

CGIAR RESEARCH PROGRAM ON  
WATER, LAND AND ECOSYSTEMS



RESEARCH  
PROGRAM ON  
Water, Land and  
Ecosystems



# SUSTAINABLE SOLUTIONS FOR PEOPLE AND SOCIETIES



A farm worker uses water from a solar pump in India.  
Prashanth Vishwanathan (IWM)

“ With the historic passing of the Sustainable Development Goals and the climate change agreements in 2015, sustainability is at the heart of the global development agenda. WLE is providing the evidence and solutions to ensure that our agri-food systems are enhancing our natural capital in an equitable and sustainable way. ”

Johan Rockström, WLE Steering Committee Chair

IN PARTNERSHIP WITH:



# THE CHALLENGE

Global agriculture is one of humanity's greatest success stories because we produce more food than ever before. But this success masks two key constraints. Agriculture is the single largest contributor to environmental degradation, with more than 70% of global freshwater resources used for food production. And despite progress, one person in every nine remains food insecure. The future success of sustainable agriculture hinges on the sector's ability to be a net contributor to natural capital and enable the poor and marginalized to produce food and generate more income.

## VISION

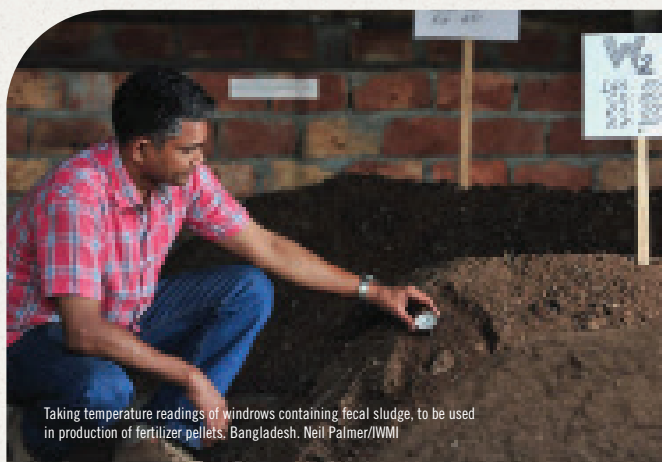
WLE's vision is for a world in which agriculture thrives within the vibrant ecosystems that support it, while delivering enduring prosperity for farming communities.

## MISSION

WLE's mission is to provide the evidence base and solutions to help decision makers scale up sustainable land, water and ecosystem management innovations and investments in agricultural landscapes that reduce risks and increase resilience of women and men in developing countries. The program achieves this through a focus on increasing productivity and identifying synergies and managing trade-offs among sectors. WLE supports the implementation of Sustainable Development Goals, with a focus on No hunger (SDG 2), Clean water and sanitation (SDG 6), and Life on land (SDG 15).

Led by the International Water Management Institute (IWMI), WLE combines the resources of ten CGIAR centers, the United Nations Food and Agriculture Organization (FAO) and hundreds of research and uptake partners based around the world.

# TACKLING TODAY'S AGRICULTURAL AND POVERTY CHALLENGES



Taking temperature readings of windrows containing fecal sludge, to be used in production of fertilizer pellets. Bangladesh. Neil Palmer/IWMI



Drip irrigation in the Tana River Basin, Kenya. Georgina Smith/CIAT

**RESILIENCE:** WLE is developing a portfolio of technologies, services and institutional mechanisms to strengthen the resilience of governments and communities, enabling them to better respond to extreme weather events. In Africa, researchers have developed SMART ICT tools to empower smallholder farmers in Africa to make informed decisions in managing their land and water resources better. This is being trialled in Sudan and Nigeria.

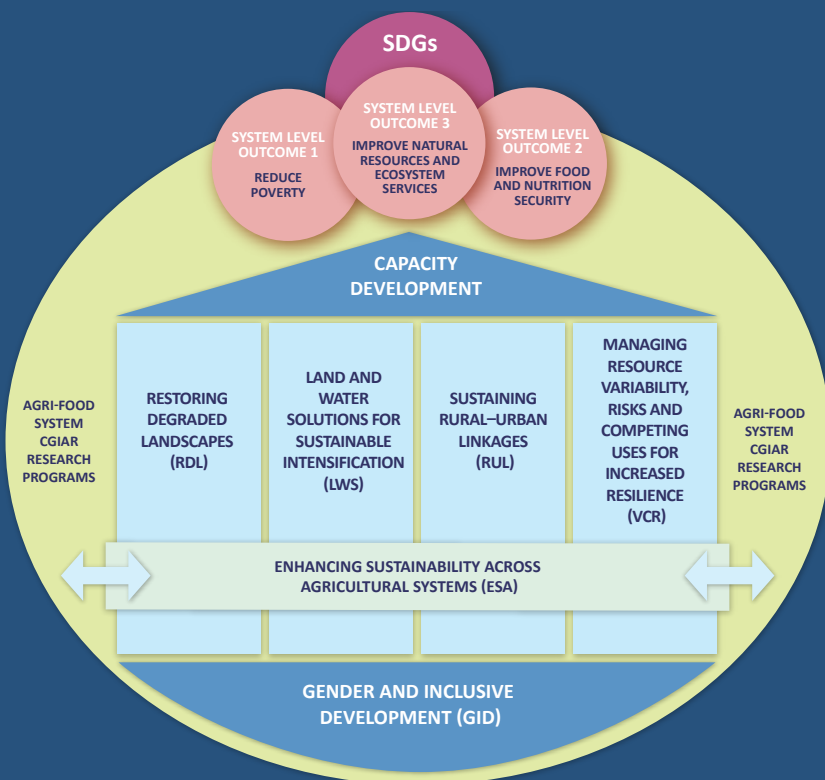
**PRODUCTIVITY:** WLE works on water productivity and availability for agriculture, as well as equitable access for both men and women. In India, WLE has helped establish the world's first solar pump

irrigation cooperative which was launched in 2015. This enterprise aims to reduce over-extraction of groundwater by providing incentives for the cooperative to sell excess power produced by their solar irrigation pumps back to the grid.

**TRADE-OFFS AND SYNERGIES:** WLE is working on Africa's first water fund. In the Tana River Basin in Kenya, the fund is to manage water and ecosystem services across scales and sectors. It is designed to provide a sustained water supply to more than nine million people and generate US\$21.5 million in long-term benefits to Kenyan citizens, including farmers and businesses.

# WLE INTO THE FUTURE

WLE has completed five successful years of operation (see page 4 on achievements). WLE Phase 2 (2017–2022) is designed to identify synergies between increased agricultural productivity and economic prosperity, while achieving environmental sustainability. WLE will complement research on specific commodities and value chains by focusing on game-changing solutions and innovations that will transform both agro-ecosystems and the institutions that manage them. WLE ensures that solutions incorporate equity, access to resources and gender mainstreaming through its core theme on Gender and Inclusive Development.



## FLAGSHIP 1: REGENERATING DEGRADED LANDSCAPES (RDL)

The RDL flagship works with governments, investors and people to restore degraded landscapes as well as enhance ecosystem services and related benefits, such as food, energy, clean water and livelihoods. RDL will work with more than 1.5 million farm households to restore more than 3 million ha and an estimated 4 MT CO<sub>2</sub>-e yr<sup>-1</sup> sequestered in soils. It focuses its efforts around SDG 15.3 on achieving a land degradation-neutral world.

## FLAGSHIP 2: LAND AND WATER SOLUTIONS FOR SUSTAINABLE INTENSIFICATION (LWS)

The LWS flagship will help to strengthen the resilience of farming communities, especially the poor, by developing productive agricultural land and water management solutions that can be sustainably applied at scale. LWS research will foster more resilient, equitable and food-secure farming landscapes, benefiting six million women and men and thereby contributing to SDG 6.4 on increasing water use efficiency at scale (target: 5% in irrigation).

## FLAGSHIP 3: SUSTAINING RURAL-URBAN LINKAGES (RUL)

The RUL flagship addresses challenges related to urbanizing landscapes (i.e., resource competition and pollution) and opportunities for closing water and nutrient loops. RUL increases water- and nutrient-use efficiency on 4 Mha of urban and peri-

urban areas and aims to improve nutrient- and water- use efficiency on 3.6 Mha through resource recovery from food waste. RUL works primarily on SDG 2, 6, and 11.

## FLAGSHIP 4: MANAGING RESOURCE VARIABILITY, RISKS AND COMPETING USES FOR INCREASED RESILIENCE (VCR)

The VCR flagship aims to reduce risks and losses that farming communities suffer from floods, drought and other water-related events as well as help them manage trade-offs from competition over water, energy and land. It expects to co-develop and scale innovative policy mechanisms and institutional arrangements, benefiting 10 million smallholders by 2022. VCR works primarily on SDGs 2.4 and 6.4.

## FLAGSHIP 5: ENHANCING SUSTAINABILITY ACROSS AGRICULTURAL SYSTEMS (ESA)

The ESA flagship will integrate research findings from other CGIAR research programs on agri-food systems and WLE flagships to support development decisions and investments across commodities, sectors and scales. This work includes refining, testing and benchmarking pragmatic sustainability indicators at scale as well as applying decision analysis methods. ESA works on multiple SDGs (2, 3, 5, 6, 13 and 15) and more importantly, looks across the SDGs to identify synergies and avoid unintended consequences in one SDG having an adverse affect to achieving another.

# WLE PHASE 1 (2012-2015) KEY ACHIEVEMENTS



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## RESEARCH & SOLUTIONS



**185**  
FIELD TESTED  
TECHNOLOGIES



**486,739** WEBSITE VIEWS  
**284,585** CG SPACE VIEWS  
**31,841** DATABASE VIEWS



**367 ISI PUBLICATIONS**

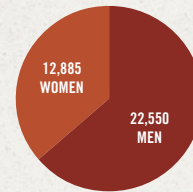
## OUTCOMES & IMPACTS

### 87 MULTISTAKEHOLDER R4D PLATFORMS

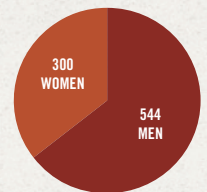


**IN 2015, WLE TOOK PART IN MORE THAN 200  
POLICY RELATED ENGAGEMENTS**

### CAPACITY DEVELOPMENT



SHORT-TERM COURSES



LONG-TERM TRAINING

**2,499,035 (2015) HECTARES UNDER IMPROVED  
TECHNOLOGIES OR MANAGEMENT PRACTICES**

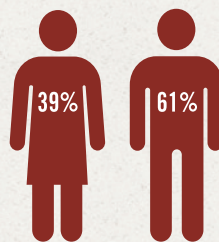
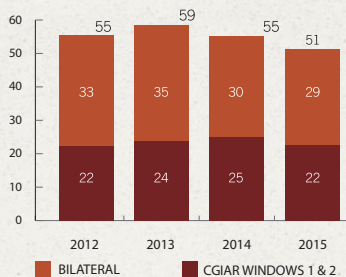


**366,000 FARMERS APPLYING  
NEW TECHNOLOGIES**



## PROGRAM

### ANNUAL EXPENDITURE (US \$ MILLIONS)



**GENDER DISTRIBUTION  
OF TOTAL 511 STAFF**

### 457 PARTNERS

- 12 CORE
- 204 RESEARCH
- 177 CAPACITY DEVELOPMENT
- 54 ENABLING AND LEVERAGE (UPTAKE)
- 10 INVESTMENT

CGIAR Research Program on Water, Land and Ecosystems  
International Water Management Institute (IWMI)

127 Sunil Mawatha  
Pelawatta, Battaramulla, Colombo  
Sri Lanka

Email: [wle@cgiar.org](mailto:wle@cgiar.org)  
Website: [wle.cgiar.org](http://wle.cgiar.org)  
Thrive: [wle.cgiar.org/thrive](http://wle.cgiar.org/thrive)



IN PARTNERSHIP WITH:

