



CGIAR
Science for a food-secure future

Towards an AI-First Open Innovation & Digital Transformation at CGIAR

The Opportunity, the challenge, and proposed strategy

October 2023

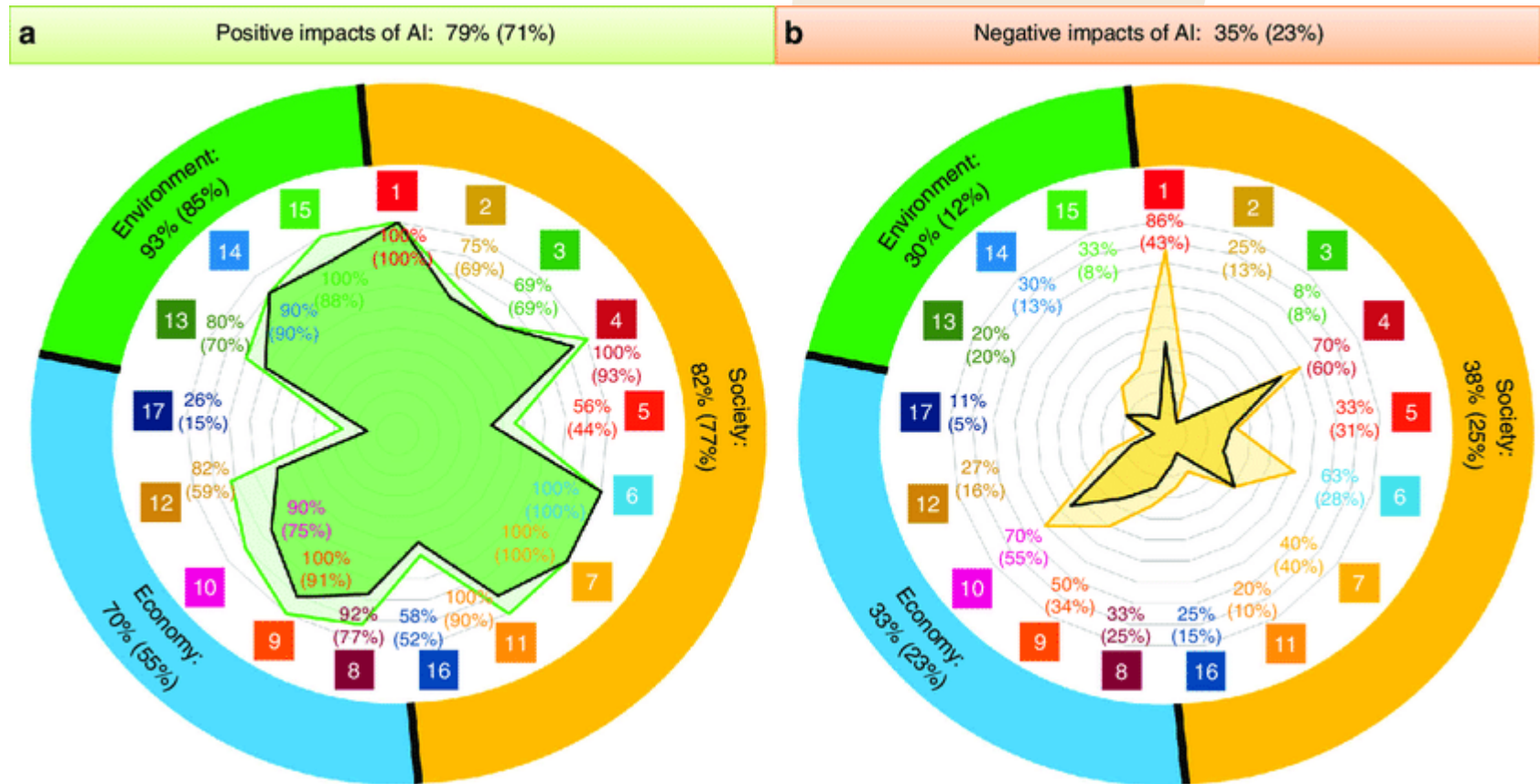
AI in Agriculture, Climate and SDGs

\$15.3 billion by 2025, projected global spending on “smart” agriculture, including AI and ML (*Forbes*)

\$2.5 Billion by 2026, the projected Market Size of AI in Agriculture (*Facts & Factors*)

\$4.5 billion by 2025, projected growth in IoT-enabled Agricultural (IoTAg) technology segment (*PwC*)

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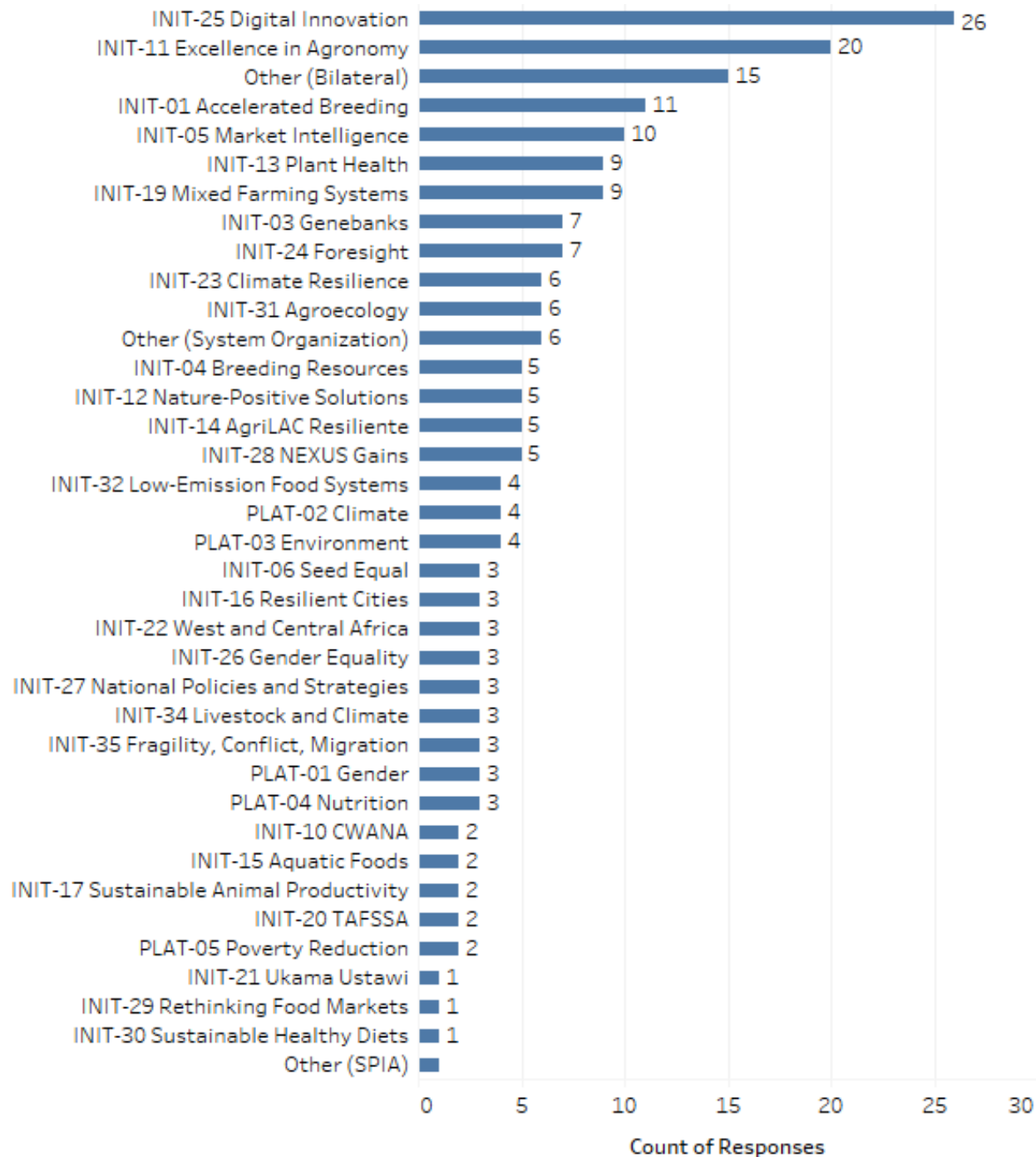
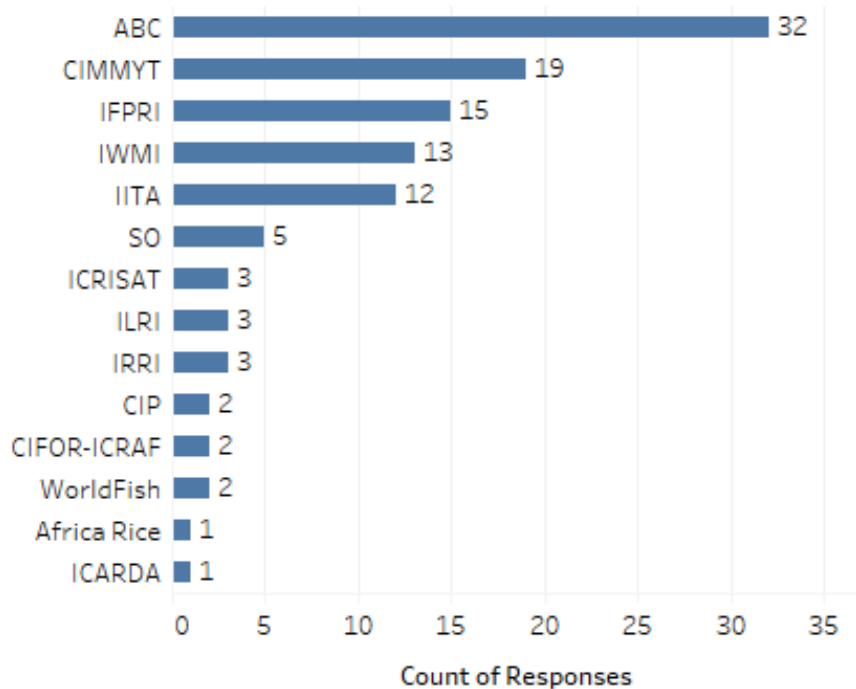
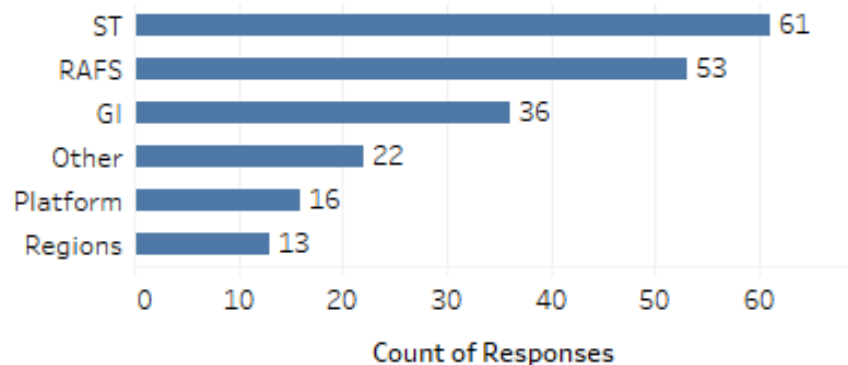


The role of artificial intelligence in achieving the Sustainable Development Goals. (*Nature Communications 2020*)

AI at CGIAR

CGIAR AI/ML Use-case Survey | Oct 2023

113 responses from 14 entities, 29 Initiatives/Platforms



AI Use Cases Survey



AI approaches
and methods

- Natural Language Processing (NLP).
- Random Forest
- Decision Trees
- Bayesian Approaches
- Computer Vision and Image Recognition

To analyze Large
data sets

- Survey data
- Remote Sensing and Geospatial
- Water & Environmental Data
- Text and Publication
- Biological & Genetic



Various
research
objectives

- Suitability analysis
- Spatial mapping
- Understanding behavior
- Predictive modeling
- Monitoring



SICK 0.34

HEALTHY 0.32

HEALTHY 0.39

HEALTHY 0.42

SICK 0.32

HEALTHY 0.42

HEALTHY 0.46

HEALTHY 0.37

HEALTHY 0.36

HEALTHY 0.31

HEALTHY 0.46

HEALTHY 0.33

HEALTHY 0.33

Computer vision-augmented plant selection in breeding trials

Machine Observation



Quantitative Counts

The future of AI in Agriculture:
Farmers/breeders as AI
engineers?

Source: Artemis project

Risks and Challenges



Incohesive Digital Transformation Strategies



Fragmented approach to AI



Skills and sustained capacity

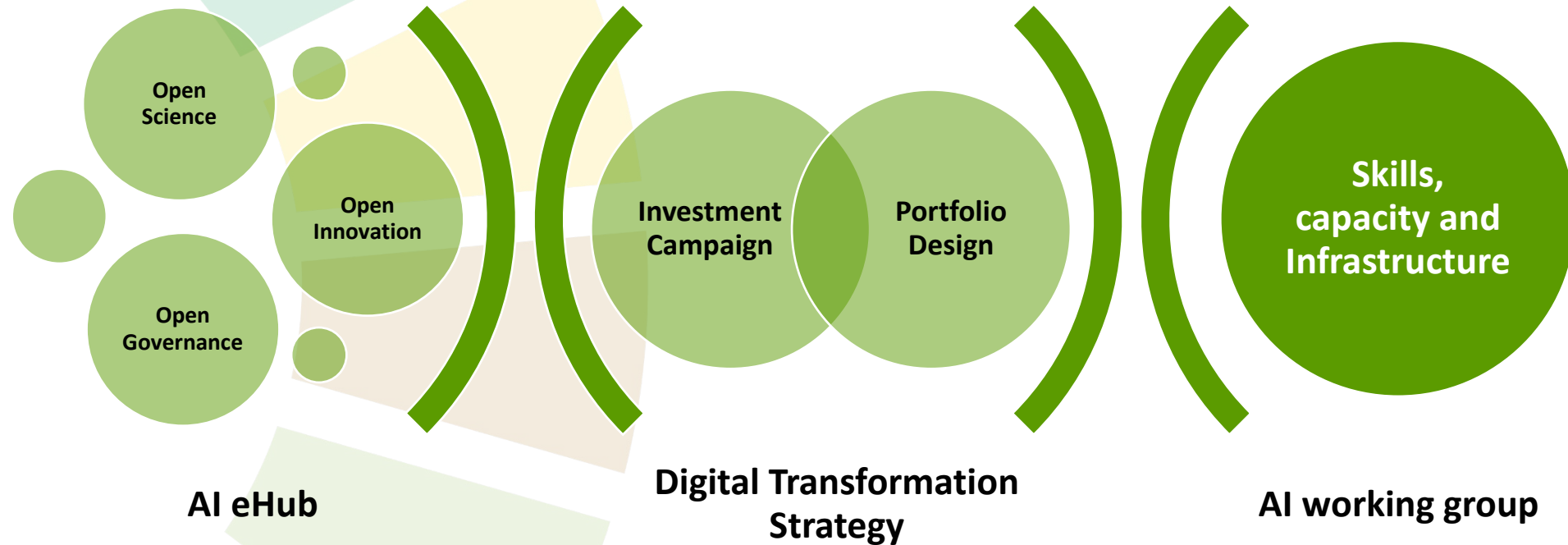


Agency and ownership



Bias, Ethics, and Governance

A Global/regional AI eHub: a unified coherent and strategic approach to AI



Conclusion



CGIAR has unique **comparative advantages** we must leverage in a **coherent way to transition from fragmented** small-scale AI applications to **realizing its full potential through strategic implementation** and progress at scale.



To get there, we must invest in making AI more **accessible, beneficial, equitable, ethical, and trustworthy**.



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