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*CGIAR Research Program on Water, Land and
Ecosystems
Extension Proposal for 2015-2016*

Submitted by:
CRP WLE



RESEARCH
PROGRAM ON
Water, Land and
Ecosystems

Led
by:



CGIAR Research Program on Water, Land and Ecosystems Extension Proposal for 2015-2016

Submission to the CGIAR Consortium Office

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CGIAR Challenge Program on
WATER & FOOD
Andes • Ganges • Limpopo • Mekong • Nile • Volta



Acronyms

AAS	CGIAR Research Program on Aquatic Agricultural Systems
ADB	Asian Development Bank
ASARECA	Agricultural Research in Eastern and Central Africa
AWM	Agriculture Water Management
BRAC	Bangladesh Rural Advancement Committee
BSM	Benefit Sharing Mechanisms
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CIAT	International Center for Tropical Agriculture
CPWF	CGIAR Challenge Program on Water and Food
CRS	Catholic Relief Services
DAI	Strengthening Decision Analysis and Information Systems
EPA	Essential Program Activities
ESS	Ecosystem Services
FAO	United Nations Food and Agriculture Organization
GPI	Gender, Poverty and Institutions
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IDO	Intermediate Development Outcome
IEA	Independent Evaluation Arrangement
IES	Integrating ecosystem solutions into policy and investments
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services'
ITP	IWMI-Tata Water Policy Research Program
IWMI	International Water Management Institute
IWRM	Integrated Water Resource Management
M-POWER	Mekong Program on Water, Environment and Resilience
MRV	Managing Resource Variability and Competing Uses
NBD	Nile Basin Discourse
NBI	Nile Basin Initiative
NGOs	Non-Governmental Organizations
PES	Payment for Environmental Services
PPA	Program Participant Agreement
PPP	Public-private partnerships
PRADAN	Professional Assistance for Development Action
RBM	Results-Based Management
RDE	Regenerating Degraded Agricultural Ecosystems
RRR	Recovering and Reusing Resources in Urbanizing Ecosystems
RUAF	Resource Center on Urban Agriculture and Food Security Foundation
SADC	Southern African Development Community
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SDG	Sustainable Investment Goals
THPC	Theun Hinboun Power Company
TNC	The Nature Conservancy
UNEP	United Nations Environment Program
UNU	United Nations University
USAID	United States Agency for International Development
WHO	World Health Organization
WLE	CGIAR Research Program on Water, Land and Ecosystems

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1. WLE Impact Focus

Improving the lives of millions of poor women and men requires healthy ecosystems that support sustainable agricultural development, human well-being and resilient food systems. Many agricultural and pastoral ecosystems, however, have reached or exceeded sustainability thresholds. Rapidly increasing and competing demands for abundant clean water, fertile soils, energy, and other ecosystem services will further accelerate deterioration of the resource base. Significant drivers of change, including rural to urban migration, and extensive land acquisition and resource extraction, will also have long-term, multi-scale impacts on ecosystems. In short, the world is sacrificing the ecological basis upon which food production systems depend, thereby undermining development goals, livelihoods, food security and economic growth.

The CGIAR Research Program on Water, Land and Ecosystems (WLE), led by the International Water Management Institute (IWMI), is catalyzing an approach in which sustainable agricultural intensification is the starting point to increasing global agricultural production and improving livelihoods. Sustainable agricultural intensification is an important means to mitigate global risks, such as ecosystem collapse, biodiversity loss and food crises (World Bank 2007¹; World Economic Forum 2013²). WLE uses an ecosystem service-based approach which emphasizes that people, particularly rural communities, are central to ecosystem services. WLE adds value to the CGIAR Research Programs by providing the evidence base to highlight synergies and negotiate critical trade-offs in landscape- and basin-scale ecosystem-based investments.

1.1 Intermediate Development Outcomes

WLE works with partners on the ground to establish equitable and lasting solutions that promote shared prosperity and human well-being. The program targets specific clients - governments, private sector and regional bodies - charged with making large-scale decisions on resource use and allocations. A long-term investment in WLE advances five interrelated **Intermediate Development Outcomes (IDOs)** and contributes to the CGIAR **System-Level Outcomes (SLOs)**. Key outcomes to be achieved by WLE by 2017 and in 2025 are provided in Figure 1. Additional details are provided in the Work plan section of this document. These targets will be refined and detailed indicators will be developed through WLE's involvement in the collaborative efforts of CGIAR SLO/IDO Working Groups to develop IDO targets and indicators in June and July 2014. Final targets will be approved by the end of 2014.

¹ World Bank. 2007. [World development report 2008: Agriculture for development](#). Washington, DC, USA: The World Bank. 384p.

² World Economic Forum. 2013. [Achieving the new vision for agriculture: New models for action](#). A report by the World Economic Forum's New Vision for Agriculture initiative. (accessed on April 25, 2014).

Figure 1: WLE IDOs and illustrative interim targets

WLE IDOs	2017 Illustrative IDO Achievements (see Workplan for full set of targets)
Productivity: Improved land, water and energy productivity in rainfed and irrigated agro-ecosystems Income: Increased and more equitable income from agricultural and natural resource management and ecosystem services in rural and peri-urban areas Gender & Equity: Enhanced decision making power of women and marginalized groups and increased benefits derived from agricultural and natural resources Adaptation: Increased ability of low-income communities to adapt to environmental and economic variability, demographic shifts, shocks and long-term changes Environment: Increased resilience of communities through enhanced ecosystem services in agricultural landscapes	At the global level: At least 3 global initiatives, conventions, frameworks, targets and/or indicators use WLE recommendations, inclusive of recommendations relating to gender, within agricultural/poverty reduction investments, including: ○ Sustainable Development Goals (SDGs) include targets and indicators that seek to improve the capacity of agricultural landscapes to provide or support ecosystem services ○ Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES) frameworks include methodologies for evaluating the ecosystem services of agricultural landscapes At least 5 key global decision makers are committed to investing in ecosystem-based approaches to improve food security and reduce poverty In WLE regions ○ 4 key national/regional large-scale investment decisions informed by WLE decision analysis and decision support tools, data, models ○ Substantive capacity improvements for ecosystem-based decision-making – including ecosystems decision analysis and risk assessment - at regional, national and sub-national levels developed in 10 partner regional/national partner institutions ○ At least 6 decision-making analysis tools for improving decisions with ecosystem-based approaches have been tested/piloted

1.2 Integration for impact

Capitalizing on learning to date regarding outcome-driven research for development, WLE has changed its structure and investment commitments to strengthen IDO delivery. With this architecture for delivery in place, WLE will accelerate substantive impact over the next 10 years.

- WLE has refocused its research lines of inquiry from Strategic Research Portfolios (SRPs) to **Flagships** that are structured, planned and resourced in order to shape and direct multi-disciplinary, cross-CGIAR science and partnerships towards achievement of outcomes and IDOs.
- WLE has initiated a new region-based flagship, **Integrating ecosystem solutions into policy and investments (IES)**, as a cornerstone to achieving IDOs. IES achieves lasting outcomes through geographically-based impact pathways that reposition significant development investments in Africa and Asia³ towards more sustainable pathways. The flagship harnesses and integrates WLE's research-for-development portfolio in support of prioritized regional partner-defined investment decisions. This flagship's impact portfolio is completed through its coordination and capacity strengthening of research and development partners and partner networks for improved decision-making.
- WLE's **Innovation Fund** inspires innovative multi-disciplinary research to develop integrated, cross- regional and global tools, methods and analyses that support equitable ecosystem-based development planning and investments. Fund outputs will advance the science and capacity to

³ WLE may expand to Latin America in the future.

incorporate ecosystem service and resilience-based approaches into agricultural development decision-making and processes.

- WLE **Core Themes** of **Gender, Poverty and Institutions** and **Ecosystem Services and Resilience (ESS&R)** provide strategic, crosscutting research to achieve the program's objectives of improving ecosystem services to benefit poor women and men. The core themes also work across WLE flagships by building program capacity and partnerships.
- WLE's **capacity strengthening** strategy supports IDO delivery through the design, implementation and measurement of capacity strengthening initiatives directed to address knowledge gaps that hinder sustainable agricultural intensification outcomes. In this, WLE works with CGIAR and cross-CGIAR Research Program collective action initiatives to maximize impact and efficiency.

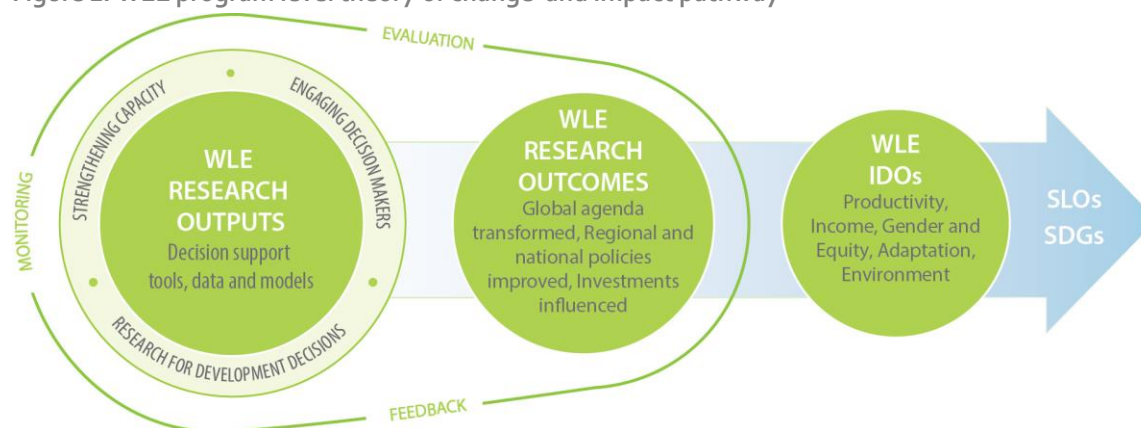
1.3 Impact pathway and Theories of Change

A transition to sustainable agricultural 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, ecosystem services, energy and other resources across scales. To achieve its long-term development outcomes, WLE is investing in **impact pathways** within and across priority **regions** and at the **global level**. As shown in Figure 2, WLE supports public, non-profit and private sector decision makers at all levels by: (a) prioritizing their research needs; (b) engaging them in multi-stakeholder platforms that support joint learning and transparent decision making; and (c) jointly developing and applying decision-support tools, data and models. These tools help decision makers and broader stakeholder groups to understand upstream-downstream and transboundary benefits, losses and trade-offs.

WLE recognizes that many decision-makers have limited knowledge and capacity to analyze, understand and invest effectively across scales and across institutions in ecosystem service-based strategies. Given that these capacity constraints will likely impede progress towards IDOs and the post-2015 SDGs, WLE's impact pathways incorporate capacity strengthening. This targeted capacity building will expand capabilities to embed complex ecosystem processes and service valuation into future decisions and investments. WLE's flagship on decision analysis and information systems will be critical in these efforts to combine expert knowledge with available data and integrated information systems.

WLE's theory of change recognizes that transforming agricultural investments at scale is complex and dynamic, inherently political and frequently contentious. In this decision arena, traditional linear research pathways that deliver technical outputs alone are not effective. WLE's theory of change framework draws from the theories of complex adaptive systems and innovation systems to emphasize interdisciplinary problem-solving within development processes. This is supported by the program's learning and adaptive management approach. To guarantee results, WLE measures performance and integrates feedback mechanisms to improve engagement with research users, design and implementation of research, and capacity strengthening.

Figure 2: WLE program level theory of change and impact pathway





By the end of 2014, WLE will finalize key regional and global impact pathways, which will form the heart of the program's Results-Based Management (RBM) accountability framework. On this basis, WLE will pilot RBM in 2015 with a focus on measuring progress in relation to impact pathway targets and milestones to demonstrate the contribution to IDOs.

WLE's newest flagship, IES, leads the program's **national and region/basin-level** impact pathways. These impact pathways are grounded in the political economies of selected countries/regions and align WLE research towards addressing large-scale agricultural development issues. In these regions, WLE works primarily with change agents who can re-frame large-scale investments. In 2013, WLE conducted systematic diagnostics of development challenges in regions, in order to prioritize entry points in existing political/economic processes that WLE's sustainability agenda could best support. Building on this foundation, in 2014, the IES flagship will finalize national/regional targets, indicators and theories of change jointly with development partners. The flagships will also integrate research and core themes to achieve these targets. Within this context, national targets under Sustainable Investment Goals (SDG) will provide a framework for WLE to support the monitoring and achievement of national partners' SDG targets.

At the **global level**, WLE's theory of change seeks to bring ecosystem services to the forefront of the global development agenda through three key interrelated avenues. First, by intensifying and leveraging its role in global platforms on biodiversity, ecosystem services and sustainable development; for example, WLE's engagement in Intergovernmental Platform on Biodiversity and Ecosystem Services' (IPBES) will grow over the next few years through field-based collaboration to assess ecosystem services. Second, WLE flagships and core themes will bring essential analyses and solutions, which address priority global risks, to these global platforms and partners. Third, WLE aims to make a significant contribution to SDGs by providing analyses of trade-offs among options that optimize achievement of multiple goals without jeopardizing individual objectives. WLE's expertise is particularly well aligned to the emerging focus areas on ecosystems and biodiversity of the SDGs⁴ (in particular, enhancing ecosystem resilience, addressing land degradation and soil erosion, and mitigating the effects of desertification and drought); gender equality and women's empowerment; water and sanitation; and sustainable agriculture, food security and nutrition.

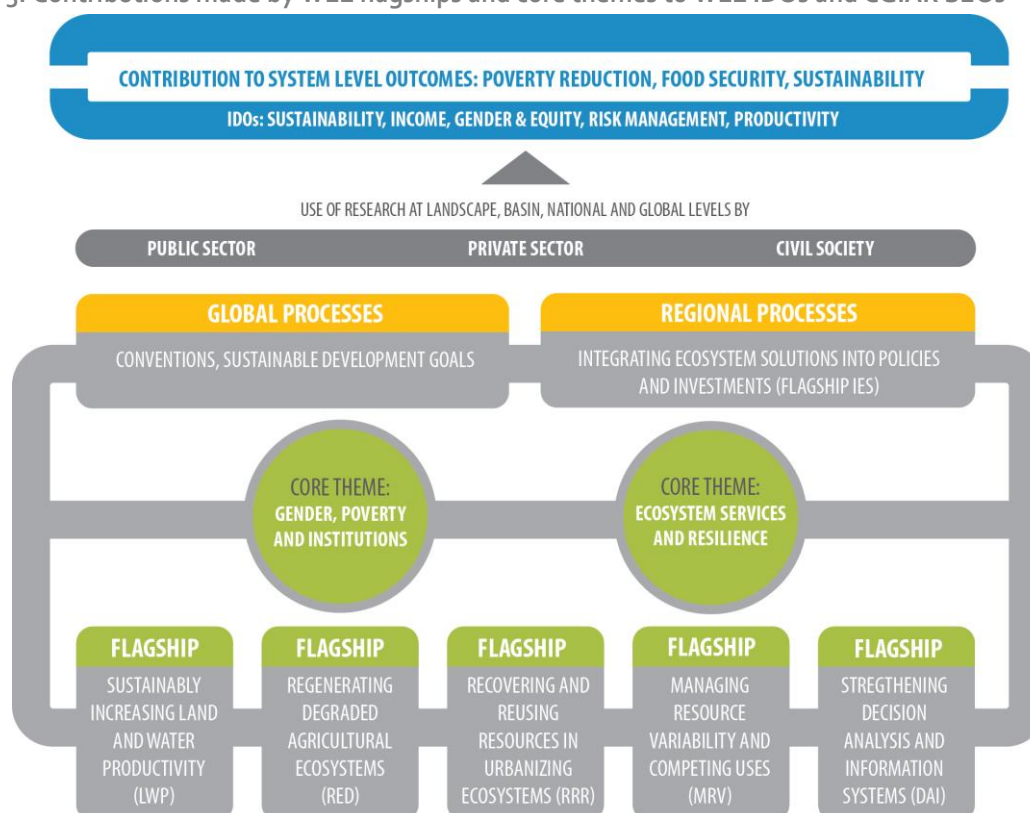
As detailed in the annual reports, WLE has advanced its outcome-oriented research portfolio in spite of two critical challenges faced by the program: (i) selected inherited projects were not designed within an outcome-oriented framework; and (ii) there was a shortfall in Windows 1 funding in 2013, which delayed initiation of WLE's flagship. Looking towards 2017 and beyond, WLE's goal of placing ecosystems at the core of sustainable development investments requires significant long-term investments and partner engagement along the entire impact pathway. This is a necessity in order to prove the viability of this alternative development path and to also realize impact at all levels. Uncertainties surrounding the future of CGIAR Research Programs and/or funding discontinuities may disrupt financing along impact pathways and financial commitments made to partners, which would jeopardize the progress made by WLE towards achieving outcomes. In addition, many countries, where WLE supports decision making, are experiencing rapid changes that have profound impacts on water, land and ecosystems. These changes and their projected impacts will be assessed by WLE in 2015 to ensure that the program is well positioned to address the most critical development priorities with the most relevant partners, and to determine the need for further analysis and/or programmatic adjustments.

2. WLE Flagship Projects

By 2015, WLE will evolve its SRPs into Flagship Projects and crosscutting Core Themes of Gender, Poverty and Institutions, and Ecosystem Services and Resilience (ESS&R), as shown in Figure 3. The important elements of this evolution in WLE's structure include: integration across the irrigated-rainfed continuum in agroecosystems and landscapes; integration of ecosystem service approaches across the program portfolio; definition and inclusion of gender-specific research and targets under each flagship; further alignment of flagships with WLE IDOs and the SDGs; and the introduction of the regional flagship: IES.

⁴ UN (United Nations). 2014. [Open Working Group on Sustainable Development Goals, Compilation of goals and targets suggestions from OWG-10, April 19, 2014](#). United Nations, Department of Economic and Social Affairs. (accessed on April 24, 2014).

Figure 3: Contributions made by WLE flagships and core themes to WLE IDOs and CGIAR SLOs



2.1 Sustainably Increasing Land and Water Productivity (LWP)

Efforts to ensure food security and increase agricultural productivity are threatening the resilience of terrestrial and aquatic ecosystems in many countries. The **objective** of the LWP flagship is to develop technical, managerial and institutional solutions for managing water and land that: (i) improve productivity in smallholder agricultural systems and in large-scale public irrigation systems; (ii) increase incomes and equitable benefits to women and resource-poor farmers; and (iii) enhance resilience of ecosystem services, including biodiversity and fisheries, and limit negative externalities, e.g., loss of downstream aquatic ecosystems. Solutions include innovations in soil, water and nutrient management; strengthening the role of small-scale farmers in input and output market chains; and reforming existing irrigation system management.

LWP fosters impact through outcome-oriented, action research that delivers: (i) science-based research and mapping methodologies to identify and target promising agricultural land and water management solutions for specific ecosystem, social and economic contexts; (ii) assessments of suitability and potential return on investments of various options (e.g., business models for smallholder irrigation; and management, financial and institutional reforms of large-scale irrigation systems) that improve sustainable land and water productivity; and (iii) impact analyses and monitoring frameworks to understand the potential impacts on social structures, and ecosystem services and institutional capacity to manage potential trade-offs.

LWP's **theory of change** (TOC) is founded on the growing demand for effective, scalable and sustainable approaches to agricultural land and water management, and revitalization of irrigation systems from the LWP flagship's development partners: African Development Bank (AfDB), Asian Development Bank (ADB), World Bank, Bill & Melinda Gates Foundation, United States Agency for International Development (USAID), Swedish International Development Cooperation Agency (Sida), CARE International, iDE, Professional Assistance for Development Action (PRADAN), national and regional policy and decision makers, universities and the private sector.

2.2 Regenerating Degraded Agricultural Ecosystems (RDE)

The **objective** of the RDE flagship is to support decision makers to invest in and rebuild ecosystem services from degraded landscapes, which include areas that are strongly eroded, have depleted soil fertility and/or have salinized soils. Responding to the emerging global agenda calling for a 'land-degradation neutral world' (Rio+20), national agendas of the Comprehensive Africa Agriculture Development Programme (CAADP), and anticipated SDG targets on land degradation, RDE research aims to restore ecosystem health and services in degraded irrigated, rainfed and pastoral landscapes. RDE further seeks to understand the gendered use of landscapes, and how WLE solutions could benefit smallholder women and men farmers.

The RDE **theory of change** recognizes that decision makers from farmers to governments and development investors (Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ], International Fund for Agricultural Development [IFAD], USAID, United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP]) are calling for research-based economic arguments for investment in natural resources, as well as tools for monitoring of progress towards rehabilitation and resilience. RDE responds to the needs of these investors through research that reveals spatial, temporal and socioeconomic distribution of land management costs, benefits and trade-offs to balance gaps between private and social interest, short- and long-term goals, and on- and off-site impacts. RDE research focuses on: (i) economic valuation, diagnosis and monitoring of land degradation and ecosystem services; (ii) innovative technologies and incentive mechanisms that address constraints to sustainable natural resource management and women's access to resources; and (iii) assessing changes in benchmark sites that serve as 'proof of concept' models for development investors to scale up solutions in other landscapes and basins. RDE further aims to inform the global agenda on land degradation through partnership with the Global Soil Partnership (GSP) of the Food and Agriculture Organization of the United Nations (FAO), Global Soil Forum (GSF), Global Environment Facility (GEF), Economics of Land Degradation (ELD), the new international World Overview of Conservation Approaches and Technologies (WOCAT), and conservation nongovernmental organizations (NGOs) (The Nature Conservancy [TNC], International Union for Conservation of Nature [IUCN] and Ecoagriculture Partners).

2.3 Recovering and Reusing Resources in Urbanizing Ecosystems (RRR)

Rapid urbanization in many countries in Africa and Asia is creating major challenges, including increasing numbers of poor at the margins of cities, increasing competition for water, land and energy, and negatively impacted ecosystem service flows. Urbanization also offers new market opportunities that maximize valuable resource flows (e.g., nutrients, water and energy). The **objective** of the RRR flagship is to capitalize on these opportunities, and reduce the negative urban footprint on ecosystems and human health through innovative market-driven investments in nutrient, water and energy recovery and reuse. RRR creates impact through two lines of outcome-oriented action research: (i) Develop scalable business models that bridge the sanitation and agricultural value chains, and ensure positive social benefits. Specific areas to be addressed include risk assessment, risk perceptions and risk mitigation; and (ii) Support public and private entities in the creation of innovative technologies, and the development of guidelines and policies for safe reuse.

The **theory of change** for RRR is based on (i) the expressed demand of municipalities and investors, including the Water and Sanitation Program (WSP) of the World Bank, Gates Foundation, USAID, ADB and AfDB, for innovative business approaches and investment briefs to address waste and resource recovery challenges; and (ii) strategic partnerships around the globe with innovative entrepreneurs and technical competence centers (including the Department of Water and Sanitation in Development Countries [Sandec] at the Swiss Federal Institute of Aquatic Science and Technology [Eawag] and WASTE) and global outreach partners (including the World Health Organization [WHO], FAO, UNEP and United Nations University [UNU]) to develop capacities and guidelines at scale; and with relevant national sector ministries, national institutions, and universities; and (iii) engagement in professional dialogue platforms, as offered, for example, by the International Water Association (IWA), World Business Council for Sustainable Development (WBCSD) and the Sustainable Sanitation Alliance (SuSanA).

2.4 Managing Resource Variability and Competing Uses (MRV)

The MRV flagship focuses on and across landscape and basin scales in WLE regions and globally. The **objective** of MRV is to assist decision makers to reconcile natural variability, competition among sectors and trade-offs, given the interconnectedness of water, land, energy and other ecosystem services, and the importance of equitably sharing these resources, their services and benefits. The **theory of change** for the priority action areas of MRV is: (i) mainstreaming the role of biodiversity, and a range of ecosystem services in sustainable agricultural production, into development programs. These services include non-marketed and less visible services such as water quality; (ii) managing the spatial and temporal variability of water to alleviate the negative impacts of floods and droughts on poor men and women. This will be achieved by working with investors and governments to enhance their understanding of, and improve their investments in, innovative structural and policy solutions for conjunctive flood-drought management in a basin-wide context; (iii) scaling up of successful benefit-sharing mechanisms for socially and environmentally equitable allocation of water and ecosystem services; and (iv) reducing the costs of trade-offs across the water-food-energy nexus by developing tools, investments and case-specific solutions, and through policy dialogues, that reduce energy pressures and increase overall resource-use efficiency and sustainability. The theory of change is based on the demand for credible scientific information and policy advice from partners, including national basin authorities and national disaster management agencies, international basin organizations, FAO, UNEP, IUCN, World Wildlife Fund for Nature (WWF), Conservation International (CI), Future Earth, and the International Association of Hydrological Sciences (IAHS).

2.5 Strengthening Decision Analysis and Information Systems (DAI)

Development decision makers often struggle to design and implement interventions that meet multiple objectives of productivity, equity and resilience of socio-ecological systems, which is due, in part, to uncertain information and gaps in data. The **objectives** of the DAI flagship are to: (i) improve intervention decisions that enhance livelihoods and reduce risk while maintaining critical ecosystem services; (ii) improve learning on the performance of interventions through better metric frameworks and measurement methods; and (iii) strengthen the capacity of professionals deploying decision analysis and information systems tools.

DAI's **theory of change** focuses on: (i) supporting participatory, integrated analysis of intervention decisions and risk assessment that emphasizes quantification of traditionally neglected areas (e.g., ecosystem services and social/gender impacts) through further developing a Bayesian Network analytic framework and toolset, supported by a probabilistic database, for combining uncertain data and expert knowledge; and (ii) contributing to shaping policies and programs at basin, national, sub-national and international scales through: (a) scaling out cost-effective soil information systems that provide evidence for national and farm-level management decisions; (b) establishing a global water accounting platform that will provide water accounts on a monthly basis for major river basins of the world; and (c) implementation of a global information and knowledge facility for agro-biodiversity in support of agroecosystem health.

2.6 Integrating Ecosystem Solutions into Policy and Investments (IES)

WLE's IES flagship represents a significant evolution of the program towards effective IDO delivery. Initially focused in four regions (East Africa, West Africa, Southeast Asia, South Asia), with additional regions planned⁵, the **objectives** of IES are to realize IDO targets and contribute to relevant SDG targets in each region. The IES **theory of change** is to (i) engage and align with public, civil society and private sector partners, in each region, who create or re-frame large-scale water, land and ecosystem investments or implementation strategies; (ii) integrate WLE research to assess the long-term impacts, risks and trade-offs of these large-scale investments and strategies (e.g., through spatial dynamic landscape modeling); (iii) strengthen the capacity of decision makers to effectively apply the knowledge, tools, data and models, and to develop context-specific solutions; and (iv)

⁵ Latin America, Central Asia, and Near East and North Africa (NENA) will be considered in the future.



assess the long-term impacts of these investments and draw out lessons learned on effective modalities for investing in sustainable intensification in other locations.

IES builds on the previous successes of CGIAR centers and the CGIAR Challenge Program on Water and Food (CPWF). A recent external review of CPWF's ten-year initiative noted, "there is clear evidence that CPWF's implementation principles and strategies were a key contributory factor in the program being able to translate research outputs into outcomes." Through IES, the proof-of-concepts developed by CPWF, CGIAR centers and partners in each region can be scaled up rapidly for further impact.

In 2013, WLE made significant progress in the design of the IES flagship. WLE consulted stakeholders to diagnose development challenges and to define the opportunity space for WLE to support sustainable intensification of agriculture in each region. The program also established objectives and criteria (i.e., likelihood of contributing to WLE IDOs, degree of focus on gender, ecosystem services and partnerships) to fund IES initiatives.

The research-for-development portfolio of IES will integrate other WLE flagship research to provide context-specific decision support in each region as follows:

- Nile/East Africa region: Support a sustainability agenda within existing and evolving processes, and investments, in the region to achieve green, resilient and equitable growth through: (i) negotiating trade-offs of planned infrastructure development; (ii) achieving sustainable land management in degradation hot spots; and (iii) strengthening equity and benefits to women and youth during sustainable intensification.
- Volta/Niger region: (i) Guide sustainable investments in land and water management in the rural north to ensure that farming remains attractive, and contributes to sustainable development and food security; and (ii) guide improved management of ecosystems under demographic pressure, and due to increasing demands on water, food and energy in the fragile north and in growing peri-urban landscapes of the south.
- Greater Mekong Subregion: WLE seeks to ensure that development investments and policies across three key issues – water and land, energy, and food and nutrition – are sustainable, equitable, and meet national growth and poverty goals.
- Ganges region: Inform future developments in land, water and energy management through scientifically-defined environmental thresholds in the subregions (highlands, plains and delta).

3. Gender

3.1 Achieving WLE's Gender and Equity IDO

Ensuring that women and marginalized groups have decision-making power over, and increased benefits from, agriculture and natural resources is central to WLE's vision of sustainable agricultural intensification and IDOs. WLE created the Gender, Poverty and Institutions (GPI) Core Theme to drive this agenda through three interrelated avenues: Strategic gender research, integrating gender in WLE flagship outcomes and associated impact pathways, and gender transformative partnerships. WLE's 2013 Gender Strategy articulates the objectives, overarching impact pathway, and entry points for the program to achieve these objectives.

WLE's strategic gender research provides analyses to identify where, when and how women influence common-pool resource use (water, land and ecosystems), and how WLE can enhance their role and decision making in this arena. This research guides WLE's investments by providing entry points to investable options for women, and by providing research and data to ensure equitable outcomes.

The GPI Core Theme is led by a senior-level Gender Coordinator. The Coordinator is a full member of WLE's Management Committee and Operations Team, and leads the program's GPI Advisory Group. WLE allocates a minimum of 10% of the program's annual research budget (approximately USD 3.4 million in 2015 and 2016) for gender research, and an additional USD 1 million per year to the GPI portfolio for activities and staff costs. The proportion of gender-specific work will increase as the program evolves, particularly through regional investments by WLE's IES flagship and the program's Innovation Fund, which will allocate at least 10% of the budgets to gender research starting in 2014.

3.2 Gender in the Workplace

WLE's Steering Committee is currently comprised of 27% female members; its Management Committee includes 31% female members; and its Operations Team includes 70% female members. WLE's lead center, IWMI, sets the program's human resource policies and operational plans. IWMI's initial successful initiatives towards gender balance will be intensified through its '*Gender in the workplace: Operational agenda*'. It is expected that these efforts will result in positive recruitment, retention and career development of female staff in WLE. Key milestones in this Agenda include the following:

- By July 2014, IWMI will be actively engaged with the CGIAR Human Resources Community of Practice to integrate best practices and targets into the Institute's operational plan.
- By October 2014, IWMI will establish a gender and diversity performance monitoring committee.
- By December 2014, IWMI's Management Team will establish gender and diversity initiatives and targets for change, with an action plan agreed by January 2015 and implementation initiated in February 2015.

4. WLE Partnerships

WLE's ambitious change agenda necessitates combining forces with a coalition of partners that can collectively transform opinions and advance ecosystem-based sustainable development solutions. Partners have a vital role in achieving IDOs, and their skills and resources complement and add value to those of WLE to bring ideas to scale. This extension phase builds on a rich legacy of partnerships, including engagement by CPWF and CGIAR centers. WLE's draft partnership strategy shifts traditional thinking of the research impact pathway towards 'change agents' that are critical at each stage and scale (e.g., local, regional and international) of the program's impact pathways. The draft partnership strategy, to be finalized and approved in 2014, details the program's principles and approaches for partnerships, responsibilities for partnership engagement, and roles of partners in decision making and management.

WLE dedicates a minimum of 50% of the program's Innovation Fund and a minimum of 30% of its IES region-based flagship budget to external partners. These financial allocations do not, however, encompass the entire range of WLE partnerships, because many strategic partnerships are not contractual or financial but instead are long-term collaborative efforts based on adding complementary value to achieve common objectives. WLE places strong emphasis on research being credible and relevant to national and regional decision makers. One of WLE's planned 2014 CGIAR Research Program-Commissioned External Evaluation (CCEE) will assess the degree to which the program's research is aligned with and relevant to partners' priorities. WLE will use CCEE recommendations to improve alignment with those priorities.

WLE partners with **agricultural development organizations**, including **FAO**, at multiple levels. FAO has a key governance role in WLE as a member of the program's Steering Committee. WLE flagships partner with FAO to achieve specific strategic objectives. For example, (i) the RRR flagship partners with FAO, as well as WHO and UNEP, to set global standards on human health and food safety within the reuse context; the MRV flagship partners with FAO, among others, in managing ecosystem service flows, benefit-sharing, and the spatial and temporal variability of water; the DAI flagship partners with FAO and the UNESCO-IHE Institute for Water Education to develop a repository for public domain data on water accounts of WLE's focal river basins, which will link to the Water Auditing program of FAO's Land and Water Division and will establish a joint IWMI/FAO/UNESCO-IHE Institute for Water Education Global Water Accounting Chair. WLE and FAO will also actively collaborate with, and jointly lead, the thematic group on 'Rural Landscapes' under the Ecosystem Services Partnership (ESP), a network that aims to enhance the science and practical application of ecosystem services assessment. This partnership includes WLE leadership on the ESP Steering Committee, thus contributing to the program's global goals through the ESP network. WLE also partners with other UN-based agencies with close engagement in ecosystem services, such as with UNEP for global water quality assessment.

WLE partners with **agricultural development donors** in order to position ecosystems within the core of their investments. WLE's work with IFAD, for example, includes the Improved Management of Agricultural Water in Eastern and Southern Africa (IMAWESA) program that builds capacity of national agencies and development partners in agricultural water management. WLE also builds on the IFAD-CPWF partnership to strengthen the evidence base in IFAD's water management projects



and in national policies in countries where IFAD works. An example of these efforts is strengthening the evidence base for project design and capacity strengthening of the Laos Policy Think Tank in the Mekong.

WLE recognizes the critical role of the **private sector** in unlocking private capital and accelerating market-driven ecosystem-based solutions to poverty. These partnerships include the RRR flagship engagement with entrepreneurs, public-private partnerships (PPPs), business schools, investment banks and the private sector as next-step users of research outputs in resource recovery and reuse. WLE will also scale out PPPs, for example, the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) in East Africa, a multi-stakeholder PPP, for rapid agricultural development. WLE will further strengthen effective CPWF collaborations, for example, with hydropower companies in the Mekong region working on the water-food-energy nexus. These collaborations include partnering with the Theun Hinboun Power Company (THPC) to improve household nutrition in relocation sites of the Theun Hinboun Expansion Project.

WLE also partners with **ecosystem services** and **conservation organizations**, including the Natural Capital Project, a joint effort of Stanford University, TNC, WWF and the University of Minnesota, to pioneer ecosystem service valuation and decision models. Partnerships with conservation organizations include an active and growing partnership with TNC based on the mutual objective of uniting equitable prosperity and conservation. At both global and regional levels, joint initiatives include collaboration in East Africa to “Find Smart Planning Solutions in SAGCOT” and “make ecosystem services count in the SDGs” through Science for Nature and People projects. By 2015, WLE and TNC will determine specific TNC roles in relation to governance and/or management structure to strengthen WLE.

Partners for capacity strengthening: Achieving WLE’s IDOs requires significant capacity strengthening of partners to utilize the program’s research in order to improve development decisions. Examples of WLE capacity-oriented partnerships include the RRR flagship partnership with UNU. In addition, the DAI flagship partners with Hubbard Decision Research, USA, and the University of London, UK, to strengthen the capacity of decision makers in the WLE regions, together with other partners (Zentrum für Entwicklungsforschung [Center for Development Research] [ZEF] and the African Technology Policy Studies Network). Further, WLE is negotiating an agreement with King’s College, London, for trainings and facilities with WaterWorld and Co\$ting Nature for valuing ecosystem services. WLE’s ESS&R Core Theme works with the Natural Capital Project to support WLE’s scientists and to build capacity in the program’s focal regions on ecosystem service modeling tools. WLE’s collaboration with the CGIAR Research Program on Policies, Institutions and Markets (PIM), through Science for Nature and People (SNAP) (a joint initiative between TNC, Wildlife Conservation Society, and the National Center for Ecological Analysis and Synthesis), will create a joint space for CGIAR Research Programs to support national governments with a country-implemented System of Environmental-Economic Accounting (SEEA). Moving forward, WLE will assess opportunities for collective action with CGIAR centers and other CGIAR Research Programs to maximize joint contributions for capacity strengthening.

Partners in management and governance: The recent review of the governance and management of CGIAR Research Programs, carried out by the Independent Evaluation Arrangement (IEA) of CGIAR, noted that WLE was highly rated for independence and inclusiveness of its governance structure. The report noted that WLE already complies with virtually all of the recommendations related to the CGIAR Research Programs that have been endorsed by the Consortium Board. The report noted, in particular, that WLE has a very effective “independent and balanced governance body” with “high external participation.”

5. WLE Regional Collaborations

Ecosystem services follow natural - rather than political, sectoral or economic – boundaries. Therefore, achieving WLE goals requires strong collaboration not only with international, national and sub-national partners, but also with regional partners that span transnational and trans-jurisdictional boundaries. WLE builds on partnerships established by CPWF and CGIAR centers, and also catalyzes new regional collaborations. WLE’s newest flagship (IES) and the program’s regional coordinators take the lead in defining regional impact pathways, which specify the roles and budget for each partner and address partners’ capacity needs. Strategic regional collaborations include the following:



Nile/East Africa region: WLE teams up with the Nile Basin Initiative (NBI), led by 10 Nile riparian countries, as a dialogue platform for natural resource planning and management. NBI provides a strong link to key policy and practice decision makers across the basin. WLE has a complementary collaboration with the Nile Basin Discourse (NBD), a civil society network of more than 1,200 organizations in the region. In the past year, WLE has been actively engaged in defining joint synergies and plans in the region with TNC, IUCN and the Global Water Initiative (GWI), which focus on better access, management and use of water for sustainable agricultural production. WLE collaborates with the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and builds on CPWF's partnership with the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN). WLE also builds ties with investors in the region (including GIZ, IFAD, UNEP and UNDP), PPPs for agricultural development (such as SAGCOT) and development actors (CARE) and Catholic Relief Services (CRS).

Volta/Niger region: Building on CPWF's partnerships in West Africa, WLE supports the vision of CAADP, which is economic growth through agriculture-led development, by specifically providing support to CAADP's Pillar 1 on land and water management. WLE has also continued CPWF's relationship with the Volta Basin Authority, which provides an entry point for the program to support improved management of river basin-scale water resources. In addition, WLE partners with the West African Science Service Centre on Climate Change and Adapted Land Use (WASCAL), Regional Strategic Analysis and Knowledge Support System (ReSAKSS), Alliance for a Green Revolution in Africa (AGRA), and the Economic Community of West African States (ECOWAS). Cross-CGIAR Research Program collaborations in the region include the joint commitment between three of these programs (WLE; Climate Change, Agriculture and Food Security [CCAFS]; and Forests, Trees and Agroforestry [FTA]) to develop a shared impact pathway towards common outcomes in Burkina Faso.

Greater Mekong Subregion: To improve water governance in the region, WLE builds on CPWF's extensive research-for-development network of 76 diverse partners that comprises government agencies and civil society organizations (e.g., the Australian Government Department of Foreign Affairs and Trade, Oxfam, and the Mekong Program on Water, Environment and Resilience (M-POWER). Cross-CGIAR Research Program collaborations include a joint initiative between two of these programs (WLE and Aquatic Agricultural Systems [AAS]) on ecosystem services of flood pulse systems in the Tonle Sap Floodplains. WLE also collaborates with CCAFS in the region to reduce the risks of droughts and floods through water harvesting and banking, thus improving food security and adaptation to climate change. WLE, AAS and the Global Rice Science Partnership (GRiSP) led a successful jointly-funded mission to Myanmar to determine collaborative roles in addressing the needs of the poor.

Ganges region: WLE builds on partnerships established by CPWF and CGIAR centers, including work with the Bangladesh Rural Advancement Committee (BRAC), a large international NGO based in the region, to scale out new water management technologies at the local level; WorldFish in Southeast Asia; Government of India; IWMI-Tata Water Policy Research Program (ITP); and the National Ganga River Basin Authority, which is the financing, planning and monitoring authority for the Ganges River. WLE has already established strong linkages with AAS in Bangladesh, and with the Foundation for Ecological Security, India, and government ministries in Bangladesh and Nepal.

6. WLE Phased Workplan for 2015-2016

2025: WLE IDO Achievements

- Significantly improved global awareness of the role of healthy ecosystems to achieve CGIAR SLOs
- At least 18 global initiatives, conventions, frameworks or key decision makers/investors use WLE achievements in investments

In WLE regions

- 10 key national/regional large-scale investment decisions informed by WLE decision analysis and support tools, data, or models, resulting in increased returns on investments, gender equity and improved ecosystems services
- Substantive improvements in capacity for ecosystem-based decision-making, including ecosystems decision analysis and risk assessment capacity developed in 100 regional/national partners
- Development investments in hydropower, agricultural growth and green growth strategies, valued at more than USD 50 million have been informed by WLE research, resulting in a 20% improvement over baseline scenarios in sustainability, social inclusion, and greater resilience of ecosystems and their services

2017: WLE IDO Achievements

- At least 3 global initiatives, conventions, frameworks, targets and/or indicators use WLE recommendations, inclusive of recommendations related to gender, within investments in agricultural/poverty reduction, including:
 - SDGs targets and indicators that seek to improve the capacity of agricultural landscapes to provide or support ecosystem services
 - IPBES frameworks include methodologies for evaluating the ecosystem services of agricultural landscapes
- At least 5 key global decision makers are committed to investing in ecosystem-based approaches to improve food security and reduce poverty

In WLE regions

- 4 key national/regional large-scale investment decisions informed by WLE decision analysis and support tools, data, and models
- Substantive improvements in capacity for ecosystem-based decision-making, including ecosystems decision analysis and risk assessment, at regional, national and sub-national levels developed in 10 regional/national partner institutions
- At least 6 decision-making analysis tools for improving decisions with ecosystem-based approaches have been tested/piloted

WLE Individual IDO Achievements

ENVIRONMENT	GENDER and EQUITY	INCOME and PRODUCTIVITY	ADAPTATION
By 2025: • 100 municipalities are implementing RRR programs based on WLE value propositions and business models (RRR) • 2 focal regions secure ecosystem service provision through biodiversity conservation and landscape management drawing on WLE approaches (MRV)	By 2025: • USD 50 million in investments in regenerating degraded agro-ecosystems influenced by WLE research is benefiting 2 million farmers, 50% of whom are women; rates of degradation of land, soil and ecosystem services are reduced by 50% over 5 million hectares of land area; and target nations will be on track to monitor progress and achieve sustainable development goals on land	By 2025: • Increased incomes of at least 1 million smallholder farmers, in South Asia (SA) and sub-Saharan Africa (SSA) through USD 50 million of new, targeted investments in smallholder land and water management informed by WLE research (LWP) • Soil productivity enhanced in SSA	By 2025: • WLE contributes to monitoring and safety guidelines for the proposed SDG target on safe wastewater use, benefitting 20 million farmers in SA and SSA (RRR) • Multi-lateral financial institutions and governments in 4 or more regions use a

By 2017:

- More than 5 donor programs and 10 business schools acknowledge reuse based business models and opportunities for resource recovery (RRR)
- The feasibility of RRR business models verified in 10 peri-urban areas across Asia, Africa and Latin America (RRR)
- Entrepreneurs invest private capital into RRR options (RRR)
- Enhanced knowledge of the role of biodiversity conservation, landscape composition/configuration (inclusive of gendered analysis) and management for ecosystem service flows and variability in at least 2 focal regions (MRV)
- 5 gendered analyses of representative landscapes' composition and options for biodiversity conservation that support rural communities (MRV)
- Global agro-biodiversity information system used by 3 governments, basin authorities, or development agencies in WLE focal regions (DAI)
- Decision makers in 4 countries have sought WLE research as input to their program development, e.g. analysis of gendered use of landscapes and policy and institutional impacts on women's access to resources (RDE)

degradation (RDE)

- Decision makers and investors in 4 regions use WLE research (e.g. gender profiles, maps) to target women and resource-poor farmers (LWP, MRV, RDE)
- Natural resources are managed more equitably in at least 2 focal regions through the application of benefit-sharing mechanisms for poverty alleviation identified by WLE (MRV)

By 2017:

- Decision makers in 6 countries trial WLE options to rejuvenate ecosystem services of 4 WLE regions (RDE)
- Decision makers in 4 countries use WLE research for program design, e.g. incentives and options to restore degraded soils and landscapes and improve equity in SSA (RDE)
- Individual and institutional capacity of decision makers' capacity strengthened in 6 countries to use WLE tools and analyses and to manage trade-offs in decisions (RDE, LWP)
- Decision makers in 4 regions use WLE gender maps/profiles, guidance, and investable solutions to enhance equitable access to land and ecosystems (MRV, RDE)

(LWP)

- Decision makers in at least 2 regions use WLE knowledge products to increase resource use efficiency and reduce costs of trade-offs across the water-energy-food nexus (MRV)

By 2017:

- WLE recommendations for investing in smallholder land and water management are incorporated into: (a) 10 national/state policies, initiatives or programs in SA and SSA; (b) at least 10 new investments initiatives by donors; (c) entrepreneurs' investments of private capital into business models; and (d) methods, analyses, tools, etc. used by national agricultural research and extension systems (NARES) (LWP)
- Knowledge base on causes of low soil productivity in SSA feed into development programs for targeting of interventions (LWP)
- A network of soil spectral laboratories supported in at least 15 African countries and in use by private sector soil testing services in 2 countries (DAI)
- Soil information systems adopted at national and farm level in Ethiopia, Ghana, Nigeria and Tanzania (DAI)
- Enhanced knowledge on water-food-energy trade-offs in 2 regions through application of WLE decision support tool for trade-off analysis (MRV)

wider set of storage options to address water variability concerns, drawing on water storage options and solutions identified by WLE (MRV)

By 2017:

- Global reuse guidelines and initiatives acknowledge WLE input on sanitation safety, safe wastewater and excreta management and use (RRR)
- Multi-regional capacity improved on safe wastewater reuse covering 70 countries in collaboration with WHO, FAO and UN Water (RRR)
- 5 policies and programs in SA and SSA acknowledge recommended safe reuse practices (RRR)
- Water accounting tools adopted by 2 basin authorities in WLE focal regions to improve water use planning (DAI)
- Enhanced knowledge of the potential of underground storage to reduce flood/drought risks, maintain ecosystem services and improve livelihoods in at least 2 regions (MRV)

7. WLE Budget

In 2015, according to the financing plan of CGIAR, it is anticipated that WLE will be allocated USD 34 million of Window 1 (W1) and Window 2 (W2) funding (USD 28 million from W1 and USD 6 million from W2), representing a growth in funding of approximately 10% compared to 2014. Applying the same growth rate of 10% to 2016, the WLE budget is based on a forecasted allocation of W1 and W2 funds of USD 37.4 million. The program recognizes that actual allocations to WLE for 2016 will be based on performance to date, and the quality of the proposal for the extension phase and the conclusions drawn from it. WLE partners estimate bilateral and Window 3 (W3) funding to the program to reach USD 32 million in 2015 and USD 30.7 million in 2016, bringing total estimated funds of USD 66 million in 2015 and USD 68 million in 2016 (See Table 1)

Table 1: Estimated funds available to WLE in 2015 and 2016 (in USD 000's).

Source of funding	2015	2016	Total
W1/W2	33.97	37.37	71.34
W3/Bilateral	31.98	30.65	62.63
TOTAL FUNDS	65.95	68.02	133.97

The Program Implementation Agreement for WLE sets out a total budget for phase 1 of USD 246 million. It is expected that 2012–2014 expenditure will be 23% under budget, at USD 189 million. For the period 2012–2016, although the W1 and W2 funding levels are expected to remain slightly below the original budget (USD 160 million compared to USD 164 million), additional bilateral and W3 funding to be received during the extension phase is expected to be USD 163 million compared to the budgeted value of USD 80 million. This brings the total budget for phase 1 of the program to USD 323 million from 2012 to 2016. Authorization will be required to spend this additional USD 77 million.

Budgets will be allocated to the new WLE flagships and their associated activity clusters, as described in this proposal. Funds are also allocated to the management and governance of the program as well as for investment in the core themes of Ecosystem Services and Resilience, and Gender, Poverty and Institutions, and providing support to the leadership of flagships through WLE's 'Program Management and Coordination' (PMEC) budget. WLE's Gender Strategy sets out a minimum target of 10% of the program's annual budget to be allocated for gender-specific research; during the extension phase, the program aims to increase this proportion to at least 12% and 13% in 2015 and 2016, respectively. Budgets for each flagship and the estimated allocation of these budgets for gender-specific research are shown in Table 2. These budgets and proportions may be adjusted as the details of activities under each cluster are developed further.

Table 2: WLE budgets for 2015-2016 by flagship, including the proportion of funds allocated for gender-specific research.

Flagship	2015			2016		
	Total funds (W1, W2, W3 and Bilateral)	Proportion of funds allocated for gender-specific research	Percentage of funds allocated for gender-specific research (%)	Total funds (W1, W2, W3 and Bilateral)	Proportion of funds allocated for gender-specific research	Percentage of funds allocated for gender-specific research (%)
1. LWP: Sustainably increasing land and water productivity	9,036	1,165	13	9,109	1,174	13
2. RED: Regenerating degraded agricultural ecosystems	16,503	1,644	10	16,636	1,657	10
3. RRR: Recovering and reusing resources in urbanizing ecosystems	4,258	408	10	4,293	411	10
4. MRV: Managing resource variability and competing uses	10,409	1,196	11	10,494	1,206	11
5. DAI: Strengthening decision analysis and information systems	9,077	342	4	9,150	345	4
6. IES: Integrating ecosystem solutions into policy and investments	12,000	2,400	20	13,200	2,640	20
SUBTOTAL Flagships	61,283	7,155	12	62,881	7,433	12
PMEC: Program Management and Coordination	4,670	1,002	21	5,137	1,102	21
SUBTOTAL PMECC	4,670	1,002	21	5,137	1,102	21
TOTAL	65,953	8,157	12	68,018	8,535	13



RESEARCH
PROGRAM ON
Water, Land and
Ecosystems

Led
by:



CGIAR Research Program on Water, Land and Ecosystems

The **CGIAR Research Program on Water, Land and Ecosystems (WLE)** combines the resources of 11 CGIAR centers, the Food and Agriculture Organization of the United Nations (FAO) and numerous national, regional and international partners to provide an integrated approach to natural resource management research. WLE promotes a new approach to sustainable intensification in which a healthy functioning ecosystem is seen as a prerequisite to agricultural development, resilience of food systems and human well-being. This program is led by the International Water Management Institute (IWMI) and is supported by CGIAR, a global research partnership for a food secure future.

WLE Partners

