INCEPTION REPORT

APRIL 2015

Evaluation of the CGIAR Research Program on Water, Land and Ecosystems

Charles Batchelor
Sylvie Brouder
Federica Coccia
Elias Fereres Castiel
John Soussan
David Todd (Team Leader)

CGIAR
Independent Evaluation Arrangement

Table of Contents

Tables

Figures

Boxes

LIST OF ACRONYMS

AAS	CGIAR Research Program on Aquatic Agricultural Systems
ADB	Asian Development Bank
AfDB	African Development Bank
AWM	Agriculture Water Management
BMGF	Bill and Melinda Gates Foundation
BRAC	Bangladesh Rural Advancement Committee
CCAFS C	GIAR Research Program on Climate Change, Agriculture and Food Security
CI	Conservation International
CIAT	International Center for Tropical Agriculture
CIRAD	La recherche agronomique pour le développement
CPWF	CGIAR Challenge Program on Water and Food
CRP	CGIAR Research Program
DAI	Decision Analysis and Information Systems
ES	Ecosystem services
ESR	Ecosystems Services and Resilience
EAWAG	Institute of Aquatic Science and Technology
FAO	United Nations Food and Agriculture Organization
FTA	CGIAR Research Program on Forests, Trees and Agro-Forestry
GEF	Global Environment Facility
GPI	Gender, Poverty and Institutions
GSF	Global Soils Forum
GSP	Global Soils Partnership of the FAO
GWI	Global Water Initiative
GWP	Global Water Partnership
GWSP	Global Water Systems Project
IAHS	The International Association of Hydrological Sciences
ICRAF	World Agroforestry Centre
IDO	Intermediate development outcome
IEA	Independent Evaluation Arrangement
IES	Integrating Ecosystem Solutions into policy and investments
IF	Innovation fund
IFAD	International Fund for Agricultural Development
INVEST	Integrated Valuation of Ecosystem Services and Trade-offs
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
ITP IWMI-Tata	Water Policy Research Program
IUCN	International Union for Conservation of Nature

IWA	International Water Association
IWMI	International Water Management Institute
LWP	Land and water productivity
M-POWER	Mekong Program on Water, Environment and Resilience
MRV	Managing Resource Variability and Competing Uses
NGOs	Non-governmental organizations
NRM	Nature resource management
ODI	Overseas Development Institute
PES	Payment for ecosystem services
PIM	CGIAR Research Program on Policy, Institutions and Markets
RDE	Regenerating Degraded Agricultural Ecosystems
RRR	Recovering and Reusing Resources in Urbanizing Ecosystems
SDC	Swiss Development Cooperation
SDG	Sustainable Development Goals
SIDA	Swedish International Development Agency
SLM	Sustainable Land Management
SRI	Systems Rice Intensification
SSA	Sub-Saharan Africa
TNC	The Nature Conservancy
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNESCO-IHE	United Nations Educational, Scientific and Cultural Organization – Institute of Water
USAID	United States Agency for International Development
VBA	Volta Basin Authority
WB	World Bank
WHO	World Health Organization
WLE	CGIAR Research Program on Water, Land and Ecosystems
WSP	Water and Sanitation Program of the World Bank

EXECUTIVE SUMMARY

1. Since 2010, the CGIAR has undergone radical transformation, driven by a new strategy that has affected all parts of the CGIAR, including centres, donors, partners, and all levels of leadership and management. The Centres have re-aligned their research activities, institutional capacities, financial resources and partnerships to 15 research programs (CRPs). Two new system-level pillars were established, namely the Fund Council and the Consortium. Donors committed to a new funding strategy and investment in the CGIAR as a whole grew to around $1 billion.

2. This evaluation covers the CRP on Water, Land and Ecosystems (WLE), which is one of ten CRPs that IEA is evaluating over the period 2013-15. Its primary purpose is to increase the contribution that WLE is likely to make toward CGIAR goals, enhancing the productivity and sustainability of water and land resources in agro ecosystems, as well as the livelihoods of poor producers and consumers in developing countries.

3. Stakeholders of this evaluation include the management of WLE, all participating Centers, partners associated to the Program, the CGIAR Fund Council, and the Consortium Board. These stakeholders will be consulted and engaged throughout the evaluation through structured interviews, surveys, and site visits.

4. This inception report aims to provide an initial roadmap for the conduct of the evaluation, which can help guide the evaluation team and inform evaluation stakeholders. In order to do this, its structure includes the following elements:

- A brief analysis of the context in which the evaluation is taking place, to inform the evaluation design
- A conceptual framework for evaluation of the key evaluation criteria
- A short list of key evaluation questions that build on the evaluation TOR and preliminary stakeholder consultation and analysis during the inception phase
- Outline evaluation methodology and tools to be used and analysis, including initial thoughts on sampling frames, site selection and consultation
- Preliminary work plan, outlining provisional division of duties among the team.

5. The original WLE funding proposal1 states its objective as, “To learn how to intensify farming activities, expand agricultural areas and restore degraded lands, while using natural resources wisely and minimizing harmful impacts on supporting ecosystems.”

6. WLE originally consisted of five Strategic Research Portfolios (SRPs). These covered:

- Irrigated systems
- Rainfed systems
- Resource Recovery and Reuse

[1] WLE 2011

- River Basins (which incorporated several CPWF projects)
- Information Systems.

7. In 2014, after structural reform to the program for the 2015-16 Extension Period, the five original SRPs were replaced by five Flagships. These are as follows:

- *Flagship 1: Integrating Ecosystem Solutions into Policy and Investments (IES)*

  IES pursues policy and investments in ecosystem services through influence and decision support—with unique, context-specific impact pathways in four regions where international rivers occur called Focal Regions—and an Innovation Fund

- *Flagship 2: Sustainably Increasing Land and Water Productivity (LWP)*
  LWP research aims to impact small farmers and large-scale irrigation; gender equity and resource access equity; and the sustainability of ecosystem services.

- *Flagship 3: Regenerating Degraded Agricultural Ecosystems (RDE)*

  RDE hypothesizes change through research on degraded landscapes.

- *Flagship 4: Recovering and Reusing Resources in Urbanized Ecosystems (RRR)*

  RRR seeks to reduce negative footprints of urbanization through private sector investments, by promoting business models and supporting technological innovation.

- *Flagship 5: Managing Water Resource Variability and Competing Use (MRV)*

  MRV research is targeted to reconcile competing claims on variables resources.

8. In both SRPs and Flagships, the program has incorporated crosscutting themes of Gender, Poverty, and Institutions (GPI) and Ecosystem Services and Resilience (ESR). In early 2014, WLE issued a comprehensive gender strategy, which aimed to help integrate gender themes into planning and management processes and into the portfolio. This was followed in late 2014 by an Ecosystem Services and Resilience framework document. Both of these approaches cut across research areas, to such an extent that most projects from every Flagship contribute to both, which have been defined as Core Themes. The previous fifth SRP on Decision Analysis and Information Systems (DAI) became a third Core Theme, intended to strengthen decision analysis and improve measurement of an intervention's impact, thereby helping to build capacity among partners in these areas. As a Core Theme, it is intended to complement all of the Flagship research areas, although it is budgeted slightly differently from the ESR and GPI Themes. Furthermore, while most projects will have ESR and GPI aspects, DAI is currently engaged in relatively few projects across the portfolio.

9. The overall WLE portfolio has a 2015 budget in excess of $53 million. Some 11 CGIAR Centers currently participate in WLE, with IWMI as Lead Center and disbursing the largest single share of the overall funding.

10. The evaluation scope encompasses all activities covered by the WLE programme. The concept of WLE was specified in its initial proposal document and formalised through Program

Agreements. Much of the first WLE cohort consists of projects, which were initially designed and implemented as part of existing programs, such as the Challenge Program on Water and Food (CPWF) and were then incorporated into WLE through a process of mapping Projects, which commenced before WLE start up in 2012, will be at various stages or progress and some may have been completed. The extent to which these have produced results at outcome or impact level will be assessed as part of the summative dimension of the evaluation.

11. The Extension Proposal for CGIAR Research Program on Water, Land and Ecosystems (Resubmit, September 8, 2014) is expected to lead to some modification in the types of activities undertaken under WLE, within the guidance offered under the Second Call for Proposals. Although these activities will be only starting up at the time of this evaluation, their approach (particularly where detailed through the means of a Theory of Change) will be assessed as part of its formative dimension.

12. A multidisciplinary team covering a wide range of disciplines, areas of expertise and experience will undertake the evaluation. The core evaluation team is comprised of five team members.

13. According to the CGIAR Standards for Independent External Evaluation, there are six key criteria to be used in its independent CRP evaluations, namely relevance, science quality, efficiency, effectiveness, impact and sustainability. In line with this requirement, the TOR specify the key evaluation criteria and related core evaluation questions, which should be used to explore performance against these criteria. The following set of strategic questions that the evaluation needs to address has been developed from this process:

- Are the conceptual framework and key hypotheses of WLE coherent, effectively communicated and appropriate for the wide range of issues and diversity of locations included in the program?
- Are the impact pathways identified by the program ones that are likely to achieve the desired development outcomes and are they consistently developed across the different components of the program?
- Is the quality of science in the program of an appropriate standard, does it reflect the CGIAR's comparative advantage in science and is it engaged with and reflective of international developments in the different fields included in the program?
- Are the partnership strategy and range of partnerships being developed in the program consistent with the program's overall goals and the development of impact pathways within the program?
- Are the management procedures and governance structure of the program appropriate, efficient and consistently applied and is there clarity on the roles and operational procedures of different components of the management structure?
- Is the development of the program finding an effective balance between ensuring the delivery of concrete planned outcomes within the program life whilst at the same time creating a long-term development trajectory to ensure the program's approach and benefits will continue beyond the presently defined program period?

14. In order to ensure a consistent approach to both the summative and formative intentions, the evaluation will adopt a Theory of Change approach. This will assess the achievements and potential achievements of the WLE programme against an anticipated overarching results chain, which will lead from individual inputs and outputs towards long term and broad scale effects, at outcome and impact level. The Theory of Change approach adopted by the team has been derived from the document CGIAR Research Programme on Water, Land and Ecosystems (WLE) 2014. Ecosystem Services and Resilience Framework.

15. The evaluation will use primary and secondary data collection and analysis methods as follows. Secondary data collection and analysis methods, which are likely to be used, are presented below.

- *Portfolio Analysis*
- *Document Review*
- *Meta Analysis*
- *Quality of Science Analysis*
- *Coherence Analysis*

16. Primary data collection and analysis methods, which are likely to be used, are presented below.

- *Semi-structured interviews*
- *Group discussions*
- *Social surveys*
- *Workshops.*
- *Case Studies*

17. The following Case Studies will be conducted:

- Country Case studies in all WLE Focal Regions
- IMWI – TATA Partnership
- Mekong River Basin
- *Field missions.*

18. Initial field missions (Laos, Thailand and India) are planned to take place from about 1 to 11 May 2015. The evaluation team will then meet in Sri Lanka for discussions within the team and with IMWI stakeholders from approximately 12 to 17 May, after which a second set of field missions (Cambodia, Ethiopia, Kenya and Ghana) will be undertaken in June and July 2015. The exact dates of missions will be finalised in collaboration with participating stakeholders and taking account of national constraints.

19. An Independent External Evaluation Team will conduct the Evaluation. The Team Leader has final responsibility for the evaluation report and all findings and recommendations, subject to

adherence to CGIAR Evaluation Standards. The IEA is responsible for planning, designing, initiating, and managing the evaluation. The IEA will also be responsible for the quality assurance of the evaluation process and outputs, and for the dissemination of the results.

20. WLE management will play a key role in helping provide for the evaluation team's informational needs. It is also responsible for giving factual feedback on the Draft Report and for preparing the Management Response to the Final Report. It will assist in dissemination of the report and its findings and lessons and it acts on the accepted recommendations. While the evaluation is coordinated with WLE management, IWMI as the lead Centre is also a key stakeholder in the evaluation. The Centre and its leadership and board are expected to make themselves available for consultations during the evaluation process.

21. A Reference Group has been set-up to work with the IEA Evaluation Manager and Team Leader to ensure good communication with, learning by, and appropriate accountability to primary evaluation clients and key stakeholders, while preserving the independence of evaluators.

22. External peer review: The IEA quality assurance of evaluations includes the peer review for each CRP evaluation by two external peer reviewers at two stages in the evaluation process: the draft inception report and the draft evaluation report.

1. INTRODUCTION

1.1 Origins of This Evaluation

23. As noted in the Terms of Reference for this evaluation: "In the CGIAR, the Independent Evaluation Arrangement (IEA) is responsible for System-level external evaluations. IEA's principal mandate is to lead the implementation of the CGIAR Policy for Independent External Evaluations2 through the conduct of strategic evaluations of CRPs and of other institutional elements of the CGIAR. IEA is also charged with developing a coordinated, harmonized and cost-effective evaluation system in the CGIAR. IEA's first four-year Rolling Evaluation Work Plan 2014-17, approved in November 2013 by the Fund Council, foresaw the evaluation of 10 CRPs between 2013 and 2015.

24. The CRP on Water, Land and Ecosystems (WLE) is one of the ten CRPs that IEA is evaluating over the period 2013-15".

1.2 Evaluation Purpose and Users

25. As stated in 1.1 above, this evaluation is one of a substantial set, which IEA will manage by the end of 2015. In common with these3: "The primary purpose of this evaluation is to increase the contribution that WLE is likely to make toward CGIAR goals, enhancing the productivity and sustainability of water and land resources in agroecosystems, as well as the livelihoods of poor producers and consumers in developing countries.

26. As in all CRP evaluations, the purpose of the evaluation of WLE is to provide essential, evaluative information for decision-making—by both CRP management and funders — on issues such as extension, expansion and structure of the program, as well as adjusting some aspects of the program.

27. In November 2013 the CGIAR Fund Council agreed that all current CRPs should undergo some form of evaluation before the call for the second round of CRPs and full proposal development is initiated. In that context, the evaluation of WLE will also provide information for decisions on program formulation and selection in the 2015 call for second-cycle CRP funding. Taking into account the stage of the program and given its nature and timelines for results, the evaluation aims to provide an overview and critical analysis of the relevance of the program, as well as its achievements and progress to date.

28. The evaluation provides both accountability and learning. It re-enforces the principle of mutual accountability and responsibility among program, donors and partners. And it fosters institutional learning among the CRP and its stakeholders, for improving program relevance, efficiency, and the likelihood of sustainable results. Therefore, it will look at the extent to which WLE is responding within its mandate, to the vision and focus underlying the CGIAR reform—especially through a delivery orientation, clearer accountability, and synergy through efficient partnerships.

[2] http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/CGIAR_evaluation_policy_jan2012.pdf
[3] Terms of Reference, IEA, 2014. P7.

29. Stakeholders of this evaluation include the management of WLE, all participating Centers, partners associated to the Program, the CGIAR Fund Council, and the Consortium Board. These stakeholders will be consulted and engaged throughout the evaluation through structured interviews, surveys, and site visits. A reference group will be convened to represent WLE management, governance, partners and stakeholders closely involved in the CRP.

1.3 Purpose and Structure of the Inception Report

30. This inception report builds on the Terms of Reference of the evaluation and aims to provide an initial roadmap for the conduct of the evaluation, which can help guide the evaluation team and inform evaluation stakeholders. In order to do this, its structure includes the following elements:

- A brief analysis of the context in which the evaluation is taking place, to inform the evaluation design
- A conceptual framework for evaluation of the key evaluation criteria
- A list of evaluation questions that build on the evaluation TOR and preliminary stakeholder consultation and analysis during the inception phase
- Outline evaluation methodology and tools to be used and analysis, including initial thoughts on sampling frames, site selection and consultation
- Preliminary work plan, outlining provisional division of duties among the team.
- Consideration and explanation of deviations from the evaluation TOR.

2. BACKGROUND TO THE EVALUATION

2.1 Context of CGIAR Reform

31. Since 2010, the CGIAR has undergone radical transformation, driven by a new strategy that has affected all parts of the CGIAR, including centers, donors, partners, and all levels of leadership and management. The Centers have re-aligned their research activities, institutional capacities, financial resources and partnerships to 15 research programs (CRPs). Two new system-level pillars were established, namely the Fund Council and the Consortium. Donors committed to a new funding strategy and investment in the CGIAR as a whole grew to around $1 billion.

32. As part of the reform process, CGIAR established a Strategy and Results Framework, which establishes its overarching goals of less rural poverty, better food security, better nutrition and health and sustainably managed resources. The CRPs, which are developed and delivered by CGIAR centers and partners, should be characterized by:

- A focus on development outcomes
- Explicit expectations about the role of partners in shaping strategy and delivering results
- Their larger scale, when compared to the CGIAR's earlier programmatic initiatives, such as Challenge Programs
- The complexity of the relationships between CRPs and centers.

33. Although designed as 10 year programs, most CRPs were initially approved for a three-year period to run in parallel to the SRF. The SRF is currently being revised and will be submitted by the Consortium Office for approval by the Fund Council in April 2015. A Mid-Term Review of CGIAR reform, commissioned by the CGIAR Fund Council in April 2013 to assess progress and make recommendations for course correction was recently completed. The Fund Council accepted all its recommendations except the one related to the governance structure of the CGIAR.

34. At the request of the Consortium, all CRPs have applied for extension funding for 2015-16 and submitted revised proposals for the extension period that were reviewed by the ISPC, the Consortium and approved by the Fund Council. The budget allocation for WLE's extension proposal for these years was officially approved by the Fund Council in November 2014. The total of $128,590,000 was supposed to be reached through contributions of $60.69 million through Windows 1 and 2 and $67.9 million through Window 3 and bilateral funding. The Windows 1 and 2 funding however was recently cut down to $46 million.

35. A second call of CRPs is currently been developed. The process for this second call takes into account the MTR recommendation that there should be an element of competition in the selection of future CRPs. It will be a two-step process, with CRP pre-proposals expected to be submitted in mid-2015. Following an assessment, the Consortium Board and the Fund Council will determine which pre-proposals should be developed into full CRP proposals by April 2016.

36. The new CRP governance and management arrangements[4] were designed to build on existing structures and capacities to provide the CGIAR with the flexibility to adapt its portfolio of research programs as results are achieved and new opportunities and challenges emerge. Under this approach, the CRPs function as time-limited joint ventures, mandated to effectively mobilize resources and partners. The CGIAR Centers provide an institutional framework for the CRPs and a critical mass of human and physical research capacity. Within this overall structure, the lead centers have program agreements with the Consortium to provide it with accountability for CRP performance. The Centers are able to draw on existing partnerships and collaborations as a starting point for a more extensive and inclusive partnership strategy. Funding for the CRPs is based on two essential funding channels: bilateral project funding from individual donors for individual projects mapped to CRPs and programmatic funding for each CRP as a whole from Windows 1 and 2 of the CGIAR Fund. Windows 1 and 2 funding is usually referred to as "unrestricted funding" compared to the more restricted Window 3 and bilateral funding (see Box 1 below for a definition of the sources of funding in the CGIAR System). The intention is that the CRPs and Centers should be interdependent for access to and control of resources and results, with functions that overlap, co-exist and complement, whilst also in competition for some funding.

The funding sources available to CRPs in the reformed CGIAR are shown in Box 1 below.

Box 1: Major Sources of Funding in the CGIAR System

- To maximize coordination and harmonization of funding, donors to CGIAR are strongly encouraged to channel their resources through the CGIAR Fund. Donors to the Fund may designate their contributions to one or more of three funding "windows":
- Contributions to **Window 1** (W1) are the least restricted, leaving to the Fund Council how these funds are allocated to CGIAR Research Programs, used to pay system costs or otherwise applied to achieving the CGIAR mission.
- Contributions to **Window 2** (W2) are designated by Fund donors to specific CGIAR Research Programmes.
- Contributions to **Window 3** (W3) are allocated by Fund donors to specific CGIAR Centres.

Participating Centres also mobilize financial resources for specific activities directly from donors as **bilateral funding** and negotiate agreements with their respective donors for the use of these resources.

Source: CGIAR website: http://www.cgiar.org/who-we-are/cgiar-fund/

[4] Review of CRP Governance and Management, P10

2.2 Background to the Water, Land and Ecosystems (WLE) Program

2.2.1. Context of Research on Water, Land and Ecosystems

37. Research into water, land and ecosystems has seen considerable change and development over recent years. Disciplinary research into issues such as hydrological modelling, the engineering of irrigation systems, land and soil erosion and the distribution and species composition of ecosystems has continued with an emphasis on increasing productivity and sustainability while minimising environmental trade-offs. In addition, multidisciplinary efforts that encompass the social and natural sciences and engineering have expanded rapidly to tackle some of the more complex WLE issues, making good use of the new ICT tools and methods.

38. Key research topics relating to WLE include:

39. Sustainable land management (SLM): FAO[5], CGIAR and many national research organisations continue to view SLM as an imperative for sustainable development that has the potential to play a key role in harmonizing the complementary, yet historically conflicting goals of production and environment. One of the most important aspects of SLM is this critical merger of agriculture and environment through twin objectives: i) maintaining long term productivity of the ecosystem functions (land, water, biodiversity) and ii) increasing productivity (quality, quantity and diversity) of goods and services, and particularly safe and healthy food.

40. Within R4D, Sustainable Intensification (SI) has emerged as the comprehensive framework for simultaneous pursuit of hunger / poverty eradication and improvement of agriculture's environmental performance. SI eschews one-size-fits all solutions in favour of data driven, knowledge intensive management[6] and, thus, is inherently challenging to deliver to even the most sophisticated farmers and land managers. Further, a philosophical divide has emerged between those who place yield gains as paramount in the context of population growth and the humanitarian need to alleviate hunger[7] and those who advocate a more agro-ecologically focussed approach that emphasizes ecology and prioritizes multi-objective optimisation through harnessing biological regulation, food webs and more holistic approaches to ecosystem services[8]. WLE has explicitly posed the latter approach as a testable hypothesis and has aligned its portfolio accordingly.

41. Integrated approaches to water resource management: A central concept in the international approach to water has been Integrated Water Resources Management (IWRM); but, whilst an attractive idea, there are few examples of it working in practice, especially at a river basin level. In addition, some critics have argued that as a concept IWRM is naïve and idealistic[9]. Others

[5] See http://www.fao.org/nr/land/sustainable-land-management/en/

[6] Solutions for Sustainable Agriculture and Food Systems, Technical Report for the Post-2015 Development Agenda. Prepared by the Thematic Group on Sustainable Agriculture and Food Systems of the Sustainable Development Solutions Network.

[7] e.g. Cassman, K.G. 1999. Ecological intensification of cereal production systems: Yield potential, soil quality, and precision agriculture. PNAS, 96: 5952-5959.

[8] e.g. Dore, T., Makowski, D., Malezieux, E., Munier-Jolain, N., Tchamitchian, M., Tittonell, P. 2011. Facing up to the paradigm of ecological intensification in agronomy: Revisiting methods, concepts and knowledge. European J. Agron. 34:197-210.

[9] e.g.Biswas, A. K. (2004). Integrated water resources management: A reassessment. Water International, 29, 248–256.

have maintained that IWRM takes insufficient account of the politics that are at the core of most (if not all) important water-related decisions[1011]. Paradoxically, the IWRM concept has also been criticized for being: 1) Too broad to have any real meaning and 2) So narrow that it focuses mainly on water and ignores important linkages between land and water management[12]. Concerns relating to the way the IWRM concept has been interpreted and implemented led researchers to invest in development of the concept of light IWRM[13]. In contrast to prescriptive top-down IWRM[14], light IWRM aims to be problem-focused, opportunistic and adaptive/iterative when applying core IWRM principles, especially at the water-users level. The intended outcome of applying light IWRM is a system of managing water resources and water services delivery that has developed incrementally over many years and, as a result, is better adapted or tailored to the political economy of a given area.

42. Water/Energy/Power Nexus: During the last 3-4 years, the Water/Energy/Power nexus approach has gained traction as an alternative or complementary approach to IWRM[15]. A key difference between the two approaches is that IWRM always starts with water resources when considering inter-relationships between water, land, food and energy whereas the nexus approach can start from different perspectives (e.g. water, food or energy)[16]. Whilst the nexus approach has significant merit, it has also attracted criticism for being unnecessarily limiting and prescriptive, for example, by not explicitly highlighting inter-linkages with climate change, poverty and pro-poor development.

43. Agronomy and breeding of cultivars for dry environments: Progress in producing drought resistant cultivars has been very slow so far, but new approaches are being developed to complement past efforts. Better understanding of the role of physiology and of the co-limitation of water and nitrogen[17] should lead to more rapid increases in yield under drought conditions. Optimizing water productivity[18] (Fereres et al., 2014) should also minimize the tradeoffs between yield and water productivity in the future.

44. Deficit/supplemental irrigation: Water scarcity in irrigated areas is forcing farmers to explore the profitability of deficit or supplemental irrigation, a technique that uses a fraction of the

[10] e.g. Jensen, K. M. (2013). Viewpoint–swimming against the Current: Questioning development policy and practice. Water Alternatives, 6, 276–283.
[11] Molle, F. 2008. Nirvana concepts, narratives and policy models: Insight from the water sector.Water Alternatives 1(1): 131-156. http://www.water-alternatives.org/index.php/allabs/20-a-1-1-8/file
[12] Merrey,D.J, Drechsel,P., Penning de VriesF.W.T. and Sally,H. 2005. Integrating ''livelihoods'' into integrated water resources management: taking the integration paradigm to its logical next step for developing countries. Regional Environmental Change (2005) 5: 197–204DOI 10.1007/s10113-004-0088-5
[13] Moriarty, P.; Butterworth, J. and Batchelor, C. 2004. Integrated water resources management and the domestic water and sanitation sub-sector. Thematic Overview Paper. Delft, the Netherlands: IRC International Water and Sanitation Centre.
[14] Shah, T. and van Koppen, B. 2006. Is India ripe for integrated water resources management IWRM: Fitting water policy to national development context. Economic and Political Weekly XLI(31): 3413-3421.
[15] e.g. http://www.water-energy-food.org/en/news/view__1612/the-nexus-approach-vs-iwrm-gaining-conceptual-clarity.html
[16] e.g. Hoff, H. (2011). Understanding the Nexus. Background Paper for the Bonn2011 Conference: The Water, Energy and Food Security Nexus. Stockholm Environment Institute, Stockholm.
[17] Sadras and Richards, 2014
[18] Fereres et al., 2014

full irrigation requirements in a way that minimizes the negative impacts of water deficits on yield[19]. The situation is particularly critical in China and the Middle East[20]. In horticulture, deficit irrigation has been found to reduce irrigation water use without negative impact on yield in many cases[21].

45. Advances in remote sensing and modelling for performance evaluation of irrigation networks and for precision irrigation management: Advances in remote sensing and modeling tools now permit the quantification of irrigation performance and the physical mapping of water stress in rainfed areas with a degree of precision which was unthinkable only a decade ago[22]. One of the applications that would be most useful would be to map yield gaps and water productivity gaps in irrigated and rainfed systems[23]. The techniques developed are also paving the way for the development of precision irrigation management, an approach by which a field that is homogeneously irrigated, may receive variable water amounts in different parts according to its precise needs, thus minimizing water waste[24]:

- **Remote sensing of water balance components:** Thermal infra-red based ET monitoring has reached a stage where it is operationally and economically feasible deliver providing large-area ET information at accuracies and spatiotemporal resolutions that are required for many practical water resource applications[25]. A similar stage has been reached with estimation: remotely sensed rainfall[26] and remotely-sensed soil moisture and groundwater conditions[27].

- **Recycling transpiration:** Technically speaking, it is now possible to collect transpirational water and recycle it, thus reducing the consumptive use of water in enclosed areas (greenhouses) to negligible amounts. New research activities have been undertaken to make this option commercially viable for intensive horticultural production under protected cultivation.

- **Wastewater reuse:** The adoption of re-cycling of drainage water and wastewater use in agriculture tends to be positively correlated with water scarcity. Re-use of drainage water is a reality in most large irrigation schemes, in particular in the large rice-based systems of Asia. Of lesser global significance, but locally important, is the re-use of urban wastewater (it is estimated that world-wide some 20 million hectares of agricultural land is irrigated with wastewater). Efforts

[19] Boyer, C. N., Larson, J. A., Roberts, R. K., McClure, A. T., & Tyler, D. D. (2014). The impact of field size and energy cost on the profitability of supplemental corn irrigation. *Agricultural Systems*, *127*, 61-69.
[20] Oweis, T. Y. (2014). The role of water harvesting and supplemental irrigation in coping with water scarcity and drought in the dry areas. *Drought and Water Crises*, 191.).
[21] Pérez-Pérez, J. G., Robles, J. M., & Botía, P. (2014). Effects of deficit irrigation in different fruit growth stages on 'Star Ruby'grapefruit trees in semi-arid conditions. *Agricultural Water Management*, *133*, 44-54.
[22] Ghahroodi, E. M., Noory, H., & Liaghat, A. M. (2015). Performance evaluation study and hydrologic and productive analysis of irrigation systems at the Qazvin irrigation network (Iran). *Agricultural Water Management*, *148*, 189-195.
[23] van Noordwijk, M., & Brussaard, L. (2014). Minimizing the ecological footprint of food: closing yield and efficiency gaps simultaneously?. *Current Opinion in Environmental Sustainability*, *8*, 62-70.
[24] (Gonzalez-Dugo, V., Goldhamer, D., Zarco-Tejada, P. J., & Fereres, E. (2015). Improving the precision of irrigation in a pistachio farm using an unmanned airborne thermal system. *Irrigation Science*, *33*(1), 43-52)
[25] Anderson, M.C, Allen, R.G, Morse, A. and Kustas, P. 2012. Use of Landsat thermal imagery in monitoring evapotranspiration and managing water resources. Remote Sensing of Environment Volume 122.
[26] e.g http://trmm.gsfc.nasa.gov/
[27] e.g. http://drought.unl.edu/MonitoringTools/NASAGRACEDataAssimilation.aspx

are needed to better assess re-use and its potential, and promote safe recycling of wastewater in agriculture, in particular in water-scarce areas[28].

- **Information management technologies & applications:** New information management technologies and cyberinfrastructure[29] are emerging that have the potential to transform many aspects of WLE. These include:

  - **Virtual observatories** can link and integrate online: 1) Global, national and global information bases (containing both terrestrial and remotely sensed biophysical and societal information); 2) Networks of environmental sensors; 3) Information collected by users of water services or by citizen scientists; and, 4) Inconnnected web or cloud-based services or application[30].

  - **Unmanned aircraft systems (UAVs)** offer the opportunity for individual scientists and small teams to obtain low-cost, repeat imagery at high resolutions (;1 cm to 1 m) tailored to the specific areas, products and delivery times of research interest[31];

  - **GPS-enabled smartphones** are having a major impact on the abilibity of users to report problems or inadequacies in the services they receive using applications such as AKVO Flow[32] or Water Point Mapper[33];

  - **IT applications** that have built-in capabilities for locating and accessing water-related information via the internet. An example of this approach is the CUAHSI Hydro-Desktop[34] application that provides access to remote data archives using the CUAHSI WaterOneFlow web service[35] [36].

[28] http://www.fao.org/docrep/016/i3015e/i3015e.pdf
[29] The generic term *cyberinfrastructure* is used to describe the infrastructure that takes advantage of recent advances in information technology.
[30] Laniak, G.F et al. 2013. Integrated environmental modeling: A vision and roadmap for the future. Environmental Modelling & Software, 39, 3-23.
[31] Vivoni,E.R, Rango,A, Anderson,C.A, Pierini,N.A, Schreiner-McGraw,A.P., Saripalli,S., and Laliberte,A.S. 2014. Ecohydrology with unmanned aerial vehicles. Ecosphere Volume 5(10) v Article 130
[32] For more information see: http://www.akvo.org/web/introducing-akvo-flow
[33] For more information see: http://www.waterpointmapper.org/
[34] For more information see: http://hydrodesktop.codeplex.com/
[35] Ames, D.P., Horsburgh, J.S. Yang Cao, Kadlec, J., Whiteaker, T., Valentine, D. 2012. HydroDesktop: Web services-based software for hydrologic data discovery, download, visualization, and analysis. Environmental Modelling & Software 37
[36] Tarboton, D.G., Horsburgh, J.S., Maidment, D.R., Whiteaker, T., Zaslavsky, I., Piasecki, M., Goodall, J., Valentine, D., Whitenack, T., 2009. Development of a community hydrologic information system. 18th World IMACS Congress and MODSIM09 International Congress on Modelling and Simulation. In: Anderssen, R.S., Braddock, R.D., Newham, L.T.H. (Eds.), Modelling and Simulation Society of Australia and New Zealand and International Association for Mathematics and Computers in Simulation, pp. 988e994. http://www.mssanz.org.au/modsim09/C4/tarboton_C4.pdf

46. Agriculture is both a cause and a victim of water scarcity[37]. Inter-sectoral competition for water is most obvious in the hinterlands of large urban centres, but water scarcity can arise in all catchments where the intensification of agriculture in headwater areas reduces water supply downstream. Unsustainable groundwater use can have long-term impacts on agricultural production in areas such as South Asia, where a boom in groundwater-based irrigation in the 1980s and 1990s led to a major increase in agricultural production that is now constrained by aquifer depletion. Many WLE challenges are as much societal as they are biophysical. As a result, much of WLE research focuses on issues related to governance, institutions, legislation, economics, gender and the wide political economy of areas of interest. Increasingly WLE-related research in both funding programmes and journal submissions and publications focuses on issues that include:

- **Governance**: the nature of governance of natural resources, including the institutional arrangements through which governance operates, has become a major issue across all of these themes. This has emerged from the understanding that effective management is contingent upon good governance arrangements, whilst management failures and a consequent lack of sustainability are in part a reflection of governance failures. There are strong and obvious links between research and policy in this field. One important research theme here is the nature of formal and informal governance arrangements, themselves often a reflection of different stakeholder interests in these areas.

- **New concepts and ways of working:** New (or relatively new) societal concepts relating to addressing WLE challenges include: "thinking politically, working differently"[38], "politically smart, locally-led development"[39] and "good enough governance"[40]. New ways of diagnosing issues and opportunities include: governance assessment[41] and political economy analysis[42]. Finally new approaches to action research include: problem-driven iterative adaptation[43].

- **Valuation**: understanding and, where this is possible, placing a quantitative monetary value on resources and the ecosystems services that they generate is one of the key research issues to emerge in recent years[44]. This includes major international initiatives such as the Stern Report on

[37] FAO. 2012. Coping with water scarcity: An action framework for agriculture and food security. FAO Water Reports 38. http://www.fao.org/docrep/016/i3015e/i3015e.pdf.
[38] Rocha Menocal, A. 2014. Getting real about politics: from thinking politically to working differently. http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8887.pdf
[39] Booth,D. and Unsworth,S. 2014. Politically smart, locally-led development. ODI London. http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9158.pdf
[40] Grindle,M. 2007. Good Enough Governance Revisited. Development Policy Review, 2007, 25 (5): 553-574 http://onlinelibrary.wiley.com/doi/10.1111/j.1467-7679.2007.00385.x/abstract
[41] UNDP. 2013. User's Guide on Assessing Water Governance. http://www.watergovernance.org/documents/WGF/Reports/20058-UNDP-Assessing-water_web.pdf
UNESCO (2009a). IWRM Guidelines at River Basin Level, Parts 1: Principles. Paris: UNESCO. http://www.hydrology.nl/images/docs/ihp/IWRM_Guidelines/IWRM_Part_1_Principles.pdf
[42] Fritz, Verena, Brian Levy, and Rachel Ort. 2014. Problem- Driven Political Economy Analysis: The World Bank's Experience. Directions in Development. Washington, DC: World Bank. doi:10.1596/978-1-4648-0121-1. License: Creative Commons Attribution CC BY 3.0
[43] Andrews, Matt. 2013. The limits of institution reform in development. Cambridge Press
[44] Schomers, S. & Matzdorf, B. (2013). Payments for ecosystem services: a review and comparison of developing and industrialized countries. *Ecosystem Services*. Ranasinghe T & Kallesoe, M. (2006) Valuation, Rehabilitation and Conservation of Mangroves in Tsunami Affected Areas of Hambantota, Sri Lanka: Economic

climate change, the TEEB initiative in relation to the value of biodiversity and ecosystems and, more recently, the Economics of Land Degradation Initiative[45]. Valuation methods and models are a major research field, with environmental economics increasingly important within overall economics. However, they are often also the source of debate and controversy, in part because they require numerous assumptions and judgment calls, but also because of the paucity of reliable data. There are clear links between valuation research and policy, including fields such as Payment for Ecosystems Services (PES) and carbon offsetting initiatives[46]. The ability to demonstrate a monetary value for ecosystems and ecosystem services that are not traditionally valued through markets is seen as crucial evidence in policy debates.

- **The relationship between natural resources and livelihood systems**: although it is a well-established principle in many parts of the developing world that livelihood systems have an intimate relationship with the local natural resource base, this still poses many complex research questions[47]. In particular the specific form of this relationship in particular ecosystems and/or livelihood systems (including how these relate to the governance issues raised above) has formed the focus of extensive local-level studies[48]. The dynamics and direction of change within these relationships is also a key issue, including how they are conditioned by external factors such as changing markets, climate change and globalization[49]. Differential gender roles within natural resources and livelihoods systems are also an important research issue, as is understanding and valuing the sustainable management of ecosystems within these livelihood systems[50].

- **Resilience and sustainability**: although sustainability is not a new issue, there is an increasing research concern to understand what it means in terms of the ability of specific ecosystems and

---

Valuation of Tsunami Affected Mangroves — The World Conservation Union, Ecosystems and Livelihoods Group Asia. Costanza, R., de Groot, R., Sutton, P., van der Ploeg, S., Anderson, S.J., Kubiszewski, I., Farber & S., Turner, R.K. 2014. Changes in the global value of ecosystem services. *Global Environmental Change.* 26: 152-158.

[45] TEEB (2009) The Economics of Ecosystems and Biodiversity for National and International Policy Makers – Summary: Responding to the Value of Nature. ELD (2012) The economics of land degradation, the global initiative for sustainable land management ELD Secretariat, Bonn.

[46] Greiber, T. (2009) Payments for ecosystem services: legal and institutional frameworks. IUCN Environmental Policy and Law Paper No.78.

[47] Haines-Young, R. and Potschin, M. 2010. The links between biodiversity, ecosystem services and human well-being *in* Ecosystem Ecology: A New Synthesis, eds. David G. Raffaelli and Christopher L. J. Frid. Cambridge University Press, Cambridge (Ch 6). Daw, T., K. Brown, S. Rosendo, and R. Pomeroy. 2011. Applying the ecosystem services concept to poverty alleviation: The need to disaggregate human well-being. *Environmental Conservation.* 38:370–379.

[48] See, for example, J. Chong, (2005), Valuing the Role of Wetlands in Livelihoods: Constraints and Opportunities for Community Fisheries and Wetland Management in Stoeng Treng Ramsar Site, Cambodia. IUCN Water, Nature and Economics Technical Paper No. 3, IUCN — The World Conservation Union, Ecosystems and Livelihoods Group Asia, Colombo. Willemen, L., Drakou, E.G., Dunbar, M.B., Mayaux, P. & Egoh, B.N. (2013) Safeguarding ecosystem services and livelihoods: Understanding the impact of conservation strategies on benefit flows to society. *Ecosystem Services.* 4: 95-103.

[49] Ruckelshaus, M., E. McKenzie, H. Tallis, A. Guerry, G. Daily, P. Kareiva, S. Polasky, T. Ricketts, N. Bhagabati, S. a. Wood, and J. Bernhardt (2013) Notes from the field: Lessons learned from using ecosystem service approaches to inform real-world decisions. *Ecological Economics.* doi: 10.1016/j.ecolecon.2013.07.009

[50] Plummer, M. L. (2009) Assessing benefit transfer for the valuation of ecosystem services. Frontiers in Ecology and the Environment 7:38–45.

natural resource systems to withstand the impacts of external factors that change and potentially degrade them[51]. These factors include both sudden 'shocks', rapid change caused by factors such as natural disasters or major pollution events, and more incremental change from soil degradation, the over-exploitation of resources or persistent pollution. The key research issues relate to the ability of ecosystems (and land resources and hydrological systems) to survive these degradation forces, their resilience, as well as the levels of change and of resource exploitation that are sustainable without threatening the integrity of the natural systems in question. However, to date, there are no commonly agreed approaches to the measurement of Ecosystem Resilience.

- **Carbon stocks, flows and sequestration**: climate change is an increasingly pervasive issue across policy and research programmes and is central to concerns over the dynamics of land and water systems and the nature of ecological change. One important challenge within this broad agenda is to understand levels of carbon stocks in different ecosystems (including above and below ground biomass carbon as well as soil carbon), the nature of carbon flows over time (especially where there is ecological change) and the actual and potential role of different ecosystems in carbon sequestration. This issue has catalysed the establishment of policy links to REDD initiatives in many parts of the developing world.

- **Climate change adaptation**: adaptation is increasingly recognized as both necessary and inevitable as the effects of climate change are felt by ecosystems and livelihood systems throughout the developing world. It is of particular significance in areas, such as coasts and drylands, which are the most vulnerable to the impacts of climate change. The role of land and water management in adaptation is recognized as central, as is the ability to respond to changes in ecosystem services availability that occur as a result of climate-induced ecological change. Research into sustainable adaptation systems is increasingly recognised as important and essential if effective adaptation policy systems are to emerge. It is understood that this item and the one above are being primarily tackled by the CCAFS CRP and they will not, therefore, be investigated in detail by this evaluation. The evaluation will however look at the linkages that WLE has with CCAFS in this area.

- **Local management and knowledge systems**: it is now widely understood that local-level livelihoods and resource management systems are based on traditional knowledge systems that differ widely from mainstream science. Their effectiveness in sustainably managing local resources and their ability (or otherwise) to respond to externally-induced change is a key research issue, as is the nature of the relationship between traditional local and mainstream scientific knowledge.

- **Land tenure and entitlements**: research into these issues has become increasingly important in relation to customary rights and usufruct entitlements, with the emergence of large-scale land allocations to external (including foreign) interests for production of such commercial crops as oil palms and rubber. The institutional arrangements that underpin the management and allocation of land resources under traditional, customary tenure systems are a further focus of research into

[51] Biggs, R., Schlüter, M., Biggs, D., Bohensky, E.L., BurnSilver, S., Cundill, G., Dakos, V., Daw, T.M., Evans, L.S., Kotschy, K., Leitch, A.M., Meek, C., Quinlan, A., Raudsepp-Hearne, C., Robards, M.D., Schoon, M.L., Schultz, L. & West, P.C. (2012) Toward principles for enhancing the resilience of ecosystem services. *Annual Review of Environment and Resources.* 37:421-448.

land issues. It is notable also that, at the international level, FAO has developed voluntary guidelines for land tenure[52] and is currently working on similar guidelines for water tenure.

2.2.2. Institutional and Program Structure and Origins

47. The original WLE funding proposal53 states its objective as, "To learn how to intensify farming activities, expand agricultural areas and restore degraded lands, while using natural resources wisely and minimizing harmful impacts on supporting ecosystems."

48. WLE originally consisted of five Strategic Research Portfolios (SRPs). These covered:

- Irrigated systems
- Rainfed systems
- Resource Recovery and Reuse
- River Basins (which incorporated several CPWF projects)
- Information Systems.

49. In 2014, after structural reform to the program for the 2015-16 Extension Period requested by the CGIAR Consortium Office, the five original SRPs were replaced by five Flagships. These are as follows:

- *Flagship 1: Integrating Ecosystem Solutions into Policy and Investments (IES)*

  IES pursues policy and investments in ecosystem services through influence and decision support—with unique, context-specific impact pathways in four international river basin zones called Focal Regions—and an Innovation Fund

- *Flagship 2: Sustainably Increasing Land and Water Productivity (LWP)*

  LWP research aims to impact small farmers and large-scale irrigation; gender equity and resource access equity; and the sustainability of ecosystem services.

- *Flagship 3: Regenerating Degraded Agricultural Ecosystems (RDE)*

  RDE hypothesizes change through research on degraded landscapes.

- *Flagship 4: Recovering and Reusing Resources in Urbanized Ecosystems (RRR)*

  RRR seeks to reduce negative footprints of urbanization through private sector investments, by promoting business models and supporting technological innovation.

- *Flagship 5: Managing Resource Variability and Competing Use (MRV)*

  MRV research is targeted to reconcile competing claims on variables resources.

[52] http://www.fao.org/nr/tenure/voluntary-guidelines/en/
[53] WLE 2011

50. Research on integrating ecosystem solutions into policies and investments (IES, Flagship 1) is based on the ecosystems approach described in the Ecosystem Services and Resilience framework, notably around the concepts of resilience and sustainability. Flagship 2 (LWP) addresses sustainable land and water productivity enhancement. It focuses on sustainable land management and on adaptive water management, as discussed in Section 2.2.1 and it conducts research on biophysical and engineering aspects of land and water management and conservation. Flagship 3 on regenerating degraded agricultural ecosystems (RDE) combines biophysical and socio-economic models and other approaches to quantify the levels of ecosystem degradation and to find new ways of landscape restoration. The recovery and reuse of resources in urbanized ecosystems is the subject matter of Flagship 4 (RRR). The focus here is on peri-urban environments where multiple partners can develop new business models to bring back water, nutrients, and energy into the production cycle. Finally, Flagship 5 on managing water resource variability and competing use (MRV) aims to formulate innovative solutions to deal with the impact of spatial and temporal variability on agricultural ecosystems at different scales.

51. In both SRPs and Flagships, the program has incorporated crosscutting themes of Gender, Poverty, and Institutions (GPI) and Ecosystem Services; but by the time of the revised proposal, Resilience had been added to the latter theme to give its current scope of Ecosystem Services and Resilience (ESR). In early 2014, WLE issued a comprehensive gender strategy, which aimed to help integrate gender themes into planning and management processes and into the portfolio. This was followed in late 2014 by an Ecosystem Services and Resilience framework document. Both of these approaches cut across research areas, to such an extent that most projects from every Flagship contribute to both, which have been defined as Core Themes. The previous fifth SRP on Decision Analysis and Information Systems (DAI) became a third Core Theme, intended to strengthen decision analysis and improve measurement of an intervention's impact, thereby helping to build capacity among partners in these areas. As a Core Theme, it is intended to complement all of the Flagship research areas, although it is budgeted slightly differently from the ESR and GPI Themes. Furthermore, while most projects will have ESR and GPI aspects, DAI is currently engaged in relatively few projects across the portfolio.

WLE Intermediate Development Outcomes (IDOs)

52. Under its new Flagship structure, WLE is intended to contribute towards a set of Intermediate Development Outcomes (IDOs). These are as follows:

- Improved land, water and energy productivity in rainfed and irrigated agro-ecosystems
- Increased and more equitable income from agricultural and natural resources management and ecosystem services in rural and peri-urban areas
- Women and marginalized groups have decision making power over and increased benefits derived from agriculture and natural resources
- Increased ability of low income communities to adapt to environmental and economic variability, demographic shifts, shocks and long term changes
- Increased resilience of communities through enhanced ecosystem services in agricultural landscapes.

53. Whereas the previous IDOs in WLE's 2012 Strategic Plan were aligned with the old SRP structure, but were not specifically measurable, the new IDOs are intended to enable such monitoring. In particular, results should be trackable across four thematic criteria: Environment; Gender and Equity; Income and Productivity; and Adaptation.

54. Under the Extension Proposal for WLE, significant changes were made to its structure and approach[54]:

> "The changes to WLE's structure draw on lessons from the CGIAR Challenge Program on Water and Food's (CPWF) external review and two years of WLE implementation. Changes include:
>
> 1. The establishment of a significant region-based flagship, Integrating Ecosystem Solutions into Policy and Investments (IES), which is defined by open and competitive calls for ecosystem service and sustainable intensification research within defined geographical areas.
>
> 2. WLE has introduced an Innovation Fund to support impact-driven research that features its ecosystems-based approach. The Fund, which was implemented through an open and competitive call, encourages integrated, curiosity driven research, cross-regional and global development and use of tools, methods and analysis that support equitable ecosystems based development and investments.
>
> 3. WLE's heritage projects have been largely realigned to demonstrate clear contributions to the outcomes of the flagships they represent. The realignment is an ongoing process that will be completed by the end of 2014.
>
> 4. Decision Analysis and Information (DAI) has been reclassified as a core theme in order to provide more cross-cutting support to all WLE's flagships.
>
> 5. The development of a robust monitoring and evaluation process building from the work of CCAFS that includes hiring an M&E Coordinator and an online reporting tool for the flagships".

Challenge Program on Water and Food (CPWF)

55. WLE has inherited some of the work commenced under the previous CGIAR Challenge Program on Water and Food (CPWF)[55]. Some of the elements carried over include:

- Focal Regions for WLE research
- Emphasis on context-specific development impact from scientific research ("participatory action research" and research for development)

[54] Extension Proposal for CGIAR Research Program on Water, Land and Ecosystems. Resubmit, September 8, 2014. P3.

[55] This initial impression may be modified by later research, since some stakeholders already interviewed expressed a stronger distinction between the two programs.

- Approach towards partnership, with 26 of 36 WLE projects in the Focal Regions led by non-CGIAR institutions

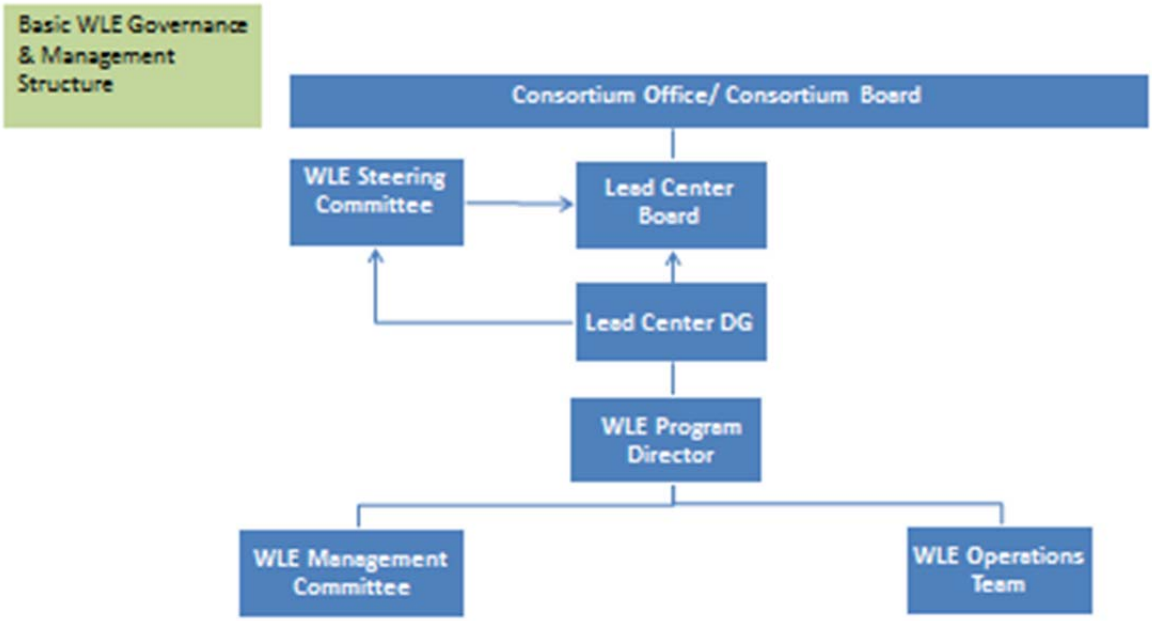
- Members of governance committees, and research managers in the Focal Regions

56. Thirty-four CPWF projects were mapped to WLE at the outset in 2012, while 10 remained active in 2013. CPWF projects carried into 2014 were no cost extensions. There appear to be CPWF-heritage aspects of many more research grants and activities, often within projects that received a new name during their transition from CPWF to WLE. This evaluation will therefore trace to what extent projects, research ideas and relationships formed under CPWF and under other pre-existing programs have been continued without change, modified, or discontinued. Changes made to heritage projects "mapped" to WLE will be examined; particularly in order to assess to what extent these processes affected their relevance and coherence.

Governance and Management of WLE

57. WLE is headed by a Steering Committee of experts with international standing in WLE research areas, with the Director General of IWMI and Director of WLE as ex officio members. The Steering Committee provides recommendations to the Lead Center (IWMI) Board. It is responsible for scientific direction, quality of science and oversight of the WLE CRP. It includes a representative from FAO, the Deputy Director of the Land and Water Division.

Figure 1: Basic WLE Governance and Management structure



58. Reporting by way of the Lead Center DG to the WLE Steering Committee and to the IWMI Board, management of WLE is split into two bodies, both headed by the WLE Program Director. On one side, the central Operations Team is responsible for day-to-day operations, and includes a

Communications and Knowledge Management unit. On the other, the Management Committee comprises Flagship and Theme leaders and is responsible for research performance of the Flagships.

59. IWMI and the 11 Partner Centers (and FAO) each have a Science Focal Point for that Center's participation in WLE. The Partner Centres are shown in Table 2 below.

60. Program Management and Coordination (PMEC) for WLE was originally listed as a $5.3 million line item in the 2014 budget, to consist of inter alia management (Operations Team), research coordination, knowledge management, communications (including WLE's blog), monitoring and evaluation (and learning), and support to WLE's cross-cutting themes —gender, resilience, and decision support tools — each of which is convened as a WLE working group to integrate with research strategies. Aside from these items of PMEC, program management has also issued plans for partnership, capacity-building, marketing, fundraising, and regional implementation.

61. A Review of overall CGIAR governance[56] was completed in 2014. This evaluation will therefore not cover this topic in detail. However, based on discussions held during the Inception mission to IWMI, there is little doubt that respondents will raise governance issues and their relationship to the specific efficiency and effectiveness of WLE, so they will need to be incorporated into the assessment of these evaluation criteria.

2.3 The WLE Portfolio

The most comprehensive set of budgeted data on the portfolio is contained in the 2014 year-end budget and activity plans. The WLE portfolio has been re-conceived several times since 2011, which makes it difficult to precisely trace individual research activities from one year to the next. The section below focuses on the current WLE portfolio, which consists of the 149 projects that are active in 2015. Although the evaluation will assess progress achieved during previous years of the program, in particular by identifying research activities that have been ongoing (or that were completed) since the start of WLE, it is expected that the coherence between the program activities and its overall objectives, both at Flagship and at CRP level, will focus on the 2015 projects.

2.3.1. Focal Regions

62. CPWF featured six main river basins: the Volta, Nile, Ganges, Mekong, Limpopo and Andes. WLE expanded upon the CPWF basin concept by incorporating relevant areas surrounding basins (e.g., from the Mekong Basin to the Greater Mekong Region). With effect from June 2014, the first four (expanded) basins listed above became Focal Regions (the Limpopo and Andes were originally supposed to become focal regions but had to be removed due to cuts in funding). The basis for adopting these regions was that they incorporate both rainfed and irrigated agricultural ecosystems and have good potential for long-term engagement with local research partners. They are seen as representing "critical poverty-environment hotspots" where WLE will place particular emphasis on research, partnership, outreach and policy activities. The Limpopo and Andes became regions of

[56] *Review of CGIAR Research Programs Governance and Management.* Final Report. Independent Evaluation Arrangement, Rome. March 2014.

secondary emphasis in terms of funding allocation. The Amu Dharya/Syr Dharya river basin in Central Asia and the Tigris/Euphrates river basin in the Middle East were added to this second tier.

63. The WLE Focal Region evolved from the CPWF basin concepts in the following aspects:

- Broadening of the range of operational partners from the original basin approach, which mainly focussed on CGIAR institutions
- Efforts to encourage integration among projects within each region, rather than pursuit of disconnected individual activities
- Core approach of Ecosystems Services and Gender to underlie all activities
- 20% of budget of each project to focus on gender research
- Movement of budget from CGIAR Centers to national and regional partners (40% of budget spent at this level)
- Stronger emphasis on open competitive processes for proposals within broad areas determined by WLE.

64. A major vehicle for the new regional approach is Flagship 1, Integrating Ecosystem Solutions into Policy and Investments (IES). Including its Innovation Fund, this Flagship has a 2015 budget of approximately $9 million, almost exclusively from W1-2 with the exception of some Australian DFAT bilateral co-financing of IES research partnerships in the Greater Mekong Sub-Region WLE Focal Region.

2.3.2. 2015 WLE Portfolio of Activities

65. In 2015, the WLE portfolio is currently composed of 149 projects, funded through a combination of bilateral and core funding (CGIAR W1/2).

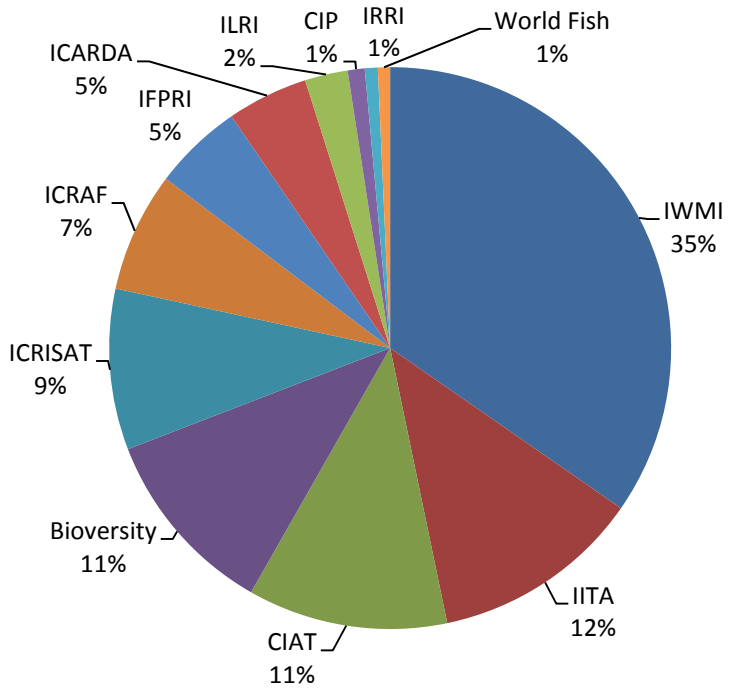
66. Table 1 below presents the 2015 WLE portfolio according to Flagship budget, with notes on W1/2 proportions. The LWP Flagship (Sustainably Increasing Land and Water Productivity) has the largest overall budget. However, LWP also receives the lowest proportion of its funds from WLE W1/2. Therefore, it could be said that this block of research is heavily driven by bilateral funds. The IES Flagship, on the other hand, is almost entirely funded through core CGIAR funding.

Table 1: 2015 Flagship budgets by funding source and number of activities *(the figures in the table below are likely to change following budget cuts to the program)*

Flagship	Cluster	W1/W2	Total Funding	Share of W1/2	N. of Projects
1 - IES	1.1	1,520,936	2,217,919	69%	13
	1.2	2,448,410	2,448,410	100%	8
	1.3	1,848,021	1,848,021	100%	6
	1.4	1,495,159	1,495,159	100%	5
	1.5	2,461,334	2,461,334	100%	4
	Total F1	***9,787,060***	***10,470,843***	***93%***	***36***
2 - LWP	2.1	3,738,865	16,157,537	23%	29
	2.2	1,001,322	1,262,974	79%	7
	Total F2	***4,740,187***	***17,420,511***	***27%***	***36***
3 - RDE	3.1	2,986,475	5,448,230	55%	17
	3.2	384,692	2,057,096	19%	6
	3.3	150,000	532,382	28%	2
	Total F3	***3,521,167***	***8,037,708***	***44%***	***25***
4 - RRR	4.1	1,159,456	2,622,092	44%	5
	4.2	299,244	840,044	36%	2
	4.3	103,493	447,047	23%	2
	Total F4	***1,562,193***	***3,909,183***	***40%***	***9***
5 - MRV	5.1	1,718,689	3,099,768	55%	15
	5.2	1,192,515	4,086,365	29%	14
	5.3	915,001	1,703,707	54%	7
	Total F5	***3,826,205***	***8,889,840***	***43%***	***36***
DAI	DAI 1	424,675	1,026,657	41%	1
	DAI 2	1,533,305	3,030,478	51%	5
	Total DAI	***1,957,980***	***4,057,135***	***48%***	***6***
ESR	***ESR***	***310,797***	***478,228***	***65%***	***1***
Total		**25,705,589**	**53,263,448**	**48%**	**149**

67. Figure 1 below shows the distribution of overall funding across participating CGIAR Centres. After the Lead Center IWMI that has 35% of the funding, the CGIAR Centers with more funding mapped to WLE are IITA, Bioversity and CIAT. The partners with the largest proportion of W1/2 funding are IWMI, CIAT, Bioversity, IFPRI and ICRAF.

Figure 2: Distribution of WLE Funding by CGIAR Center in 2015



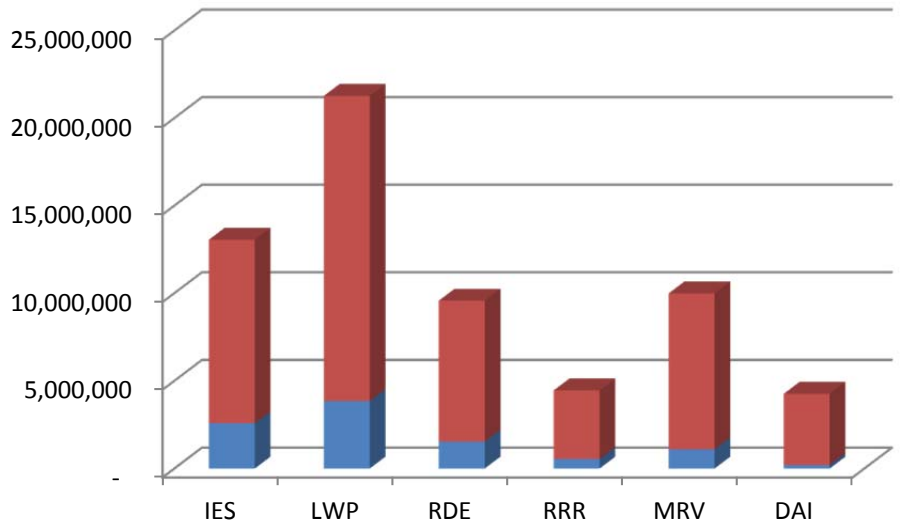
68. Table 2 below shows the distribution of research projects by Flagship and CGIAR Center.

Table 2: Distribution of research projects by CGIAR Center.

CGIAR Center	Total Funding	W1/W2	Share of W1/W2	N. of activities
IWMI	16,241,701	8,172,293	50%	50
IITA	5,666,866	874,344	15%	5
CIAT	5,388,541	2,113,677	39%	12
Bioversity	5,110,885	3,237,742	63%	11
ICRISAT	4,341,000	945,000	22%	10
ICRAF	3,235,366	1,296,000	40%	2
IFPRI	2,412,191	1,043,159	43%	14
ICARDA	2,182,342	882,000	40%	9
ILRI	1,155,539	546,140	47%	5
CIP	460,400	383,400	83%	2
IRRI	350,112	363,312	104%	1
World Fish	326,000	153,000	47%	2
Total	**46,870,943**	**20,010,067**	**43%**	**123**

69. While the overall proportion of gender funding across all the Flagships stands at approximately 20%, the percentage of gender funding in the individual flagships is uneven, ranging from 25% for IES to 5% in DAI.

Figure 3: 1. Figure 2: Gender as a proportion of Flagship Budget in 2015



Large-scale projects

70. There are 8 projects with a yearly budget (combined W1/2 and W3/bilateral) greater than $1 million in 2015. These larger projects will require detailed examination, although not necessarily through field missions. Projects funded through the innovation fund are not included in the table below because they will be the subject of a separate analysis. Larger projects are not the only projects that the evaluation team intends to review, a sub-set of projects containing innovative approaches will also be identified in collaboration with the WLE program.

Table 3: list of projects

Center	Flagship	Project Title	Funding in 2015
ICRISAT	2	Enhancing Water Use Efficiency through various agricultural water management interventions in rainfed and irrigated areas	1,176,600
IITA	2	Identification and dissemination of Integrated Soil Fertility Management recommendations for the sustainable intensification of root crop-based systems within farming landscapes	1,866,926
IITA	2	Identification and dissemination of Integrated Soil Fertility Management recommendations for the sustainable intensification of root crop-based systems within farming landscapes within farming landscapes, with a specific focus on striga management	2,298,731
IWMI	2	Water Management Solutions for Flood Recession and Dry Season Farming in Nigeria	1,058,690
Bioversity	3	Providing ecosystem services and resilience through the use of agricultural biodiveristy within production systems of in South Asia (Nepal, Sri Lanka)	1,093,216
CIAT	5	Sustainable development options and land-use based alternatives to: Enhance climate change mitigation and adaptation capacities in the Colombian and Peruvian Amazon, while enhancing ecosystem services and local livelihoods	1,770,888
ICRAF	DAI	DAI 1: Decision Analysis and Risk Assessment - Stochastic Impact Evaluation	1,026,657
ICRAF	DAI	DAI 2: Information Systems for Land, Water & Ecosystems - Soil Information Systems	2,208,709

3. SCOPE OF THE EVALUATION

71. The evaluation is being undertaken at a time when the CRP has completed its first funding phase and is entering the 2015-2016 extension phase. The Program went through various adjustments and restructuring into Flagship Projects, and within them clusters of activities, defining program theories of change as well as impact pathways for each Flagship Project. Intermediate Development Outcomes have been defined with target achievement goals for the medium-term (about a 10-year time span), according to specific agroecologies and beneficiary groups for them, with measurable indicators for progress and results.

72. The scope is structured around two main and inter-linked aspects of performance: Programmatic Performance and Organizational performance.

3.1 Research/Programmatic Performance

73. The evaluation scope encompasses all activities covered by the WLE programme. The concept of WLE was specified in its initial proposal document and formalised through Program Agreements. As discussed in Section 2.2.2 above, much of the first WLE cohort consists of projects, which were initially designed and implemented as part of existing programs such as the Challenge Program on Water and Food (CPWF) and were then incorporated into WLE through a process of "mapping." These ("legacy") projects commenced before WLE start up in 2012 and are at various stages of progress, possibly including some completed projects.

74. The Extension Proposal for CGIAR Research Program on Water, Land and Ecosystems (Resubmit, September 8, 2014) has led to further modification in the types of activities undertaken under WLE, within the guidance offered under the Second Call for Proposals. Although some of these activities will be only starting up at the time of this evaluation, their approach (particularly where detailed through the means of a Theory of Change) will be assessed as part of its formative dimension.

75. The various timescales of projects now included under WLE, together with the restructuring of the program and the change in conceptual framework to place ESR as the over-arching concept all offer potential challenges to evaluation coherence. However, to a large extent measures have already been taken by WLE management to bring all current activities under a common frame of reference. This is evident from the WLE 2014 Activity Plans for Flagships, which require a common set of planning and management information for each project, regardless of origin or start-date.

76. With regard to timescale, all projects, regardless of their date of origin, now provide information on their expected contribution to the ESR and gender , as well as the specific Intermediate Development Outcomes to which they will contribute. Timeframes are provided for anticipated outcomes and impact pathways are specified. This means that projects with different start dates can be assessed according to common criteria, taking into account the level of progress towards the anticipated outcomes of their Impact Pathways. The evaluation will also pay particular attention to issues of scaling up or the catalytic role of WLE interventions, in addition to sustainability.

77. Concerning program restructuring, all activities have been mapped from their original SRPs to Flagships. Flagship Projects incorporate clusters of activities, which should lead towards impacts according to their defined Theories of Change (ToC). In the 2014 Activity Plans, the originating SRPs are not listed and it seems that the Flagships are actually broader in concept than the original SRPs, so that migration from one to the other has been readily accomplished. Further, one SRP (Resource Recovery and Reuse) moved from one system to the other without change. The major departure from the SRP structure has therefore been the institution of Flagship 1, notably through its Innovation Fund and Open Call, which have a very specific focus on the interpretation and implementation of the ESR concept. This is interpreted by many stakeholders57 as the major conceptual innovation of the WLE Program. Accordingly, the evaluation will pay particular attention to the analysis of progress towards results in Flagship 1. Since this Flagship is very much in its start-up phase, a major aspect will be the quality of research project design, notably through the use of innovative procedures such as Write Shops. An assessment will also be made through the assembly of expert opinion on the ESR Framework itself, based on its 2014 document. This will cover the coherence and utility of the concept and the extent to which it builds on previous WLE frameworks and research.

78. In view of the relatively long timescale for the realization of outcomes, much of the focus of the evaluation, particularly for more recent research activities, will be on assessing to what extent the design and early implementation of activities are appropriate to effectively contribute towards the delivery of targeted benefits at intermediate stages of the results chain. In addition, the extent to which completed research projects have produced results at outcome or impact level will be assessed as part of the summative dimension of the evaluation, while the progress of continuing legacy projects will be addressed within the formative dimension.

79. In addition, other performance-related aspects to be explored include:

- the comparative advantage of the CGIAR and the WLE centers vis-à-vis other suppliers
- the relevance of research clusters and Flagship Programmes to the objectives of the CRP and the CGIAR more broadly, as well as to global, regional and national priorities and the needs of the targeted intermediate and final beneficiaries
- the quality of science of original research project concepts
- measures, which have been taken to build sustainability of benefits, will be assessed at a level appropriate to the current stage of implementation.

80. In addition to its focus on WLE-specific activities, the evaluation will place these within the broader context of the total set of CRPs. This assessment will be conducted from both a “top-down” and a “bottom-up” perspective. The former will assess the extent to which systematic “high level” exchanges of information and approaches have taken place among CRPs, to ensure maximum consistency and synergy. The latter approach will begin with the “linkage to other CRPs” listed for each project in its annual Activity Plan.

[57] Notably by the Steering Group, which presented the ESR Framework as a hypothesis to be tested by WLE, at a meeting with the valuation team on 3rd March 2015.

3.2 Organizational Performance

81. As specified in the Terms of Reference, this issue will enable a particular focus on efficiency of governance, management and (where relevant) administration processes, including with regard to finance[58]. However, there may also be areas to explore with regard to any perceived or demonstrated influences of these processes on effectiveness: for example, the implications on research management and activities of the unexpected reduction and delayed fund flow in 2014 and more recently in 2015.

82. An important issue on this dimension is likely to be the issue of continuity as opposed to change in CGIAR overall direction, CRP structures, objectives and regulations and the extent to which these have provided sufficient consistency to enable substantive research on complex issues to be designed and implemented. This issue spans the concepts of formative and summative evaluation, since it will be necessary to examine both the effects to date of the numerous changes and whether it appears that the systems now in place will provide an adequate enabling environment for effective research for development.

83. A robust approach to monitoring and evaluation is invaluable in terms of assessing progress, ensuring accountability and providing a sound evidence base from which lessons can be learned. The coverage and outputs from the program's M&E strategy and results framework will be examined, including the consideration of whether it is possible to aggregate M&E data across the portfolio in order to assess cumulative results.

84. Other key organizational aspects, which will be examined, include:

- The efficiency of organizational processes
- Governance and management structure
- Partnership management
- Intellectual property rights and management
- Organizational learning and knowledge management.

3.3 Geographical Scope

85. The WLE program now has a focus on four regions and its activities are gradually being aligned with these. However, there are also many projects outside of these regions, as well as global projects. This means that there will need to be focussed fieldwork covering all or most of the four Focal Regions, while other geographical locations will be accessed through secondary resources and telephone/internet-based interviews and discussions.

[58] This evaluation will not conduct detailed financial analysis, which will be separately addressed under auditing procedures, but will consider the interaction between finance and implementation

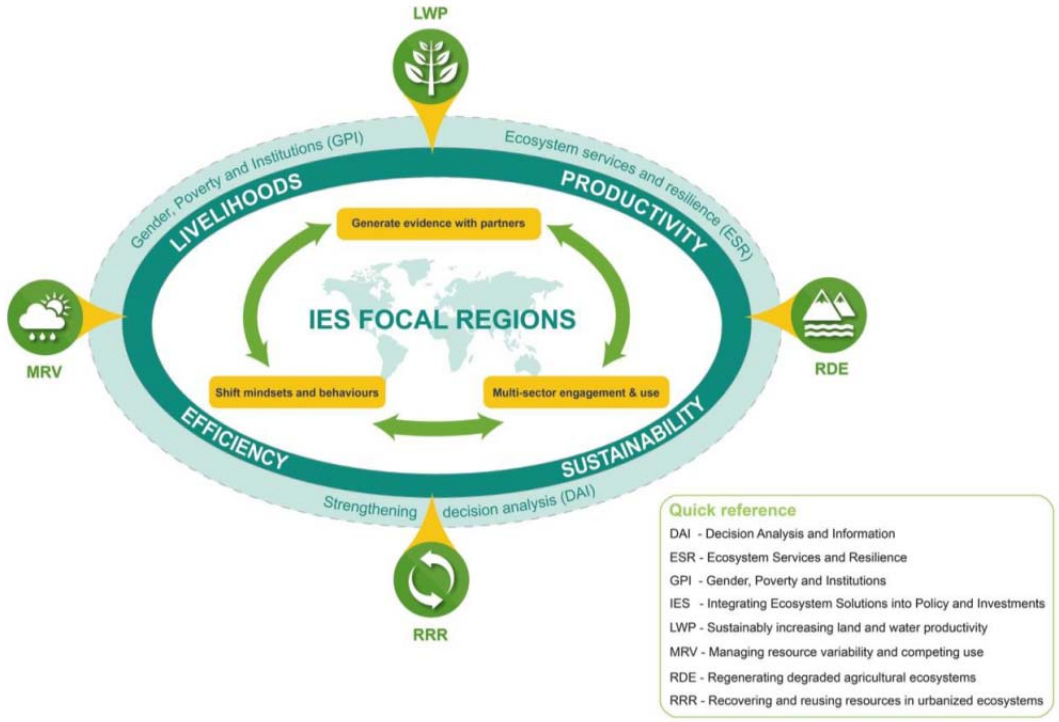
3.4 Evaluability Issues and Limitations of the Evaluation

3.4.1 The WLE Impact Pathways and Theory of Change

86. As described in the WLE Extension Proposal59, the over-arching question guiding WLE's Theory of Change is: "How can we ensure that agricultural intensification and productivity increases are accomplished in ways that are sustainable and that make use of the services provided by ecosystems?" This proposal outlines that the overall WLE program approach incorporates four layers of integration and synergy, as shown in Figure 3 below.

87. First, flagships are integrated into WLE's program by having impact in its focal regions. Second, each flagship operates in alignment with WLE's Theory of Change. This Theory proposes that WLE activities will promote change through an approach, which emphasises working through partnerships to generate knowledge, engage in multiple sectors and help to shift mind-sets. The third area of synergy happens through integration with WLE's three core themes of Gender Poverty and Institutions (GPI), Ecosystem Services and Resilience (ESR) and Decision Analysis and Information (DAI). These core themes provide strategic, cross-cutting research and support to implementing sustainable intensification within the flagships. The core themes also support use of decision-making tools to assess the power and benefits that woman and marginalized groups receive from natural resource management. Finally, the flagships integrate around WLE's core concepts of sustainable intensification: livelihoods, productivity, efficiency and sustainability.

Figure 4: Relationship between WLE Program Structure and Theory of Change



[59] Extension Proposal for CGIAR Research Program on Water, Land and Ecosystems Resubmit, Page 2, September 8, 2014.

88. The levels at which WLE can contribute towards impacts was a central topic of discussion during assessment of the Extension Proposal. This Proposal confirms that WLE focuses its work at a national and regional scale supplemented with important investment pathways to local and global scales. Through this national and regional focus, WLE is able to leverage the extensive capacity and research of its partners. WLE recognizes that a transition to integrated and holistic sustainable intensification systems requires decision makers at all levels—from local to international—to make complex choices among competing uses of, and management strategies for, water, land, ecosystems, energy and other resources.

89. Whilst the Theory of Change presented in the Extension Proposal provides an overview of how WLE intends to contribute towards its goals and objectives, the document does not suggest how this theory might be operationalised for monitoring and/or evaluation purposes. This has been partially addressed in the WLE Annual Report for 2014. This WLE Theory of Change is presented and discussed in Section 5.1 of this report.

90. The potential articulation of the WLE objectives with those of the broader CGIAR, notably through its System Level Outcomes is another area, which will be carefully explored during the evaluation. It is likely that the linkages from WLE-specific results to those of CGIAR Intermediate Development Outcomes and still further up the Impact Pathway to System Level Outcomes will be increasingly difficult to specify on the basis of evidence; since the SLOs are identified at a very high level and the number and scope of potential contributions towards their realization will be too complex to enable WLE's role to be specified.

3.4.2 Main Limitations of the Evaluation

91. The evaluation faces a number of challenges, which have the potential to limit the extent to which it can draw definitive findings. The first of these concerns the evolving identity of WLE and of the activities within it. However, as noted in 3.1 above, the 2014 Activity Plans required all continuing activities, regardless of origin, to be specifically mapped to current WLE objectives, so that this challenge is not a major one.

92. Secondly, the scale of the WLE CRP is substantial, with a projected 2015 budget of $60.5 allocated to 149 projects. The geographical distribution of project activities is also widespread, with four focal basins and a substantial volume of activities outside of these. There is also a substantial range of types of activity, distributed among five Flagships. This overall diversity presents some limitations in the extent to which evaluation methods and results can be proven to generate evidence and findings, which are "representative" of WLE. Related issues arise concerning the appropriate characteristics for aggregation. On the one hand, WLE has adopted an approach emphasising Focal Regions, which might present a suitable analytical category. On the other, a substantial body of work is active outside of these regions or on a global basis. Cross-cutting these geographical criteria are five "Flagships". Conceptually, the five Flagships are not mutually exclusive. For example, an activity categorised under "Sustainably Increasing Land and Water Productivity" could also contribute towards "Managing Resource Variability and Competing Use;" while activities funded through the Flagship "Integrating Ecosystem Solutions into Policy and Investments" could cut across all other Flagships. The complexity outlined above will pose some challenges for the extent to which the evaluation can derive WLE-wide findings, conclusions and recommendations, since it

will not be simple to "add-up" the results from component parts (whether flagships or regions) to give an aggregate overview of WLE performance.

93. The evaluation will address the challenges posed by the complexity of the programme in a variety of ways. Firstly, it will undertake detailed assessment of each Flagship separately. Secondly, it will give particular attention to Flagship 1, since this has the most specific focus on the new Ecosystem Services and Resilience Framework, which is widely regarded as the substantive new direction of the WLE program. Thirdly, it will assess the relationship of Flagships 2 to 5 as currently delivered to the ESR Framework. Fourthly, it will assess to what extent and how the results achieved or in process relate to the new Framework and what perspective this gives on the degree of overall coherence of the Programme.

3.4.3 Evaluability

94. According to the OECD DAC Glossary of Key Terms in Evaluation and Results Based Management, evaluability can be defined as: "the extent to which an activity or a program can be evaluated in a reliable and credible fashion." Within this rather broad approach, the Team confirms that WLE is definitely evaluable.

95. Challenges could occur if, under a stricter definition of evaluability, the evaluation were required to provide measurable conclusions on progress towards "impact" as specified by the Intermediate Development Objectives. This is because these objectives are expressed at such a high level (e.g., "irrigated area in Africa expands") that it will be difficult to present a convincing contribution analysis, still less any consideration of attribution. Further, although the overall budget of WLE is substantial ($50m+ per annum), once it is divided among five Flagships (and other elements) it is small in comparison with the overall scale of the issues to be addressed. With regard to results statements (effectiveness), the evaluation will therefore pay particular attention to the need to make only statements, which can be substantiated by evidence and detailed analysis of the Theory of Change of specific interventions, of Flagships and of the CRP as a whole. In view of the relatively recent start-up of many WLE activities, the evaluation will not attempt to report measurable progress towards impacts, so that this potential challenge is not considered a major factor at this time.

4. EVALUATION CRITERIA AND QUESTIONS

4.1 Introduction

96. The evaluation criteria used in CGIAR evaluations include the agreed international ("OECD-DAC") evaluation criteria, plus one additional criterion to reflect the research mandate of the CGIAR. As a result, there are six key criteria to be used in independent CRP evaluations: relevance, science quality, efficiency, effectiveness, impact and sustainability.

97. In line with this requirement, the TOR specify the key evaluation criteria60 and related core evaluation questions, which should be used to explore performance against these criteria. The Team Leader and the IEA conducted an inception mission to IWMI in December 2014, which led to refinement of these questions and the specification of some specific areas to be explored as a platform to answer them. These were further developed during the full team discussion with different WLE stakeholders in Rome in March 2015.

4.2 Strategic Questions

98. The Inception Phase involved extensive discussions between evaluation team members and a broad range of WLE stakeholders. During these discussions, various perspectives on the development and implementation of the WLE programme emerged. These have been assessed by the team and structured to form the following set of key strategic questions that the evaluation needs to address:

- Are the **conceptual framework** and **key hypotheses** of WLE coherent, effectively communicated and appropriate for the wide range of issues and diversity of locations included in the program?
- Are the **impact pathways** identified by the program ones that are likely to achieve the desired development outcomes and are they consistently developed across the different components of the program?
- Is the **quality of science** in the program of an appropriate standard, does it reflect the CGIAR's comparative advantage in science and is it engaged with and reflective of international developments in the different fields included in the program?
- Are the **partnership strategy** and range of partnerships being developed in the program consistent with the program's overall goals and the development of impact pathways within the program?
- Are the **management procedures** and **governance structure** of the program appropriate, efficient and consistently applied and is there clarity on the roles and operational procedures of different components of the management structure?
- Is the development of the program finding **an effective balance between ensuring the delivery of concrete planned outcome**s within the program life whilst at the same time

[60] The criteria are outlined in the document CGIAR Standards for Independent External Evaluation, Annex 2.

creating a long-term development trajectory to ensure the program's approach and benefits will continue beyond the presently defined program period? This aspect encompasses such key areas as communications and uptake strategies and approaches.

99. These strategic questions encompass many more specific issues, which are discussed below. The relationship between the strategic questions and the CGIAR evaluation criteria are outlined in Table 5 below.

4.3 Criteria for Research/Programmatic Performance

4.3.1 Relevance

100. As explained in the Terms of Reference for this evaluation, relevance will be considered from two perspectives: demand-side and supply-side. These have specific definitions under the CGIAR Standards, including:

101. "Supply side relevance relates to the alignment of the objectives of research and program components with the overall objectives of the CRP and its Intermediate Development Outcomes and the objectives and System-level Outcomes of the CGIAR.

102. Demand side relevance relates to how well the program research and other activities correspond with the global, regional and national priorities and the needs of the targeted intermediate and final beneficiaries, differentiated by social groups".

103. The Terms of Reference indicate three key areas of relevance. The first of these is coherence:

- "Coherence relates to the internal alignment and linkages between program components, and whether activities funded from different sources strategically complement each other".

104. The evaluation of the coherence of the programme will need to consider whether WLE CRP is strategically consistent with the main goals and System Level Outcomes presented in the CGIAR's Strategy and Results Framework. Since these have been set at a high level, it is considered likely that a very broad range of activities will be consistent with them. A second issue in this area concerns the extent to which Flagship priorities have been integrated across focal regions, so that research lessons learned can be tested in terms of their relative dependence on or independence from contextual factors. The evaluation will also need to assess whether all research activities are coherent within the WLE strategy and examine the extent to which some may be isolated thematically and/or geographically. In this respect the possibility of loss of coherence because of the need to conform to the priorities of bilateral funders will be explored.

105. The second important aspect of relevance is comparative advantage, focusing on whether the CGIAR's mandate of delivering international public goods gives WLE a comparative advantage relative to other international initiatives/research efforts, including the private sector; to partner country research institutions and to development agencies. The engagement of WLE with research partners will be an important aspect of this issue, which will be explored through contacts with both existing partners and with potential partners, particularly at regional and national level, which have

not participated in WLE activities. Important aspects of comparative advantage to be explored include: external perceptions of WLE quality of science, of the accessibility of its partnership processes and of the relevance of its activities both in academic and developmental terms..

106. The third aspect of relevance is that of Program Design. This will consider whether the program targets an appropriate set of Intermediate Development Outcomes (IDOs), the extent to which the CRP activities are adequately prioritised in relation to the resources available to contribute towards the outcomes and whether gender issues and capacity building are sufficiently incorporated into program design and targeting to ensure that these aspects are well-addressed.

4.3.2 Quality of Science

107. In evaluation terms, Quality of Science is a criterion specific to CGIAR which reflects its research mandate. The IEA has developed a comprehensive approach towards it which will form the basis of the approach taken in this evaluation. As discussed in Section 5.3(e), this CGIAR-wide approach will be tailored to WLE, to consider whether the research process reflects state of the art knowledge and approaches and will ensure novelty in all areas of research. The evaluation will also assess the quality of research outputs and whether WLE research, which is mostly context-specific, will deliver international public goods.

4.3.3 Effectiveness

108. A major focus of this evaluation will be on the effectiveness of WLE. This will be examined through an assessment of progress along the impact pathways specified for WLE, from outputs towards Intermediate Development Outcomes (IDOs). The likelihood of achievement of results relates to a number of factors including: duration of implementation to date and complexity of the results chain and Theory of Change. A further dimension concerns the extent to which design assumptions have held true during implementation. During this evaluative process, information on other (non-WLE) relevant interventions and processes will also be gathered and assessed to address issues of "contribution versus attribution" of results, which appear to be related to WLE activities.

109. Findings with regard to effectiveness will also address the issue of the extent to which supported research has been able to link outputs and outcomes to broader development processes, in order to generate effects, which are both "scaled up" and sustainable. This will include attention to the potential catalytic role of research findings and conclusions.

4.3.4 Impact

110. WLE must enable its research outputs to contribute towards development outcomes, which require both scaling up and continuity through time. The evaluation will assess WLE achievements on these dimensions, in order to focus on the impact and sustainability of its activities. This will require attention to the full range of research projects that have contributed, including those, which began under the CPWF and have been incorporated directly, or in modified form to the reformed WLE programme. In particular, the evaluation will consider whether the Theory of Change and defined impact pathways address the challenges associated with scaling up the research outputs (and especially innovative changes to production or resource management systems) generated by the program, both within and beyond the program's designated focal regions.

111. Another important aspect of impact concerns the possible extent of any unanticipated consequences of WLE activities, whether positive or negative. For example, by focussing on certain aspects of its research agenda, including its Theory of Change, the programme could be perceived to reduce attention to other potential approaches that could generate positive results.

4.3.5 Sustainability

112. As suggested in the Terms of Reference, WLE began in 2012 so that sustainability will primarily be assessed in terms of "the likelihood that actual and anticipated results will be sustained beyond the lifetime and presence of program intervention". However, Inception Phase work suggests that numerous WLE portfolio activities actually began life under the CPWF and may already have been running for some years, with varying amounts of reorientation to meet the requirements of WLE. This raises the possibility that some activities may already be assessable in terms of the actual rather than the likely sustainability of their outcomes.

113. The evaluation of sustainability will be based upon the Theories of Change at different levels; including individual research projects, programs, basin level and above, up to CGIAR-level. This will include the consideration of the extent to which benefits from past research have been sustained and whether WLE anticipated and was able to mitigate challenges of sustainability by clearly introducing the concept of continuity in program design and implementation.

4.4 Criterion for the Evaluation of Organizational Performance

4.4.1 Efficiency

114. Only one of the six core CGIAR Evaluation Criteria pertains to Organizational, rather than Programmatic Performance. This is efficiency, which includes the consideration of whether the governance and management arrangements and functions conform to the program partnership requirements of independence, accountability, transparency, legitimacy and fairness. The evaluation will examine whether WLE's institutional arrangements, management and governance mechanisms are efficient and cost-effective and whether WLE research management provide effective leadership, culture and ethos for advancing the program's objectives.

115. The concept of cost-effectiveness is likely to be difficult to specify for WLE. No concept of expected cost-effectiveness is presented in the Extension Proposal and, as noted in the Review of CRP Governance and Management61 CRPs have different degrees and patterns of partnership, which can be expected to have varying transaction costs. This being so, even internal "benchmarking" across the CRPs is not expected to generate definitive results. One area in which it may be possible to explore to draw some conclusions concerns the Open Call for Proposals under Flagship 1, where issues of the relative cost-effectiveness of different research collaborations may be susceptible to analysis.

[61] See RQ 7.7 Transaction Costs, P66.

4.5 Performance on cross-cutting issues

116. The Inception Missions and preliminary documentary analysis raised a number of questions that cut across the six evaluation criteria in various ways. These are initially listed here to ensure that they receive attention during the course of the evaluation, so that they can appropriately inform the final analyses within and possibly in addition to the six evaluation criteria.

4.5.1 Partnerships

117. WLE is a large-scale CRP, which means that the concept and practice of partnership need detailed attention. The evaluation will critically examine whether the structure of management of partnerships is efficient and effective and whether there are adequate systems for communicating with partners and other stakeholders. The nature and level of participation of different partners will also be examined.

4.5.2 Gender, Poverty and Institutions

118. Gender, associated with poverty and institutions, is a major emphasis of all of the current CGIAR CRPs and is a stated crosscutting theme in WLE. Under the 2014 Gender Strategy, projects should assess the potential gender dimensions of their activities and, as necessary, incorporate these into their design and Plan of Action. The evaluation will examine the specific ways that gender has been operationalised within the WLE portfolio and consider whether the approach should be applied uniformly across all types of project.

4.5.3 Capacity Strengthening

119. As identified in the WLE Extension Proposal[62], capacity strengthening is an important aspect of the potential for scaling up and ensuring sustainability of the results from WLE. The evaluation will consider the extent to which the design of Flagships, cross-cutting themes and projects have incorporated capacity strengthening, as well as the adequacy of resources allocated, results and potential sustainability.

4.6 Inter-relationships between Evaluation Criteria, Strategic Questions and Cross-Cutting Issues

120. The inter-relationships between different issues to be addressed are shown in Table 5 below. It can be seen that the issues, which emerged from inception discussions as important topics for the evaluation to assess overlap with or complement those already identified through the standard CGIAR research criteria. It should be noted that Strategic Questions in the area of governance and management are important for the assessment not only of efficiency, but also because they contribute towards effectiveness.

[62] Page 15, under section WLE Partnerships

Table 4: Inter-relationships between Evaluation Criteria, Strategic Questions and Cross-Cutting Issues

	Relevance	Quality of Science	Effectiveness	Impact	Sustaina-bility	*Efficiency*[63]
Strategic Questions						
Conceptual Framework	*	*				
Impact Pathways			*	*	*	
Quality of Science	*	*	*			
Partnership Strategy	*	*	*			
Management and Governance			*			*
Balance Outcomes/Impacts			*	*	*	
Cross Cutting Issues						
Partnerships	*	*	*			
Gender, Poverty, Institutions	*		*		*	
Capacity Development			*	*	*	

[63] Headings in italics relate to organizational performance issues, while all others primarily refer to programme performance.

5. EVALUATION APPROACH AND METHODS

5.1 Approach

121. The evaluation will have both summative and formative approaches, assessing achievements to date as well as design and processes established for future delivery of results under the reform agenda. It will therefore have both accountability and lesson learning elements, which will be inter-related. In order to ensure a consistent approach to both the summative and formative intentions, the evaluation will adopt a Theory of Change (ToC) approach. Achievements of completed ("legacy") projects will be assessed in terms of their original ToC, whether within CPWF or another programme and then updated by a rapid comparison with the current WLE Theory.

122. This approach will encompass all levels, from the contribution of WLE to CGIAR System Level Outcomes to the intentions and achievements of selected individual research activities. Historically, various versions of a Theory of Change for WLE as a whole have been presented as the conceptual underpinning of the program has developed. For this Inception Report, the evaluation team has utilised the summary Theory of Change included as Figure 1 in the draft WLE Annual Report for 2014. The underlying Theory of Change according to this document is presented in Figure 5 below[64].

[64] Source: CGIAR Research Programme on Water, Land and Ecosystems (WLE) 2014. Ecosystem Services and Resilience Framework. Figure 6.

IDO	SUB-IDO	ACTIVITY CLUSTER	FLAGSHIP
Enabling environment improved	Conducive agricultural policy environment, as evidenced by monitoring of core indicators	Economic solutions and incentives	Flagship 3: Regenerating Degraded Agricultural Ecosystems (RDE)
National partners and beneficiaries enabled	Increased capacity for innovations in partner development organizations	Business opportunities in nutrient, water and energy recovery and reuse	Flagship 4: Recovering and Reusing Resources in Urbanized Ecosystems (RRR)
Enhanced benefits from ecosystem goods and services	Agricultural systems diversified and intensified in ways that protect soils and water	Focal Regions (Nile, Volta) and Inovation Fund	Flagship 1: Integrating Ecosystem Solutions into Policy and Investments (IES)
	More productive and equitable management of natural resources	Revitalizing irrigation systems	Flagship 2: Sustainably Increasing Land and Water Productivity (LWP)
		Ecosystem services assessment, trade-offs, and equitable planning	Flagship 3: Regenerating Degraded Agricultural Ecosystems (RDE)
		Resource allocation and sharing of benefits for all	Flagship 5: Managing Resource Variability and Competing Use (MRV)
		Intervention Decision Analysis and Risk Assessment	Core Theme: Decision Analysis and Information (DAI)
		Water and energy for food	Flagship 5: Managing Resource Variability and Competing Use (MRV)
Equity and inclusion achieved	Gender-equitable control of productive assets and resources.	Focal Regions (Ganges)	Flagship 1: Integrating Ecosystem Solutions into Policy and Investments (IES)
Improved food security	Reduced biological and chemical hazards in food and water	Safe waste water reuse	Flagship 4: Recovering and Reusing Resources in Urbanized Ecosystems (RRR)
More sustainably managed agro-ecosystems	Increased resilience of agro-ecosystems and communities especially those including smallholders	Focal Regions (Mekong)	Flagship 1: Integrating Ecosystem Solutions into Policy and Investments (IES)
		Agricultural water and land management	Flagship 2: Sustainably Increasing Land and Water Productivity (LWP)
	Enhanced adaptive capacity to climate risks	Managing water resources variability and rethinking storage	Flagship 5: Managing Resource Variability and Competing Use (MRV)
Natural Capital enhanced and protected especially from climate change	Land and water degradation minimized and reversed.	Landscape restoration interventions	Flagship 3: Regenerating Degraded Agricultural Ecosystems (RDE)
		Land and Water Information Systems	Core Theme: Decision Analysis and Information (DAI)

Figure 5: Overview Theory of Change for the WLE Research Program

123. It is understood that most recent research projects have been designed to deliver according to this Theory of Change approach. Earlier activities, which have since been "mapped" to WLE and are therefore included in the overall portfolio, were not. However, as part of the Annual Work Plan process, most (if not all) have been "retro-fitted" to meet the current approach.

124. As part of the process of using the WLE Theory of Change, the evaluation team will assess the extent to which the projected outcomes will be susceptible to evidence-based analysis. This assessment will relate the potential contribution of WLE to those of other stakeholders attempting to address the same (or overlapping) issues it covers, in order to ensure that the ToC is realistic and can be verified over time. Other important factors with the potential to affect results, such as risks identified and key assumptions will also be determined and explored. The evaluation will also explore the extent to which the current Theory of Change is known, understood and used by a broad range of stakeholders within the WLE system and whether it has been embraced by external partners, including in Government.

125. The evidence necessary to assess progress along the intended WLE results chains will be gathered through a mixed method approach, using quantitative and qualitative evaluation methods and overall triangulation of findings, as discussed below. This approach will also be used to assess other criteria and key questions concerning WLE, such as relevance and research efficiency.

5.2 Methodology

126. The overall methodology will draw on a variety of primary and secondary data collection methods. Some of these, such as portfolio analysis and social surveys, look across the portfolio to identify overall characteristics and trends. Others, such as case studies and field missions take specific issues or sets of activities and explore them in depth. The two approaches (across portfolio and in-depth) are inter-related. Portfolio wide trends will signal issues that could be explored through in depth approaches, while the latter will suggest processes and possible cause and effect chains for verification across parts of the portfolio (e.g., flagships) or WLE as a whole. Such chains may provide specificity to the over-arching ToC contained in the ESR Framework document or may add new linkages to it.

5.2.1 Collection and Analysis of Existing (Secondary) Sources of Information

127. The main existing data sets for review and analysis are presented below:

Portfolio data

128. There is a broad range of material available within the WLE system, which can be used to assess the distribution of activities on a variety of dimensions, including:

- WLE phase (e.g. "legacy" from CPWF or other program, WLE , WLE extension proposal)
- Geographic distribution (including regions and river basins)
- Scientific discipline (e.g. soils, irrigated and rainfed agriculture, land and water management)
- Activity Scale (e.g. budget, geographical area covered (where applicable), duration)
- Funding sources (Windows 1, 2 and 3/bilateral)

- Implementing partners.

129. Analysis of this portfolio data will play two roles in the evaluation. On the one hand, it will supply information necessary to ensure appropriate selection or sampling of activities for more detailed examination through in depth methods. On the other, it will provide a substantial body of independent evidence on several dimensions of the distribution of the portfolio.

Document Review

A broad variety of documents will be reviewed, using analysis templates to ensure consistency of evidence extracted. These will include documents covering:

- CGIAR strategy and other policy documents
- WLE programming
- WLE financial reporting
- Selected project proposals
- Selected project reporting
- Thematic, program and project reviews and evaluations.

130. Documentary review will be utilised both for portfolio-wide assessment (e.g., through aggregation of reviews of individual project documents) and as part of in-depth analysis (e.g., documents informing case studies of regional or thematic programs). An assessment will also be made through the assembly of expert opinion on the ESR Framework, based on its 2014 document. In order to assess linkages and collaboration with other CRPs, frequency and minuted content of meetings and extent to which actions have ensued will be considered. The latter approach will begin with the "linkage to other CRPs" listed for each project in its annual Activity Plan and will explore the extent to which these indicate actual linking activities or simply potential areas of common interest.

Synthesis of Completed Evaluations

131. In this evaluation, evaluation synthesis refers to an approach, which integrates and summarizes the findings from the available body of evaluative evidence relevant to WLE[65]. There are several completed assessments, reviews and evaluations of aspects of the work of CGIAR, WLE and IWMI, which may provide valuable inputs and evidence to this evaluation. Those already identified include:

- 2013 IWMI Center Commissioned External Review (CCER) of Science Quality and Relevance
- 2013 Independent Evaluation of the IFAD-funded network for Improved Management of Agricultural Water in Eastern and Southern Africa (IMAWESA)
- 2013 Reviews of EC-Funded CGIAR Projects, IFAD/EU support to the Challenge Program on Water and Food, Volta Basin Development Challenge Project (VBDC)

[65] The available evidence is not appropriate for the use of statistical meta-analysis.

- 2013-2014 Forward-Looking Review of the Challenge Program for Water and Food (CPWF)
- 2014 Review of CGIAR Research Programs Governance and Management. Final Report. Independent Evaluation Arrangement.
- 2014 IWMI-led impact studies on land reform, political drivers, and agricultural and environmental effects of water pumpset electrification in West Bengal
- 2014 CGIAR Independent Science and Partnership Council (ISPC) Standing Panel on Impact Assessment (SPIA) "Evaluation of CGIAR Centers' Impact Assessment Work on Irrigation and Water Management Research."

132. These documents will be carefully reviewed to draw out key evidence, which may be useful for the current evaluation. Findings and recommendations may also be used, where detailed assessment by the evaluation team indicates that they are adequately supported by the evidence provided.

WLE-managed Databases

133. The evaluation will draw on information contained in project, research and financial management databases of WLE and its participating centres. Wherever possible, the team will obtain direct connection to these databases, in order to allow for timely access and to avoid burdening the centres' information system managers with repeated requests.

Coherence analysis of the WLE programme

134. The analysis will consist of a desk review of WLE projects contained in 2015 portfolio. It will draw on project documentation and project level Theory of Change/impact pathways/log frames (if available). A template will be developed which will include rating scales as well as short narrative assessments by team members.

135. It will assess the relevance and coherence of activities with regard to WLE objectives; identify gaps; examine to what extent bilateral and W3 funded projects' objectives match Flagship-level objectives and WLE overall program objectives; and verify whether cross-cutting issues have been appropriately considered in the projects.

5.2.2 Methods for Collection and Analysis of Original (Primary) Data

Semi-structured interviews[66]

136. These are conducted on the basis of a set of common issues that must be addressed in each interview, whilst also allowing respondents to introduce their own perspectives and additional themes. Analysis will be conducted on the basis of templates to ensure consistency, whilst allowing opportunity to raise additional issues to those specified in advance.

[66] All research methods involving respondents will meet confidentiality requirements established under UNEG Norms and Standards, Guidelines and Ethical principles.

137. Semi-structured interviews will be a core method of the evaluation, used with all categories of stakeholder, either in person or by telephone.

138. The evaluation team will draw on the experience and understandings of WLE researchers and of key partner researchers to discuss and understand the backgrounds to, and progress in, the various research activities of the WLE. The team will conduct interviews to obtain views on various aspects, including the following: the relevance and quality of research, comparative advantage of WLE in the research area, products of the research, and the likely impacts of research, as well as the quality of and management of research partnerships. The evaluation team will conduct visits to selected countries as well as to the participating centre's offices, with two team members visiting each site wherever possible. Detailed interviews will be conducted as part of the Centre visits and field visits. Interviews will also be conducted with other stakeholders, both directly and through virtual means where appropriate. Interviews will cover representatives from a wide range of different stakeholder groups. Detailed notes of each interview will be taken.

Group Discussions and Workshops

139. These will be used to explore issues and opinions on aspects of WLE context and performance, which can best be explored through the interplay of varying perspectives and where confidentiality is not regarded as essential. Group discussions are likely to be used in such circumstances as assessment by implementing partner institutions, or project implementing offices of their experience and achievements under WLE. A specific type of group discussion, which could make a valuable contribution is the use of mini-workshops to present emerging issues and findings to stakeholders and obtain their feedback, including additional data sources, which may provide verification or alternative perspectives.

Social Surveys

140. Social surveys will be used to explore issues where reaching the maximum range of respondents is more important than the depth and flexibility of responses. They present the opportunity for quantification of defined elements of the program. Surveys will be conducted electronically, to ensure that the broadest range of potential respondents is reached. Two surveys are envisaged:

- Researcher survey: To get the views of a broad range of internal stakeholders in this evaluation on issues around management effectiveness and efficiency, quality of science, gender, capacity development, etc.
- Partner survey: To get Partner institutions' perspectives on participation in planning processes and their feedback on the collaboration with the program.

Expert knowledge of team members

141. The areas of expertise of the team members are described section 6.1 below. Drawing on its own expert knowledge, the evaluation team will map and interview recognized peer researchers and institutions in all research domains of WLE to tap into expert knowledge outside of the evaluation team where required. It will be ensured that external expertise covers a broad range of perspectives (from different types of institutions and different geographic zones).

Evaluation of Quality of Science of Research Activities

Framework

142. The framework for evaluating Quality of Science has four dimensions: (a) processes for assuring quality; (b) input quality; (c) output quality; and (d) perceptions of quality.

a. Quality Assurance Processes

143. The evaluation will determine whether WLE management has developed science quality assurance processes, which are used consistently across the different components of the programme and will suggest where these could be improved.

144. It will look at all internal processes that are explicitly aimed at assuring quality. These include:

- Internal peer processes (e.g. internal reviews of publications prior to journal submissions or the internal review of research proposals) and how they function
- Use of external evaluations/reviews as a management tool
- Role of science quality in staff performance assessment (IWMI and to the extent possible for other participating Centers) and to what extent it is used for enhancing quality and as a talent management process
- Incentives for assuring and stimulating high quality.

b. Inputs to Science Quality

145. This assessment will be done at Flagship project level. The assessment aims at identifying variability within the CRP and noting areas of excellence and identifying areas where improvements could be made. The evaluation will look at quality of CRP team leaders and scientists, research and resources.

- Team leaders include all Principal Investigators, Flagship and Cluster Leaders, and Focal Points. For these lead scientists, information about their scientific track record will be assessed
- The adequacy of research support and resources
- Quality of data management at project, flagship and full programme levels
- Research conducted and specific methodologies used for sampled projects
- ISPC comments on science quality will be taken into account (original proposal and extension proposal).

c. Output quality

146. The evaluation will look at both the quantity and the quality of outputs from the main participating Centers. This analysis will include:

- Qualitative assessment of a sample of key publications offered by WLE scientists
- Quantitative assessment (bibliometric analysis) of publications.

147. The nature of WLE research is largely multidisciplinary and its outputs are generally more diverse than those in strict disciplinary sciences. Thus, the evaluation of research outputs should consider not only the scientific publications in JCR journals, but publications in other type of journals as well as books and book chapters and other media such as policy papers and media targeted at disseminating results to wider stakeholder audiences. Expert opinions are considered of substantial importance here relative to routine bibliometric analysis.

d. Perceptions of quality

148. The evaluation will draw on perceptions of quality, particularly by thematic areas and by participating Center, on issues such as overall science quality performance, excellence and ambition, critical mass and comparison with other organizations.

Scope of Quality of Science analysis

149. The evaluation will assess the quality of science conducted in the WLE CRP at two levels: the program as a whole and Flagship level. The science and evidence generated by the research, together with new tools, technologies, and practices developed will be assessed for each of the five Flagships.

150. The assessment of science quality in the five flagships will be complemented with similar efforts to evaluate the outputs and outcomes from the three core themes, namely, Ecosystem Services and Resilience (ESR), Gender, Poverty and Institutions (GPI) and Decision Analysis and Information Systems (DAI). The WLE CRP has been positioned to test the overarching hypothesis that sustainable intensification (SI) is better addressed through an Ecosystem Services optimization approach (which may incorporate technological innovation), than through a technology-led intensification approach supported by environmental mitigation (or enhancement). Thus, the evaluation team will assess to what extent the programme has been appropriately designed and implemented to allow comparison between these alternatives. Indicators for this assessment are expected to include novel experimental methods, the development and testing of appropriate (effective and useful) metrics for early, medium and long-term indicators of system performance, and explicit strategies for integrating results from disparate projects within and across flagships.

151. The evaluation of these issues will look at the quality of science in relation to appropriateness of the methods used for data collection and analysis, including the effectiveness of participatory approaches where relevant. The methodological frameworks used should show an understanding of the character of WLE, which is to produce research that generates results that are not just valid in scientific terms but that are also able to promote concrete changes to policies and practices to enhance sustainable productivity improvements in the agricultural systems researched. This aspect will focus on the appropriateness of the research design to feed into policies, rather than on implementation aspects, which relate to development effectiveness.

Case Studies

152. Case studies combine a range of methods, including desk and field-based to gather different types of evidence in order to develop an in-depth understanding of specific issues. In research terms, case studies have high internal validity (reliability concerning the specific case studied), but need to be supported by other methods, such as surveys and broader documentary research, to attain external validity (applicability beyond the specific case). The WLE evaluation will therefore conduct a range of case studies at different levels and relate their findings to those from its other, more aggregate and cross-cutting methods. These were selected on the basis of documentary analysis and through discussions with WLE management and staff during inception missions to IWMI and Rome, during which a broad range of stakeholders gave specific suggestions for the most appropriate countries to host field missions, which will play an important role in data gathering for the cases.

Country/Regional Case Studies

153. The revised Extension Proposal for WLE has emphasised that the programme is primarily seeking to contribute towards impacts at two levels; firstly national and secondly, regional. In order to assess results already achieved and progress towards outcomes and, eventually, impacts the evaluation will therefore focus on the four WLE regions. Within these, it will select a number of countries for missions, which will form the basis of case studies at country or regional level. These studies will assess activities, processes and achievements at country and regional level and will be internal documents of the evaluation, contributing to its overall body of evidence.

154. Geographically, the case studies will be spread across the four WLE Regions and will cover the following countries:

- Nile Region (Ethiopia and Kenya)
- Ganges Region (India and Bangladesh)
- Greater Mekong Region (Thailand, Cambodia and Laos)
- Volta Region (Ghana).

155. The Greater Mekong region has received slightly great coverage in terms of number of countries for two reasons. Firstly, it has the greatest concentration of activities generated by the Flagship 1 Open Call, which the evaluation team regards, on the basis of its discussions with WLE stakeholders during the Inception Phase, as one of the major innovations of WLE, therefore warranting particular attention. Secondly, a specific thematic Case Study will be conducted in this region on a major research area with important policy implications, which commenced under CPWF and is continuing strongly under WLE. This concerns the inter-relationship between water governance, hydropower and ecosystem services management in the region (see below). In order to develop a sufficiently detailed understanding of this complex programme of activities, the evaluation will visit three participating countries, namely Thailand, Cambodia and Laos. It will assess activities in these countries from two perspectives: firstly, that of national level results (where these are targeted) and progress towards impacts and secondly, the contribution towards regional progress concerning water governance, hydropower and ecosystem services management. Key dimensions of the country case study approaches to Ghana, Ethiopia and Kenya will be specified on the basis of a review of the first generation of country missions; which will be conducted by the evaluation team in Sri Lanka in mid-May 2015.

Use of Country/Regional Level Case Studies

156. The Country/Regional Case Studies will produce concise data sets, which will be used by the evaluation team as a key source of detailed information on the following areas:

- Progress of WLE activities in country (including regional and global projects with national level activities)
- Range and effectiveness of partnerships
- Key research results from legacy projects and their follow-up through WLE
- Strategies, activities and progress to influence national and/or regional policy makers
- Application of the ESR framework and results achieved or anticipated
- Application of the Gender Strategy and results achieved or anticipated
- Awareness and perceptions concerning WLE among other stakeholders and relevant experts in the country.

157. The selection of respondents will be based on an iterative process, drawing on the following sources:

- Analysis of key programme and research documents
- Identification of key stakeholders from distribution of WLE staff responsibilities
- Discussions with WLE managers covering various activities in the country concerned
- Follow up of additional contacts emerging from initial discussions and interviews
- Call backs (telephone/Skype) on respondents for clarification or additional detail.

Thematic Case Study: Water Governance, Hydropower and Ecosystem Services Management in the Mekong Region

158. The inter-relationship between water governance, hydropower development and ecosystem services management has been a major area of research and debate within the Mekong Region. Issues surrounding this relationship were a key component of the CPWF programme in the Mekong (addressed by 14 of its 19 projects) and continue to be a major focus in many of its current WLE projects. Currently, 10 out of the 14 new WLE projects in the Mekong region consider this inter-relationship in one way or another. The issues raised are of great concern to governments in the region, with each of the five lower Mekong countries having hydropower as a key focus of their power development plans and a number of specific policy initiatives in the area. The inter-governmental organization, the Mekong River Commission, has sustainable hydropower as a focal programme and has initiated a series of research projects in this area. International organizations such as the Asian Development Bank, The World Bank, DFAT (covering areas formerly addressed by AusAID), and NGOs such as WWF and Nature Conservancy all have activities in this field.

159. There has been a substantial debate in particular on the wisdom or otherwise of developing dams on the Mekong River mainstream; but there are also concerns over hydropower development

on tributaries and in other river basins. This debate has focused on the most appropriate balance between meeting rapidly expanding demand for electricity, the maintenance of ecosystems integrity and the availability of key ecosystems services such as fish production. It is widely recognized that this debate faces a challenge of incomplete information, limited capacities in key institutions and the scarcity of widely-accepted success stories of innovative approaches to water governance. The attention paid to these issues under WLE will therefore be a potentially important contribution to knowledge in a key area for sustainable regional development.

160. The case study in this evaluation will consider to what extent the approach being adopted under WLE is on track to provide this contribution. Some of the major issues it will consider include:

- Whether the specific issues being researched are ones that the wider community considers to be key knowledge gaps.
- The nature of the involvement of WLE in the wider regional discourse on these issues and the specific characteristics of the uptake and impact pathways of the projects, especially in relation to governmental power sector planning systems.
- The nature of the partnerships in the research projects and in the regional approach as a whole in the Mekong focal region.
- The inherent quality and feasibility of the research projects in the WLE programme, especially given the limited time available for the existing portfolio of projects, currently financed up to the end of 2016.

161. The case study will be undertaken through extensive documentary review (there is a large number of documents on these issues in the region, including ones that specifically identify knowledge gaps and key areas for institutional and policy development) and through stakeholder consultations (both with research partners and with uptake target stakeholders, including governments), particularly through targeted country missions, but also through telephone or Skype interviews.

Key Stakeholders within Mekong Countries

162. There are numerous key stakeholders for consultation during the case study, including partners directly involved in research projects as well as institutions likely to be engaged in the uptake pathway process. Discussions with these stakeholders will address the perceived standard, relevance and utility of research activities, the views of participating researchers on research management and views of internal and external stakeholders on the overall WLE approach.

Use of Thematic Case Study

163. The Mekong Thematic Case Study will be used by the evaluation team to provide detailed information concerning the inter-relationship between water governance, hydropower development and ecosystem services management in a region, where this is a major policy area, to which WLE expects to contribute. It may also supply an Annex of the Final Report of the evaluation.

Thematic Case Study of the National Policy Influence of the WLE IWMI – TATA Partnership

164. The IWMI-TATA Water Policy Research Program is a collaborative initiative with the Sir Ratan TATA Trust (SRTT). The partnership emerged from a shared concern regarding the growing water stress in different parts of India, it has been active across the CPWF – WLE transition, and it is considered an important activity in WLE. In particular, it is regarded as a strong example of research, which has been successfully pursued into the field of policy advice, leading to impacts. The case study will explore the results of the research "legacy" from CPWF and the effects of the new WLE approach, including the ESR Framework, on the partnership and its activities. Its key focus will be on the extent to which the research has contributed to the formulation and implementation of policies intended to reduce water stress and on evidence available to assess its impacts.

165. The Case Study will include:

- Desk Review of the extensive documentation concerning the partnership and its activities from start-up to current
- Review of information generated by the M&E and reporting system
- Inclusion of partnership in country mission to India: to include interviews with key informants in IMWI and TATA and other key stakeholders, based on guidelines prepared after documentary analysis of the partnership
- Follow up interviews with additional stakeholders identified during the country mission.

Use of the Case Study

166. The IMWI-TATA Case Study will be used by the evaluation team to provide detailed information concerning the uptake of research findings by policy makers, which is a major policy area, to which WLE expects to contribute. It may also supply an Annex of the Final Report of the evaluation.

Field Missions

167. Field missions will be conducted to selected locations in focal river basins, regions and possibly other locations where there are concentrations of WLE activities. These missions will normally be conducted by two-person teams. They will build on portfolio and documentary analysis covering the mission location and will use semi-structured interviews and group discussions to gather data, explore opinions and perspectives, and verify emerging findings.

168. The following field missions are envisaged:

- IWMI Headquarters. IMWI stakeholders
- Cambodia, Laos, Thailand *(Greater Mekong Region)*
- India, Nepal (mission cancelled) *(Ganges Region)*
- Ethiopia, Kenya (*Nile and East Africa Region)*
- Ghana - *(Volta and Niger Region)* .

5.3 Selection of methods

169. A preliminary overview of the application and mix of methods is presented in the Evaluation Matrix supplied as Annex 1. Whilst some specific issues or areas of interest may require only one method, most will call for several in sequence; such as initial portfolio analysis, documentary review, field missions involving individual interviews and group discussions, additional documentary analysis, workshop (or email exchanges, phone calls, etc.) to verify or modify evidence and findings.

5.3.1 Overall Analysis and Triangulation of Findings

170. Overall analysis will involve compiling, comparing and cross-checking (triangulating) the findings from the different lines of inquiry with each other (e.g., document review, interviews, group discussions, surveys and meta-evaluation) to address the review questions. Those findings regarded as verified, substantive and important to the evaluation will be analysed within the cause and effect chains contained in different levels of Theory of Change (e.g. CGIAR, WLE, Regional and Project level theories), enabling the team to arrive at conclusions and recommendations about the concept, design and implementation of WLE and how these might be improved. An additional triangulation approach will compare the evidence provided by stakeholders in different positions within the overall CGIAR and WLE systems. Here variations between different categories of stakeholder may be valid, particularly with regard to "opinion" questions; for example concerning the effects of CGIAR reform processes. In such cases, the purpose of triangulation is not to move towards one verified set of evidence, but rather to explore perceptual variation, which may have fundamental effects on implementation and on the interpretation of results.

5.3.2 Examples of Analysis Using Triangulation

Gender in the WLE Programme

171. The incorporation of gender into all activities is one of the underlying principles of WLE, which is now supported by a Gender Strategy, in-house expertise and budgetary allocations. This analysis will explore the processes involved in this incorporation and the extent and effectiveness of the gender approach as implemented across the portfolio. The analytical approach will include:

- Desk Review of Documents concerning gender and WLE activities from start-up to current
- Review of information generated on gender by the M&E and reporting system
- Inclusion in Country missions: topic to be addressed in interviews with key informants from WLE, donors, regional and national institutions and other key stakeholders
- Follow up interviews with additional stakeholders identified by the above methods
- Inclusion in surveys of staff and partners.

5.3.3 Analysis of Governance and Management

172. The program's governance (e.g. oversight, stakeholder participation) and management (planning, reporting, finance and human resource management, the quality and co-operation of leadership, the interactions between centres) will be reviewed. This will involve interaction with

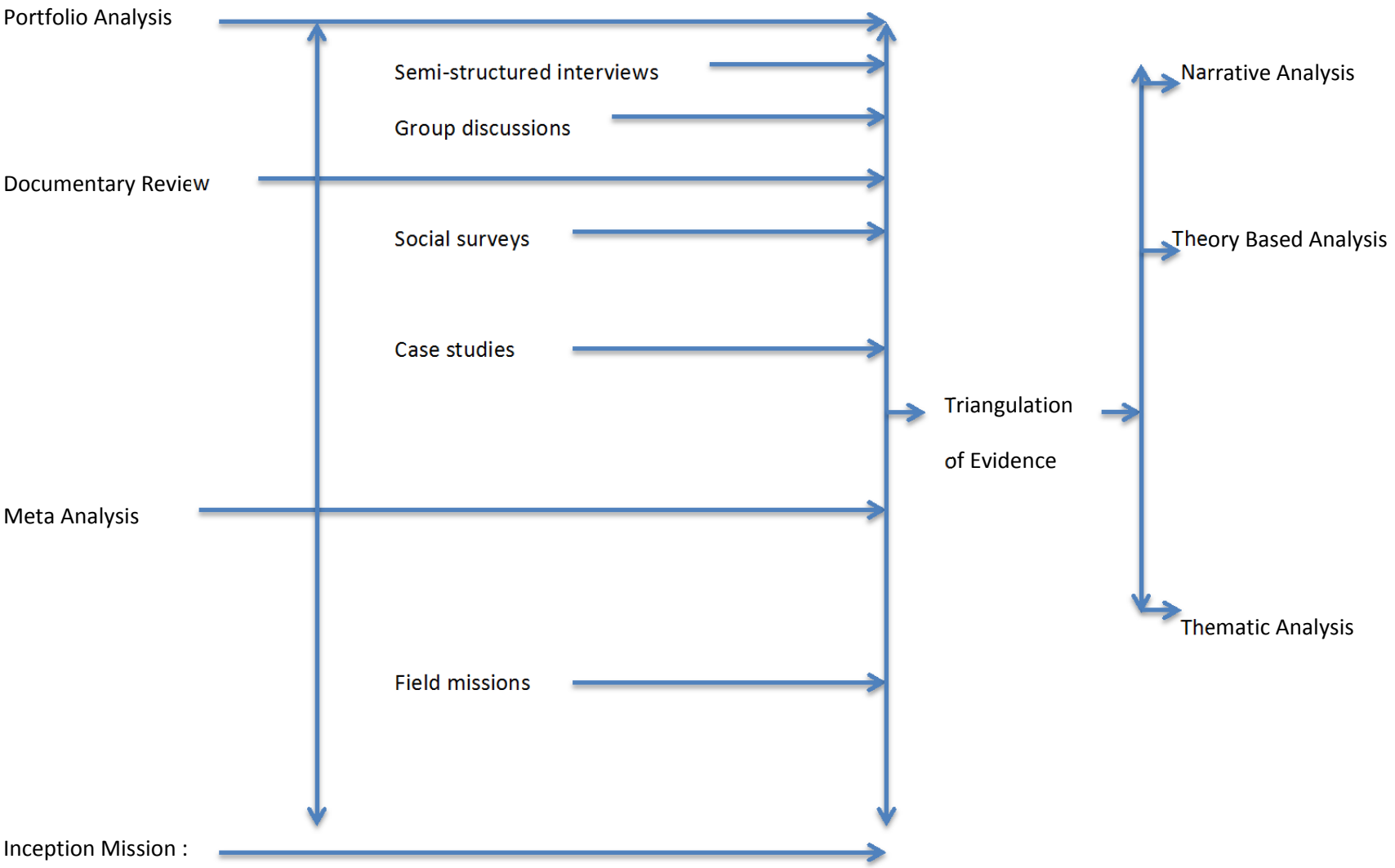
centre directors and staff, with partners and a range of other stakeholders. Evaluative methods will include:

- Analysis of current G&M structures and processes (including ToRs, interrelationships, reporting lines)
- Desk review of documents including Management Committee and Steering Committee meeting documentations, IWMI Board of Trustees minutes, programme proposals and annual WLE reports
- Review of M&E outputs
- Visits to Centres for interview with management and researchers and observation of processes.

5.3.4 Sequencing and Contribution of Methods

173. Figure 5 below provides an overview of the sequencing and contribution of the methods and approaches described above. It should be noted from the figure that each individual method both provides direct evidence and contributes towards other methods. Thus there will be direct evidence and analysis from documentary reviews, but they will also provide inputs into the content of subsequent field missions and surveys. Further, the notional sequencing of activities and methods shown in Figure 5 does not indicate discrete chronological phases. For example, the portfolio and document reviews will be updated as additional information becomes available.

Figure 5: Overview of Sequencing and Contribution of Methods



6. ORGANIZATION AND TIMING OF THE EVALUATION

6.1 Team Composition

174. A multidisciplinary team covering a wide range of disciplines, areas of expertise and experience will undertake the evaluation. The core evaluation team is comprised of five team members. The Evaluation Team Leader has broad experience in leading complex evaluations at the international level, and is supported by a team of specialists who will have between them extensive and proven experience at a variety of different levels, working for international and development agencies, on issues, programmes and policies related to WLE's activities.

Table 6 below summarises the areas of expertise of each team member.

Table 5: areas of expertise of each team member.

Name	Nationality	Area of Expertise	Bio
David Todd	UK	• Evaluation Methodology and Management • Theory-Based Impact Evaluation • Environmental Evaluation • Poverty and Gender	Consultant. Formerly, Senior Evaluation Specialist, Global Environment Facility; Social Development Adviser, DFID; Head of Social Planning, Environment Division, WS Atkins Consultants, UK; Senior Lecturer, School of Environmental Studies, University of Zambia.
Sylvie M. Brouder	USA	• Soils • Crops • Agronomy • Agroecology • Ecological Sciences	Professor of Agronomy, Wickersham Chair of Excellence in Agricultural Research, Department of Agronomy: Crops, Soils and Environmental Sciences, Purdue University, USA.
Charles Batchelor	UK	• Hydrology and Water Resources Management • Irrigated Agriculture • Rainfed Agriculture, Rangeland Management and Forestry • Urban Water Management	Consultant. Former Principal Scientist, Institute of Hydrology, Wallingford, UK.

		• Water Supply and Sanitation • Software Development • Advisory and Review Studies	
Elias Fereres	Spain	• Agricultural Engineering • Irrigation Science • Surface Water Management • Ecology • Sustainable Agriculture • Crop Ecology	Professor of Agronomy in the School of Agricultural and Forestry Engineering, University of Córdoba, Spain, and Researcher at the Institute of Sustainable Agriculture, Scientific Research Council of Spain (IAS-CSIC)
John Soussan	UK	• Ecosystems Services Assessment • Payment for Ecosystems Services • Sustainable Livelihoods Development, • Water Management • Coastal Zone Development • Poverty Reduction • Mainstreaming of Environmental Issues into National Development Policies	Consultant. Formerly Professor of Environment, University of York, UK and Senior Research Fellow, Stockholm Environment Institute; and Professor and Director of the Centre for Water Policy and Development, University of Leeds, UK.

175. It is possible that some additional expert resources will be added, possibly through the vehicle of an Expert Panel, as the evaluation develops.

6.2 Team Roles and Responsibilities

176. The first meeting of the Evaluation Team in Rome agreed the following preliminary distribution of roles and responsibilities among members.

Table 6: WLE Evaluation Team

Team Member	Responsibilities	Field Missions
David Todd	Team Leader. Lead, ESR Framework. Joint-Lead, GPI Theme.	Cambodia, Laos, Thailand
Elias Fereres	Lead, Flagship 2, LWP. Joint-Lead, Flagship 5, MRV, Joint-Lead Case Study of Mekong River Basin.	Cambodia, Laos, Thailand
Charles Batchelor	Lead, Flagship 4, RRR. Lead, DAI Theme. Joint-Lead Case Study of IMWI-TATA partnership.	India, Nepal, (mission cancelled) Ghana
Sylvie Brouder	Lead, Flagship 3, RDE. Joint-Lead, Flagship 5, MRV. Joint-Lead Case Study of IMWI-TATA partnership.	India, Ethiopia, Kenya
John Soussan	Lead, Flagship 1, IES. Joint-Lead, GPI Theme. Joint-Lead Case Study of Mekong River Basin.	Cambodia, Laos, Thailand, Ethiopia, Kenya

177. The initial field missions (Cambodia, Laos, Thailand and India) are planned to take place between about 1 and 11 May 2015. The evaluation team will then meet in Sri Lanka for discussions within the team and with IMWI stakeholders from approximately 12 to 17 May, after which a second set of field missions (Ethiopia, Kenya, Ghana) will be undertaken in June 2015. The exact dates of missions will be finalised in collaboration with participating stakeholders.

6.3 Evaluation governance/roles and responsibilities

178. A Team of Independent External Experts will conduct the Evaluation. The Team Leader has final responsibility for the evaluation report and all findings and recommendations, subject to adherence to CGIAR Evaluation Standards. The Evaluation Team is responsible for submitting the deliverables as outlined in more detail below.

179. The IEA is responsible for planning, designing, initiating, and managing the evaluation. The IEA will also be responsible for the quality assurance of the evaluation process and outputs, and for the dissemination of the results. The IEA will take an active role in the preparatory phase of the evaluation by collecting background data and information and by carrying out preliminary analysis on WLE. An Evaluation Manager, supported by an Evaluation Analyst, will provide support to the team throughout the evaluation.

180. WLE management plays a key role in helping provide for the evaluation team's informational needs. It provides documentation and data, information on all WLE activities, access to staff for engagement with the evaluators, and information on partners and stakeholders. It facilitates arrangement of site visits and appointments within the lead Centre and other stakeholders. WLE management is also responsible for giving factual feedback on the Draft Report and for preparing the Management Response to the Final Report. It assists in dissemination of the report and its findings and lessons and it acts on the accepted recommendations. While the evaluation is coordinated with WLE management, IWMI as the lead Centre is also a key stakeholder in the evaluation. The Centre and its leadership and board are expected to make themselves available for consultations during the evaluation process.

181. A Reference Group has been set-up to work with the IEA Evaluation Manager and Team Leader to ensure good communication with, learning by, and appropriate accountability to primary evaluation clients and key stakeholders, while preserving the independence of evaluators. The Reference Group provides views and inputs at key decision stages in the evaluation design and implementation process, including for the Terms of Reference, the Inception Report and the Draft Report. The Reference Group may also play an important role in leading evaluators to key people and documents. The reference group consists of ten representatives, listed in the Table 8 below.

Table 7: Reference Group Members

NAME	POSITION	ORG
Johan Rockstrom	Chair of WLE Steering Committee	Stockholm Resilience Centre
Charlotte de Fraiture	Member of WLE Steering Committee	UNESCO-IHE Institute for Water Education
John Williams	Member of WLE Steering Committee	Natural Resources Commission, Australia.
Letitia Obeng	IWMI Board Member	
Andrew Noble	CRP Director	IWMI
Emma Geatrix	CRP Program Manager	IWMI
Alain Vidal	Previous Director of the CPWF	Consortium Office
Peter Mc Cornick	Deputy Director General Research	IWMI
Claudia Ringler	Focal Point and co-leader of Managing Resource Variability and Competing Use Flagship	IFPRI
Fabrice De Clerck	Focal Point and Leader of the Ecosystem Services and Resilience cross-cutting Theme	Bioversity
Nicoline de Haan	Core Theme Leader Gender, Poverty and Institutions	IWMI

6.4 Quality Assurance

182. In order to ensure evaluation rigor, the following quality assurance will be implemented during the evaluation exercise.

183. The IEA, as manager of the Evaluation, will play a crucial role in assuring its quality. The IEA will work closely with the Evaluation Team throughout the evaluation, and will ensure that the tools and methodologies, as well as the process followed, are in line with the CGIAR Evaluation Policy and Standards as well as with those used in other ongoing CRP evaluations.

184. External peer review: The IEA quality assurance of evaluations includes the peer review for each CRP evaluation by two external peer reviewers at two stages in the evaluation process: the draft inception report and the draft evaluation report. The primary function is not ex-post quality control but represents an additional quality review to the IEA evaluation managers. It is timed so that it can help improving the outputs (whether the inception or the evaluation report) and make them in line with CGIAR-IEA standards. IEA has developed Guidance for Inception Reports and Evaluation Reports, as well as an Outline for External Peer Reviewers.

6.5 Stakeholder Involvement

185. The WLE Evaluation involves a large set of stakeholders. These include the management of WLE, all participating Centers, partners associated with the Program, the CGIAR Fund Council, and the Consortium Board, as shown in Table 9 below. These stakeholders will be consulted and engaged throughout the evaluation through such means as structured interviews, surveys and site visits.

186. An additional method intended to ensure the participation of stakeholders is through small workshops at which the evaluation team will present emerging findings and issues in order to obtain verification (or not), access to additional viewpoints and data, and contextualisation of its evidence base. In view of budget restrictions, these will be held as far as possible in association with other activities, such as debriefing meetings at national or regional level and with WLE management. The team is currently working with WLE management to identify an opportunity for such a workshop in (or around) July 2015, by which time a substantial body of work will have been conducted.

Table 8: WLE evaluation stakeholders

Type of stakeholder	Role in WLE	Interest in evaluation
CRP level		
WLE management (Operations Team and Management Committee)	Program management	Lessons learned to increase performance of WLE
WLE Steering Committee	Program oversight and strategic advice	Accountability WLE performance Lessons learned about effectiveness of Governance committees
WLE Researchers	Carry out research in line with WLE IDOs	Research performance
Center level		
IWMI Management	Contribution to program management	Organizational performance Comparative advantage

IWMI Board	Fiduciary responsibility Oversight of the WLE	Organizational performance Comparative advantage
Boards and management of participating centers	Oversight of WLE activities carried out by its center	Organizational performance Comparative advantage
CGIAR level		
CGIAR Fund Council	Oversight on use of funds for WLE	Accountability WLE performance Decision making for resource allocation
Donors of bilateral projects	Funding source	Accountability WLE performance Decision making for resource allocation
CGIAR Consortium	Signatory to Program Implementation Agreements with WLE lead-Center, strategic advisor and oversight body.	Lessons learned to increase the effectiveness and relevance of the work of the CGIAR; Lessons learned to increase the efficiency and accountability of the CGIAR.
Partners		
Research partners	Participate in the design and conduct of CRP Research	Research Performance Collaboration mechanisms, Capacity development
Development and Boundary Partners	Targeted stakeholders for implementing change	Relevance of WLE and its research, Research Performance, Collaboration mechanisms, Capacity development

6.6 Timeline

187. The overall timeline for the evaluation has been established by its Terms of Reference. Currently, this timeline looks realistic. However, this will be kept under review by the Team Leader, in coordination with IEA in order to take account of any potential delays for logistical reasons. For example, if some projects or regions cannot be visited until later than planned. The outline timeline is shown in Table 10 below. This is regarded as preliminary since the precise timing of field missions has not yet been determined and will depend partly on the availability of project and key institutional stakeholders, which is not yet known.

Table 9: Outline Timeline for WLE Evaluation

Phase	Period	Main outputs	Responsibility
Preparatory Phase	Sep – Dec 2014	Final ToR Evaluation team recruited	IEA
Inception Phase	Jan – April 2015	**Inception Report**	Evaluation team
Inquiry phase	April – Sep 2015	Working documents and analysis products as inputs into preliminary findings	Evaluation team
Presentation of preliminary findings	Sep 2015	Presentation of preliminary findings Feedback from main stakeholders	Evaluation team IEA
Reporting phase			
Drafting of Report	Sep – Oct 2015	**Draft Evaluation Report**	Evaluation team
Final Evaluation Report	Dec 2015	**Final Evaluation Report**	Evaluation team
Management and CGIAR Consortium Responses	Feb 2016	Management and Consortium Responses	CRP Management Consortium Board

6.7 Key Deliverables and Dissemination of Findings

188. The key deliverables of the evaluation are outlined in the Terms of Reference.

189. The Inception Report builds on the original terms of reference for the evaluation and outlines the emerging issues as well as the proposed approach to the main phase of the evaluation. It constitutes the guide for conducting the evaluation by:

- Outlining the scope of the evaluation
- Clarifying the analytical frameworks which will be utilized by the evaluation
- Developing the methodological tools
- Providing a detailed evaluation matrix
- Providing a detailed work plan for the Evaluation.

190. The Evaluation Report is the principal output of this evaluation. It will describe findings, conclusions, and recommendations, based on the evidence collected in the framework of the

evaluation questions defined in the Inception Report, as refined and developed during the course of the evaluation. The recommendations will be evidence-based, relevant, focused, clearly formulated and actionable. They will be prioritized and addressed to the different stakeholders responsible for their implementation. The main findings and recommendations will be summarized in an executive summary.

191. The Team Leader and Team Members will prepare Presentations for disseminating key elements of the Report to targeted audiences. The exact forms of these presentations will be agreed upon during the course of the evaluation.

192. Adequate consultations with WLE stakeholders will be ensured throughout the process, with debriefings on key findings held at various stages of the evaluation. The final report will be presented to key CGIAR stakeholders. Following this, the IEA will interact with WLE management during preparation of the Management Response.

193. WLE Management will prepare a Management Response to the evaluation for the consideration of the Consortium Board. The management response will be specific in its response to evaluation recommendations, regarding the extent to which it accepts each recommendation and reasons for partial acceptance or non-acceptance. For those recommendations which it accepts partially or in full, management will enumerate the follow-up action(s) it intends to take, and in what timeframe. The consolidated response of WLE management and the Consortium Board will be a public document made available as a package together with the Evaluation Report, for the consideration of the CGIAR Fund Council.

194. WLE will develop a specific strategy for disseminating evaluation results during the course of its implementation, responding to emerging findings and the balance of stakeholders expected to engage with and respond to them.

ANNEX 1: EVALUATION MATRIX

	Potential Methods of Evaluation							
Evaluation Criteria	Portfolio Review	Document Review (includes meta analysis)	Group discussions	Semi-structured interviews	Surveys	Workshops	Case Studies	Field missions
Relevance	*	*	*	*	*		*	*
Quality of Science		*	*	*		*	*	*
Effectiveness		*	*	*	*	*	*	*
Impact		*	*	*		*	*	*
Sustainability		*	*	*		*	*	*
Efficiency		*	*	*	*		*	*
Additional Areas for Questions								
Partnerships	*	*		*	*		*	*
Gender	*	*	*	*	*	*	*	*
Capacity Development	*	*	*	*	*	*	*	*
Monitoring, Evaluation and Learning		*	*	*	*	*	*	*
Over-Arching Questions								
Are the **conceptual framework** and **key hypotheses** of WLE coherent, effectively communicated and appropriate for the wide range of issues and diversity of locations included in the program?		*	*	*	*	*		*
Are the **impact pathways** identified by the program ones that are likely to achieve the desired development outcomes and are they consistently developed across the different components of the program?		*	*	*		*		*

Is the **quality of science** in the program of an appropriate standard, does it reflect the CGIAR's comparative advantage in science and is it engaged with and reflective of international developments in the different fields included in the program?		*		*	*			*
Are the **partnership strategy** and range of partnerships being developed in the program consistent with the program's overall goals and the development of impact pathways within the program?	*	*		*	*		*	*
Are the **management procedures** and **governance structure** of the program appropriate, efficient and consistently applied and is there clarity on the roles and operational procedures of different components of the management structure?		*	*	*	*			*
Is the development of the program finding **an effective balance between ensuring the delivery of concrete planned outcome**s within the program life whilst at the same time **creating a long-term development trajectory** to ensure the program's approach and benefits will continue beyond the presently defined program period?		*	*	*			*	*

ANNEX 2: DOCUMENTS CONSULTED

Biggs, R., Schlüter, M., Biggs, D., Bohensky, E.L., BurnSilver, S., Cundill, G., Dakos, V., Daw, T.M., Evans, L.S., Kotschy, K., Leitch, A.M., Meek, C., Quinlan, A., Raudsepp-Hearne, C., Robards, M.D., Schoon, M.L., Schultz, L. & West, P.C. (2012) Toward principles for enhancing the resilience of ecosystem services. Annual Review of Environment and Resources. 37:421-448.

CGIAR. Changing Agricultural Research in a Changing World. A Strategy and results framework for the Reformed CGIAR. 2011. Montpelier.

CGIAR. Agreement establishing the Consortium of International Agricultural Research Centers as an International Organization.

CGIAR. CGIAR Policy for Independent External Evaluation. 2012.

CGIAR Standards for Independent External Evaluation. 2014.

Chong, J. (2005), Valuing the Role of Wetlands in Livelihoods: Constraints and Opportunities for Community Fisheries and Wetland Management in Stoeng Treng Ramsar Site, Cambodia. IUCN Water, Nature and Economics Technical Paper No. 3, IUCN — The World Conservation Union, Ecosystems and Livelihoods Group Asia, ColomboReview of CRP Governance and Management

Costanza, R., de Groot, R., Sutton, P., van der Ploeg, S., Anderson, S.J., Kubiszewski, I., Farber & S., Turner, R.K. 2014. Affected Mangroves — The World Conservation Union, Ecosystems and Livelihoods Group Asia. Changes in the global value of ecosystem services. Global Environmental Change. 26: 152-158.

Daw, T., K. Brown, S. Rosendo, and R. Pomeroy. 2011. Applying the ecosystem services concept to poverty alleviation: The need to disaggregate human well-being. Environmental Conservation. 38:370–379.

Estrada-Carmona, N., Hart, A.K., DeClerck, F.A.J., Harvey, C.A. & Milder, J.C. 2014. Integrated landscape management for agriculture, rural livelihoods, and ecosystem conservation: An assessment of experience from Latin America and the Caribbean. Landscape and Urban Planning. 129: 1-11.

Greiber, T. (2009) Payments for ecosystem services: legal and institutional frameworks. IUCN Environmental Policy and Law Paper No.78.

Haines-Young, R. and Potschin, M. 2010. The links between biodiversity, ecosystem services and human well-being in Ecosystem Ecology: A New Synthesis, eds. David G. Raffaelli and Christopher L. J. Frid. Cambridge University Press, Cambridge (Ch 6).

Hall, A, A. Bullock, B. Adolph. Forward Looking Review of the Challenge Programme for Water and Food (CPWF) 2013 – 2014, IEA, Rome. 2014.

Independent Evaluation Arrangement. IEA Guidance Note G1. Guidance for Managing the Independent External Evaluation of CGIAR Research Programs (CRPs). 2014.

Independent Evaluation Arrangement. Guidance on Inception Reports. 2014.

Independent Evaluation Arrangement. Review of CGIAR Research Programs Governance and Management. Final Report, Rome. March 2014.

Independent Evaluation Arrangement. Terms of Reference for the evaluation of the CGIAR Research Program on Water, Land and Ecosystems (WLE) Rome, 2014

Independent Evaluation Arrangement. Evaluation of the CGIAR Research Program, "Forests, Trees and Agroforestry" (FTA). 2014.

Matthews, N. 2012. Water grabbing in the Mekong basin - An analysis of the winners and losers of Thailand's hydropower development in Lao PDR. Water Alternatives. 5(2): 392-411.

Merrey, D. An Evaluation of CGIAR Centers' Impact Assessment Work on Irrigation and Water Management Research. 2014.

OECD/DAC Network on Development Evaluation: "Assessing the Development Effectiveness of Multilateral Organizations: Guidance note on the Methodological Approach". (2012).

Plummer, M. L. (2009) Assessing benefit transfer for the valuation of ecosystem services. Frontiers in Ecology and the Environment 7:38–45.

Poppy, G.M., Jepson, P.C., Pickett, J.A. and Birkett, M.A. 2014. Achieving food and environmental security: new approaches to close the gap. Phil. Trans. R. Soc. B. 369: 20120272

Ruckelshaus, M., E. McKenzie, H. Tallis, A. Guerry, G. Daily, P. Kareiva, S. Polasky, T. Ricketts, N. Bhagabati, S. a. Wood, and J. Bernhardt (2013) Notes from the field: Lessons learned from using ecosystem service approaches to inform real-world decisions. Ecological Economics. doi: 10.1016/j.ecolecon.2013.07.009

Schomers, S. & Matzdorf, B. (2013). Payments for ecosystem services: a review and comparison of developing and industrialized countries. Ecosystem Services. Ranasinghe T & Kallesoe, M. (2006) Valuation, Rehabilitation and Conservation of Mangroves in Tsunami Affected Areas of Hambantota, Sri Lanka: Economic Valuation of Tsunami

TEEB (2009) The Economics of Ecosystems and Biodiversity for National and International Policy Makers – Summary: Responding to the Value of Nature. ELD (2012) The economics of land degradation, the global initiative for sustainable land management ELD Secretariat, Bonn.

Willemen, L., Drakou, E.G., Dunbar, M.B., Mayaux, P. & Egoh, B.N. (2013) Safeguarding ecosystem services and livelihoods: Understanding the impact of conservation strategies on benefit flows to society. Ecosystem Services. 4: 95-103.

WLE. Flagship 4: Recovering and Reusing Resources in Urbanized Ecosystems (RRR). 2014 Activity Plans

WLE. Flagship 3: Regenerating Degraded Agricultural Ecosystems (RDE). 2014 Activity Plans

WLE. Flagship 5: Managing Resource Variability and Competing Use (MRV). 2014 Activity Plans

WLE. Flagship 2: Sustainably Increasing Land and Water Productivity (LWP). 2014 Activity Plans

WLE. Decision Analysis and Information Systems (DAI). 2014 Activity Plans

WLE. Decision Support Tools for Catalysing Change in Water, Land and Ecosystem Management. Design notes on the Centre Commissioned External Evaluation (CCEE)

WLE. Recovering and Reusing Resources in Urbanising Ecosystems. Design notes on the Centre Commissioned External Evaluation (CCEE)

WLE. Water, Land and Ecosystems. Improved natural resources management for food security and livelihoods. CGIAR Research Program 5. September 2011

WLE. Extension Proposal for CGIAR Research Program on Water, Land and Ecosystems. Resubmit, September 8, 2014. P3.

WLE. Ecosystem Services and Resilience Framework. IMWI. Undated.

WLE. CGIAR Research Program on Water, Land and Ecosystems: Annual Report 2012
WLE. CGIAR Research Program on Water, Land and Ecosystems: Annual Report 2013

Wright, H. L., Lake, I. R., & Dolman, P. M. (2012). Agriculture—a key element for conservation in the developing world. Conservation Letters, 5(1), 11-19.

Links to web pages consulted

http://www.cgiarfund.org/sites/cgiarfund.org/files/Documents/PDF/CGIAR_evaluation_policy_jan2012.pdf
http://www.cgiar.org/who-we-are/cgiar-fund/

ANNEX 3: PERSONS CONSULTED DURING INCEPTION MISSION TO IMWI

Name	Position
Andrew Noble	WLE Director
Jeremy Bird	IWMI Director General
Emma Greatrix	WLE Program Manager
Elizabeth Weight	IWMI Global Science Uptake Coordinator
David Rider Smith	WLE Monitoring, Evaluation and Learning Manager
Michael Victor	WLE Engagement, Communication and Knowledge Management Coordinator
Pay Drechsel	WLE RRR Flagship Leader
Vladimir Smakhtin	WLE MRV Flagship Leader
Nathanial Matthews	WLE IES Flagship Leader
Fabrice DeClerck	WLE ESR Core Theme Leader
Nicoline de Haan	WLE GPI Core Theme Leader
Donald Blackmore	IWMI Board Chair
Letitia Obeng	IWMI Board Member
Barbara Schreiner	IWMI Board Member
George Rothschild	IWMI Board Member
Isher Ashluwalia	IWMI Board Member
Chemutai Murgor	IWMI Board Member
Alain Vidal	CPWF, CGIAR Consortium Senior Partnerships Advisor
Peter McCornick	IWMI Deputy Director of Research
Charlotte de Fraiture	WLE Steering Committee Member
John Williams	WLE Steering Committee Member
Amol Khisty	IWMI Director, Finance and Administration
Olufunke Cofie	IWMI Senior Researcher and Head of Office (West Africa)
Arif Anwar	IWMI Principal Researcher (Irrigation) and Head of Office (Pakistan)
Nicole Lefore	IWMI Senior International Manager, Research for Development
Miriam Otoo	IWMI Researcher - Economics
Javier Mateo-Sagasta	IWMI Senior Researcher (Water Quality and Safe Reuse)
Jayne Curnow	IWMI Researcher - Social Sciences
Robyn Johnson	IWMI Representative (Myanmar)
Fraser Sugden	IWMI Researcher - Social Sciences
Tim Williams	IWMI Director for Africa
Meredith Giordano	IWMI Advisor, Research Strategy and Management
Rinku Dokania	IWMI Manager, Financial Planning and Analysis
Nadeesha Rajapaksha	IWMI Project Officer (Finance)
Matthew McCartney	IWMI Principal Researcher (Hydrology) and Head of Office (Laos)
Simon Langan	IWMI Principal Researcher and Head of Office (Nile Basin and East Africa)
Srabani Roy	IWMI Director for Asia

ANNEX 4: PERSONS MET DURING INCEPTION MISSION TO ROME

Name	Position
Andrew Noble	WLE Director
Emma Greatrix	WLE Program Manager
Elizabeth Weight	IWMI Global Science Uptake Coordinator
David Rider Smith	WLE Monitoring, Evaluation and Learning Manager
Michael Victor	WLE Engagement, Communication and Knowledge Management Coordinator
Pay Drechsel	WLE RRR Flagship Leader
Vladimir Smakhtin	WLE MRV Flagship Leader
Nathanial Matthews	WLE IES Flagship Leader
Fabrice DeClerck	WLE ESR Core Theme Leader
Nicoline de Haan	WLE GPI Core Theme Leader
Donald Blackmore	IWMI Board Chair
Meredith Giordano	WLE LWP Flagship co-leader
Theib Oweis	WLE LWP Flagship co-leader
Deborah Bossio	WLE RDE Flagship co-leader
Suhas Wani	WLE RDE Flagship co-leader
Lisa-Maria Rebelo	WLE DAI co-leader
John Williams	WLE Steering Committee Member
Letitia Obeng	IWMI Board Member
Peter Gardiner	ISPC Executive Director
Tim Kelley	SPIA Senior Officer
WLE Management Committee	Peter McCornick
WLE Steering Committee	Johan Rockstrõm, John Williams, Gretchen Daily Olcay Űnver, Mihir Shah, Lindiwe Sibanda, Jeremy Bird *(ex-officio)*

ANNEX 5: OUTLINE WORK PLAN

Activity	J	F	M	A	M	J	J	A	S	O	N	D	J	F
Inception														
Document Analysis														
Portfolio Analysis														
Telephone Interviews														
Selection of activities for field research														
Preparation for field missions														
Field missions														
Non Field Case Studies														
Surveys														
Analysis														
Presentation of Preliminary Findings									*					
Feedback from main stakeholders									*					
Report drafting														
Draft Report circulated										*				
Feedback from main stakeholders										*				
Final Report Prepared														
Final Report Presented												*		
Management and Consortium Responses														

ANNEX 6: OUTLINE CONTENTS OF FINAL REPORT

Outline of the Final Report

Abbreviations

Executive summary

1. Introduction

1.1 Purpose and audience

1.2 The evolving CGIAR context

1.3 Evaluation questions

1.4 Evaluation methodology

1.5 Analysis framework

1.6 Timeline and organization

1.7 Deviation from inception report

1.8 Limitations to the evaluation

1.9 Structure of the report

2. WLE background

2.1 WLE Context

2.2 WLE program

2.2.1 Objectives, structure and activities

2.2.2 WLE funding

2.2.3 Donors

2.2.4 WLE project portfolio

3. Relevance

3.1 Coherence and program design

3.1.1 Research strategies

3.1.2 Consistency with reform principles

3.1.3 Targeting and impact pathways

3.1.4 Use of W1/2 funding

3.1.5 Priority setting