829)	FP2: 10% (\$369,935)	FP3: 15% (\$3,604,212)	FP4: 5% (\$569,359)	FP5: 15% (\$4,150,945)

The 14% budget listed for CapDev is lower than the 21% budget invested in the sum of subIDOs under the cross-cutting SLO Capacity Development because, in these subIDOs, we include the costs for developing methodologies to increase capacity for innovation in partner research organizations, in partner development organizations, and in poor and vulnerable communities. Part of these costs is considered research costs and hence is not included in the CapDev budgets presented in the RICE proposal, sections 1.0.6 and 1.0.10.

Specific recommendation, page 8, on FP1: The ISPC has also noted a discrepancy - US\$ 16.75 million is to be allocated (for illustration) to cross-cutting themes (p.12 of 33 in the budget narrative) but the FP only has an annual budget of US\$ 14.2 million in 2017. This needs to be clarified in the addendum.

This discrepancy has been rectified in the revised RICE submission (see RICE proposal, Section 2.1.2.5; the discrepancy was caused by a failure to update one of the many computations/tables containing budgets at the final process of submission). The sum of cross-cutting key activities in FP1 averages \$13.9 million/year, whereas the total average annual budget of FP1 is \$15.3 million/year. Note that the information presented in the RICE proposal, Section 2.1.2.5, is estimated annual average costs over the six years of RICE, whereas the \$14.2 million is specifically for the first year, 2017). The investment in cross-cutting activities in FP1 is higher than in the other FPs because cross-cutting activities such as gender, youth, capacity development, and impact assessment are concentrated in FP1, although they serve the whole RICE program. The cross-cutting budgets of the FPs of the RICE proposal have been verified and, where necessary, corrected, Sections 2.1.2.5, 2.2.2.5, 2.3.2.5, 2.4.2.5, and 2.5.2.5.

3. CO review of the RICE proposal

3.1 Intellectual asset management

CO review summary: The indicative dissemination pathways identified for the different types of intellectual assets produced by the CRP and the critical/strategic issues identified from an intellectual assets management perspective instill confidence that intellectual assets will be managed by CRP partners in a manner which maximizes global accessibility and impact with due regard to best practices and the CGIAR IA Principles. Additionally, the support identified for intellectual assets management during CRP implementation demonstrates: (i) effective planning and tracking; (ii) effective decision-making structures; (iii) sufficient capacity; (iv) sufficient resource allocation.

- Dissemination pathways and critical issues/challenges: Satisfactory
- Planning and tracking, decision making and capacity: Satisfactory and exemplary elements
- Resource allocation: Satisfactory and exemplary elements

CO review recommendations: the review did not suggest major changes; RICE’s IA management strategy is overall satisfactory with exemplary elements. A number of minor suggestions (given in bold below) for improvement were made—most of which would require a response at a level of detail exceeding the format of a four-page annex as requested for CRP II proposals. Hence, we provide additional details in this addendum.

Overall RICE response

To put the RICE IA strategy into context, we first provide an overview of the three-tier structure of cascading IA management policies and guidelines in the CGIAR (Fig. 2). First, an overarching mechanism to harmonize IA management strategies and operational plans across the CGIAR is provided by the [CGIAR Principles on the Management of Intellectual Assets](#) and their [Implementation Guidelines](#), to which all CGIAR centers adhere. Second, the centers, being legal entities, have the primary responsibility and legal instruments to manage and protect intellectual assets (IA) and property (IP), and to negotiate, secure, and manage freedom to operate. RICE recognizes this in its statement “*Ownership, custody, and management of IA rest with the RICE CGIAR centers producing them (with their partners). [AfricaRice](#), [CIAT](#), and [IRRI](#) are led by institutional IA and IP policies that are in line with those of the CGIAR*” (RICE proposal, Annex 10). Third, at the project level, the management of IA and IP among partners is governed by contractual clauses that again conform to IA and IP policies and regulations of the CGIAR. Under RICE, the CGIAR centers together manage more than 100 bilateral grant projects.

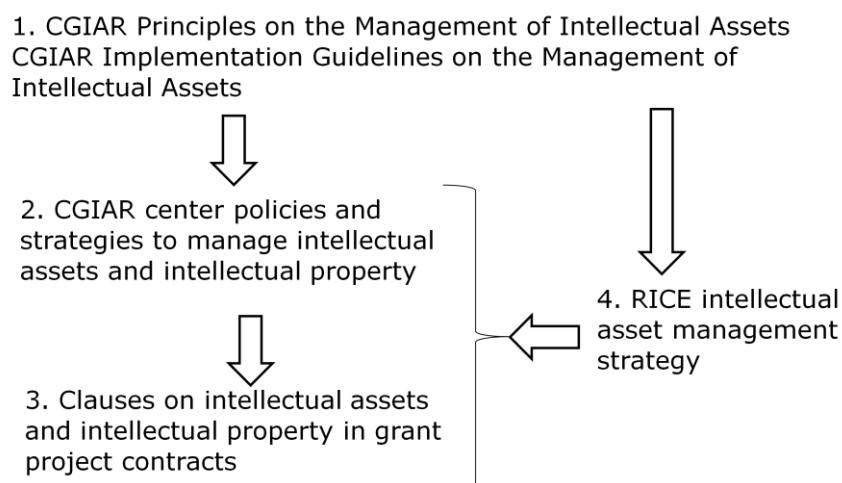


Figure 2. Overview of cascading policies to manage intellectual assets within the CGIAR; numbers are explained in the text.

In developing its CRP level IA management strategy, RICE is very cognizant of the risk of duplication of efforts, with resulting inefficiencies, increased transaction costs, confusion (who does what?), and even potential contradictions. For example, each year, the CGIAR centers submit an IA report that is audited

and approved by the CGIAR Consortium Office (from July 2016 onward, the Systems Management Office). These reports already provide much of the information requested by the reviewers of the RICE IA management section such as staffing details, specific IA management activities, and examples of IP rights pursued. Hence, following the recommendations of the IEA review of GRiSP ([IEA report, p xiii and 70](#)), RICE applies as much as possible the principle of subsidiarity with the existing—and harmonized—IA policies and implementation plans at the level of the CGIAR, centers, and projects to provide a relatively light-touch additional program-level framework (step 4 in Fig. 2).

Specific CO review recommendations and RICE responses

... the need for FTO and licensing arrangements is identified and a mention of an FTO assessment for 'C4 Rice' is provided, however, for an agrifood system CRP one would expect more detail and/or illustrative examples as to FTO assessments and licensing arrangements which are anticipated.

More illustrative examples beyond C4 rice that demonstrate the ability of RICE (centers/partners) to satisfactorily address freedom-to-operate (FTO) are given here (Source: IRRI 2015 intellectual asset report to the CGIAR Consortium):

- Framework agreement with the Swiss company Sarmap, on the development and use of remote sensing technologies (relates to FP1)
- Framework agreement with the Bangladesh company Advanced Chemical Industries Limited, on technology transfer (advanced breeding), trials, and introduction of new elite rice varieties to promote rice farmers sustainability in Bangladesh (relates to FP5)
- Joint protocol with CIAT on sharing and joint licensing of rice breeding materials and parental lines (relates to FP5)

Moreover, IRRI's Public Private Engagement Office (PPE) routinely performs FTO analyses to assess IRRI's ability to proceed with specific research projects and/or licensing of a new product or process, to minimize the risk of infringing the intellectual property rights of third parties. In addition, PPE will organize a workshop on FTO, which RICE partners will be invited to attend.

Two examples of patent applications by RICE centers demonstrate the breadth of the scope of RICE: one application relates to FP2 and one to FP5 (Source: IRRI 2015 intellectual asset report to the CGIAR Consortium).

FP2 example: TITLE: Air-cooled grate of a downdraft furnace. TYPE: Provisional Application; IP protection in this case is defensive and serves to lock in a priority date. This ensures free access to the innovation for small and very small private companies, while making sure that credit will be given to IRRI by users of the innovation. APPLICANT: IRRI. Description of protected subject matter: The invention relates to an air-cooled grate of a new model of downdraft biomass furnace, with higher efficiency. The invention includes the 19 separate pipes which are rotatable on the supporters. When used, the ambient air is sucked into the pipes through the holes by the drying fan, enabling the grate to cool down. During the combustion process, only three of the 19 pipes had a recorded maximum temperature

of 650⁰C. The temperature of the other pipes was less than 500⁰C. With these temperature thresholds, the rotatable pipes were not damaged after 30 batches (total about 100 hours) of paddy drying operation.

FP5 example: TITLE: Breeding Methods for Enhanced Grain Yield and Related Materials and Methods. TYPE: National Phase Application filed in Brazil (BR 11 2015 0183700), China (201480018617.4), India (7614/DELNP/2015 A), Philippines (1-2015-501686), Thailand (1501004378), Vietnam (1-2015-03209), and US (14765339). APPLICANT: IRRI and JIRCAS (Both RICE management centers). Description of protected subject matter: A gene was identified, SPIKE1 (SPIKELET NUMBER 1), from a rice landrace (tropical japonica) which enhances grain yield of indica cultivars through a pleiotropic effect on plant architecture. Phenotypic analyses of near-isogenic lines (NIL) of a popular indica cultivar IR64 lines that ‘over expressed’ the SPIKE1 gene revealed increased spikelet number, enlarged leaf size, enlarged root system, and an increased number of vascular bundles, indicating the enhancement of source size and translocation capacity as well as sink size. Notably, the NIL achieved an approximately 20% yield increase without any negative effect on grain appearance. Expression analysis revealed that SPIKE1 was ubiquitously expressed in panicles, leaves, roots, and culms, supporting the pleiotropic effect on plant architecture. SPIKE1 also increased grain yield by 18% in the recently released indica cultivar IRRI146. Utilization of SPIKE1 in rice breeding will potentially benefit farmers in indica-growing regions such as South and Southeast Asia.

Similarly, generic references are made to the need for compliance with international agreements, however, no information or illustrative examples are provided as to what kind of compliance issues should be considered in planning and how these will be addressed.

Illustrative examples are the following (Source: IRRI’s and AfricaRice’s 2015 intellectual asset report to the CGIAR Consortium):

- IRRI has used the Standard Material Transfer Agreement (SMTA) for transfers of Plant Genetic Resources for Food and Agriculture (PGRFA) as required, including for accessions conserved in the Genebank and held in trust, and for all material received with SMTA and all derived “PGRFA under development.” In 2015, 723 SMTAs were executed wherein all transfers of PGRFA made using the SMTA were appropriately reported to the governing body using the Easy-SMTA XL system.
- IRRI takes proactive measures to ensure compliance with the International Treaty on Plant Genetic Resources for Food and Agriculture. Breeders’ and genebank data are integrated into a common database enabling live tracing of pedigrees back to genebank accessions. Information about transfers is made available in <http://smta.irri.org>, in compliance with the obligation under SMTA article 5b, and is reported in compliance with article 5e. All incoming and outgoing transfers are channeled through trained staff in the Seed Health Unit, ensuring full compliance by all staff regardless of their personal awareness of obligations under the treaty.
- In 2015, AfricaRice distributed a total of 9,546 seed samples to 27 countries with the conclusion of 50 SMTAs in compliance with the International Treaty on Plant Genetic Resources for Food and Agriculture.

Better integration/contextualisation of IA management is recommended for the CRP Proposal to strengthen confidence that intellectual assets will be managed by CRP partners in a manner which maximizes global accessibility and impact with due regard to best practices and the CGIAR IA Principles.

This paragraph seems misplaced as it contradicts the overall conclusion of the review that *“The indicative dissemination pathways identified for the different types of intellectual assets produced by the CRP and the critical/strategic issues identified from an intellectual assets management perspective instill confidence that intellectual assets will be managed by CRP partners in a manner which maximizes global accessibility and impact with due regard to best practices and the CGIAR IA Principles”*

The following approaches to decision making and capacity should be considered:

(i) development of a CRP level IP policy framework to guide implementing partners.

The comments at the beginning of our IA response indicate that with the existence of harmonized CGIAR and center IA and IP policy frameworks, RICE will apply as much as possible the principle of subsidiarity and use a relatively light-touch and supportive approach as laid down in the RICE proposal, Annex 10.

(ii) formation of an IP Management Committee to support the CRP and to coordinate IA management across CRP.

The RICE IA strategy places the centers’ policies in a coherent framework, which is overseen by its program planning and management team (PPMT). For the CGIAR centers, the members of the RICE PPMT are deputy directors general and directors, with pertinent line management responsibilities at their centers and well-defined relationships with IA managers. For now, we believe that this management structure suffices to address IA issues, but we will monitor the situation and keep the recommendation for a dedicated RICE IA management team in mind should the situation evolve and give rise to a need for change.

(iii) detailed mapping of IP/Legal support required to support specific IA management issues related to IA management (on a CRP output/dissemination pathway basis).

IP/legal support is mainly provided for the following (see also the examples above):

- Analyze and secure freedoms to operate necessary for product development and dissemination.
- Analyze and manage intellectual properties on own-developed products and services necessary for large-scale dissemination (following appropriate impact pathways, e.g., through public sector or through private sector).
- File and secure patents.
- Analyze cases for licensing or royalty agreements; secure licenses or royalties as required.
- Train RICE staff and partners on IP and IA matters.

The responsibility of the Program Management Committee in relation to IA management issues is not explained or distinguished from that of the Lead Center (e.g. role in determining non-standard

dissemination pathways that may involve restrictions, particularly those that require justification/reporting).

See response under (ii) above; see overall comments at the start of the RICE response section.

The CRP proposal could be further strengthened by providing insight into IP legal capacity across the CRP (e.g. by attaching CVs or ToRs for the relevant staff at Lead Center and CRP strategic partners). This would also help ensure the CRP has appropriate capacity to manage the critical issues/challenges identified from an IA management perspective.

Roughly 70–80% of IRRI's and AfricaRice's and 10% of CIAT's IP and IA staff are related to RICE activities. Here we provide for IRRI, the lead center of RICE, further staffing details (Source: IRRI 2015 intellectual asset report to the CGIAR Consortium).

- *For IP:* Dr. Remy Bitoun, Head of Public Private Engagement Office (PPE), (full-time staff). Dr. Bitoun manages IRRI's intellectual assets and leverages these resources toward fulfilling the institute's mission through partnerships with the private sector. He has more than 25 years of experience in international agricultural research, technology transfer, and business development. Prior to joining IRRI, Dr. Bitoun was a senior consultant for a number of international agro and food companies and technology start-ups. He also worked for Kaiima, a seed and technology company, as VP for Business Development. In Kaiima, he initiated and managed business development partnerships and distribution agreements with leading corporations in the US, Europe, South America, and Southeast Asia. Prior to that, Dr. Bitoun held senior management positions in subsidiaries of the major seed company Limagrain, in different countries. Dr. Bitoun earned his PhD in Biotechnology from the Weizmann Institute in Israel and MBA from HEC Paris, a leading business school in France. He also earned a degree of Engineer in Agronomy at Agro-Paris-Tech.
- *For Legal:* Atty. Eugenio E. Perez, III, Senior Counsel (full-time). Legal Service Unit. Legal qualifications are: a) L.L.B. of the Ateneo De Manila University School of Law, Philippines and admitted to the Philippine Bar; and b) L.L.M. in European IP Laws with minor in Biotechnology and Transborder Conflicts (*cum laude approbatur*) of Stockholms Universitet, Stockholm, Sweden. For experience: a) consultant of the Intellectual Property Office of the Philippines and principal author/researcher of the Philippine IP Policy Strategy 2005–2010; b) member of the Technical Working Group that drafted the Philippines Technology Transfer Act of 2009 and its implementing rules and regulations; c) member of the Technical Working Group for the bicameral version of the Philippine Cheaper Medicines Law and principal consultant for the intellectual property portion of the implementing rules and regulations of the said law; d) consultant of the Technical Working Group tasked with drafting the implementing rules and regulations of the Philippine National Health Research System Law. Atty. Perez reports to the Deputy Director General for Communication and Partnerships. He provides strategic advice and guidance on governance and operations, participates and assists in the conduct of administrative hearings and investigations, assists the Board Secretary in Board-related activities, reviews and drafts contracts and identifies legal risks and assists in managing these

risks, prepare communications on legal matters, and maintains beneficial and cordial liaison with government institutions.

- Ms. Camille Joy Enalbes, Officer – Back Office Management for PPE (full-time staff). Ms. Enalbes is responsible for managing the back office operations of the unit. Her responsibilities in the team were amplified in 2015 and now include the review of relevant IP documents. She serves as the key coordinator for IP protection in IRRI, and is also in direct contact with the patent attorneys and with co-owners of IP assets, in case of co-ownership. She assists Dr. Bitoun in the management of IRRI's intellectual assets, ensuring that these are protected. She helps internal review and fine tuning the flow process of material exchange into and from IRRI. Furthermore, she trains IRRI scholars on this subject on their arrival at IRRI. She also liaises with IRRI staff and scientists regarding information required for IP matters. In addition, Ms. Enalbes administers the agreements concerning joint R&D, IP management, and IP sharing with the private sector. She provides assistance in patent search that help scientists and PPE in the conceptualization of their research ideas in IRRI. Ms. Enalbes has undergone a number of training courses that enhanced her skills in the field of intellectual property. One is the Summer School on Intellectual Property organized by the World Intellectual Property Organization (WIPO) and Intellectual Property Academy of Singapore. She has also undergone training in Technology Licensing and Patent Search Documentation provided by the Intellectual Property Office of the Philippines. Currently enrolled in the Development Communication Masters graduate program at the University of the Philippines at Los Baños (UPLB), Ms. Enalbes has already completed her BS in Development Communication at UPLB.
- Patent Attorneys. IRRI has secured the services of two experienced patent law firms, to bring added value to the institute's IP management practice:
 - FB Rice Patent Attorneys Australia (part-time, per case basis). A law firm with over 60 years of experience in the field of patent and trademark protection, it is Australia's leading independent intellectual property firm. Their expertise encompasses biotechnology, chemistry, engineering, medical technology, pharmaceuticals, software, and information technology and trademarks. In November 2015, two patent experts provided a "pro-bono" IP 101 seminar, as a capacity building activity for IRRI researchers and staff.
 - Ehrlich & Fenster Patent & Trademark Attorneys (part-time, per case basis). This Israel-based firm has 15 years of extensive professional knowledge and experience in IP protection, including licensing, investment, and financing. IRRI was able to negotiate a "pro-bono" consulting with the firm's expert patent attorneys. This is used to fine tune IRRI's IP management policy and for specific reviews, such as Freedom to Operate in gene editing.

In addition to IRRI's staffing, AfricaRice employs a full-time legal advisor, Mrs. Rougie Thomasi, who is also the IP focal point. She has successfully completed WIPO'S DL001E beginner's course and continues to pursue WIPO's free online Distance Learning Program on Intellectual Property DL101E 15S1. In 2015, she participated in several IP seminars organized by ACIPA and the CO.

The IA Management sections of the CRP could be strengthened by providing a more detailed budget narrative for specific activities related to IA management. Some specific items could be contemplated based on the information included in the CRP proposal includes (i) capacity development of partners relating to IA management in project lifecycle and CRP policies concerning IA management; (ii) IPR registration and maintenance fees, including external counsel/consultants used for this purpose.

We agree that developing a more detailed budget for IA activities is important; this will be taken up when more clarity exists on the funding available to RICE and during annual planning operations. The average cost of a provisional patent filing is about \$7,000 for a PCT patent (2nd stage in the process), about \$10,000, and for National Phase (3rd stage), about \$4,000 per country.

3.2 Open access and data management

CO review summary: The CRP Proposal provides confidence that information and data outputs generated by CRP personnel and partners will be openly accessible as per the terms of the CGIAR OADM Policy and FAIR principles. Additionally, the Proposal demonstrates: (i) an achievable OA/OD implementation plan; (ii) effective OA/OD governance and accountability structures with evidence of sufficient human resources to consistently operationalize OA/OD across the CRP; (iii) evidence of a robust technical infrastructure for OA/OD via FAIR principles; and (iv) sufficient monetary commitment to ensure effective OA/OD.

CO review recommendations and RICE responses: The review did not suggest major changes. There was one minor suggestion for improvement, and we noted one error in interpretation of information provided in the RICE proposal, Annex 9. Both are addressed below.

However, it would be useful to address the need to standardize metadata across the RICE Center repositories, in particular by testing the CG Core metadata schema--as CIAT is already doing.

This is a good suggestion that RICE will adopt based on CIAT's experiences.

RICE's OA/OD commitment is the largest of the CRPs, at around US\$11M; however, this still represents only about 2% of the total budget, while 5% of total research budgets are typically advocated to deal effectively with OA/OD.

In fact, the \$11 million is an average annual investment, representing 13.5% of the average annual budget of \$82 million of RICE. However, this a total investment in all data management activities, including the curation, annotation, and archiving of data and derived-knowledge products prior to their becoming open access, and activities such as training of staff in proper data management. We estimate that around 1/3 of this budget is used to effectively deal with the open-access nature of data and derived-knowledge products, being around 4% of total annual RICE investments.