

Inspire ▶▶
Implement ▶▶
Impact ▶▶

EiB Virtual Meeting

16-24 November 2021



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Breeding
Platform

EiB Virtual Meeting 2021

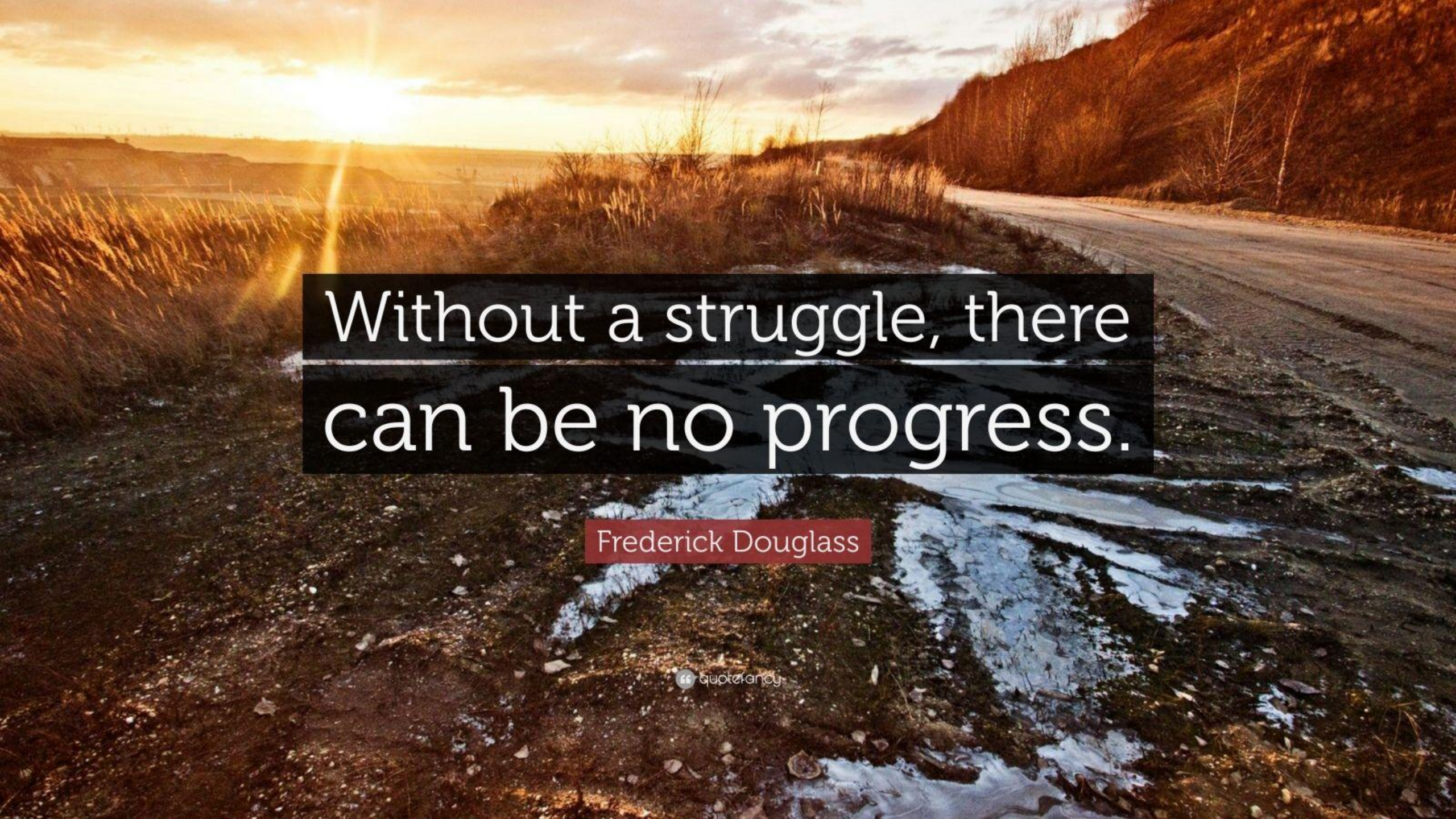
▶ Driving Implementation



EiB is about driving implementation -- and change.

As we transition to One-CGIAR, what can we learn from our past to be more successful going forward?





Without a struggle, there
can be no progress.

Frederick Douglass

Barriers & successes: What we've learned so far



- Strong sponsorship from senior leaders is critical.
- Improvements can come when you provide opportunity for those affected to come up with solutions.
- Cultural change – individual scientists and managers need to own the plan and drive it.
- It's ok to fail! Recognize early and course correct.
- Have a good communications plan for the targeted change – take time to develop it well; it is the basis for change management.
- Planning is critical. New way of working – take a step into the dark and move forward.
- Change means different things to different people. Highlight the new opportunities and bring the staff onboard.
- Provide career opportunities.

Looking back



Data sources:

- Continual partner discussions
- BPAT evaluations
- Continuous Improvement training and processes
- CAS evaluation
- Feedback sessions: webinars, mini-symposiums, workshops, virtual meetings
- Stakeholder survey...



Your input and feedback is important and very helpful!

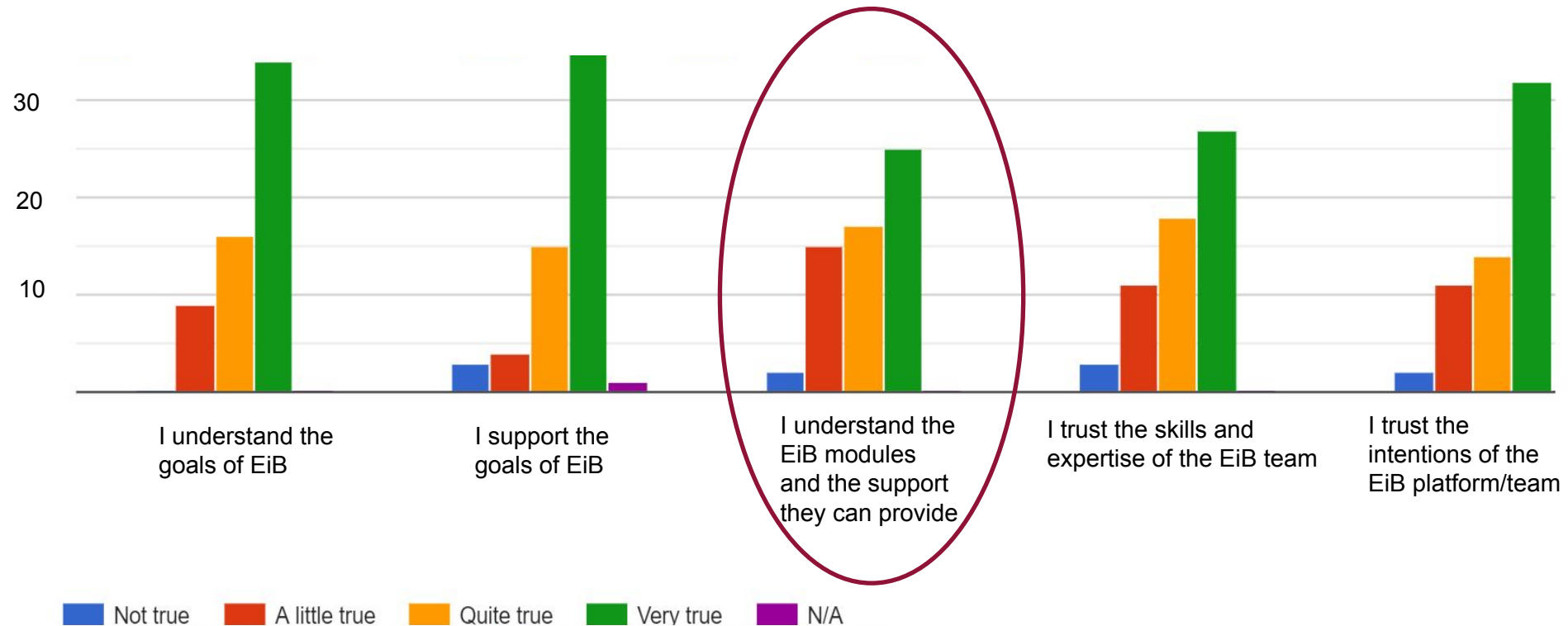
Stakeholder feedback survey



- *Part of our EiB continuous improvement project*
 - *87 responses (Research assistant = 9, Manager = 21, Breeder = 48, Admin = 1)*
 - *Thank you to all who participated – we took note and are improving processes and communication!*



EiB GOALS: Good **understanding of & support for EiB goals.** Less understanding about the support that EiB modules provide

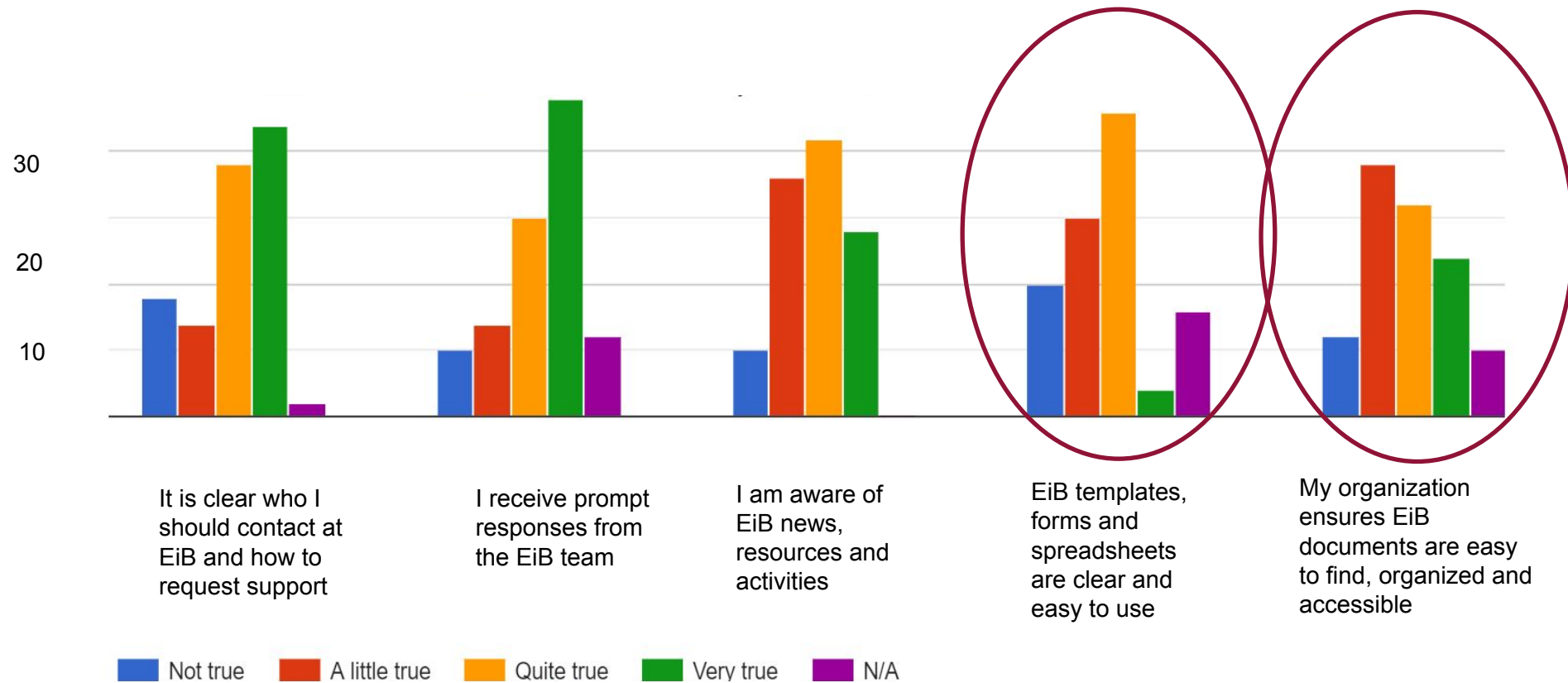


*'I feel in general there is lack of communication as to the current/updated goals in each module'
'It has become unclear what some modules are trying to achieve now, and who's in charge'*





COMMUNICATIONS: EiB templates are hard to find and use

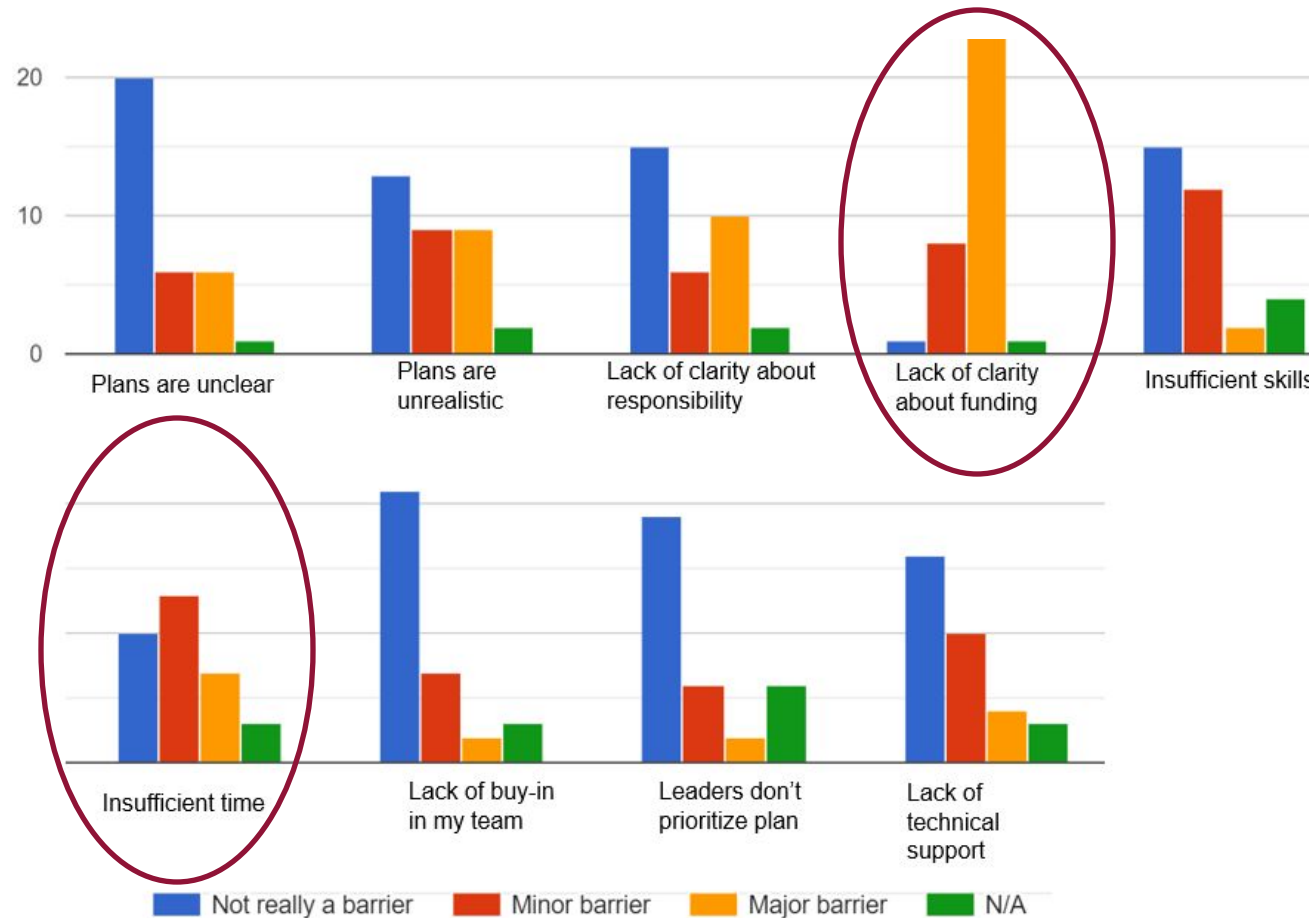


'It is difficult to browse available information in the EiB webpage'

'It is often challenging to interpret and connect with EiB forms and templates...they've become specialized with concepts and terminology we are not using'



IMPROVEMENT PLANS: What are the most significant barriers to implementing your improvement plan?



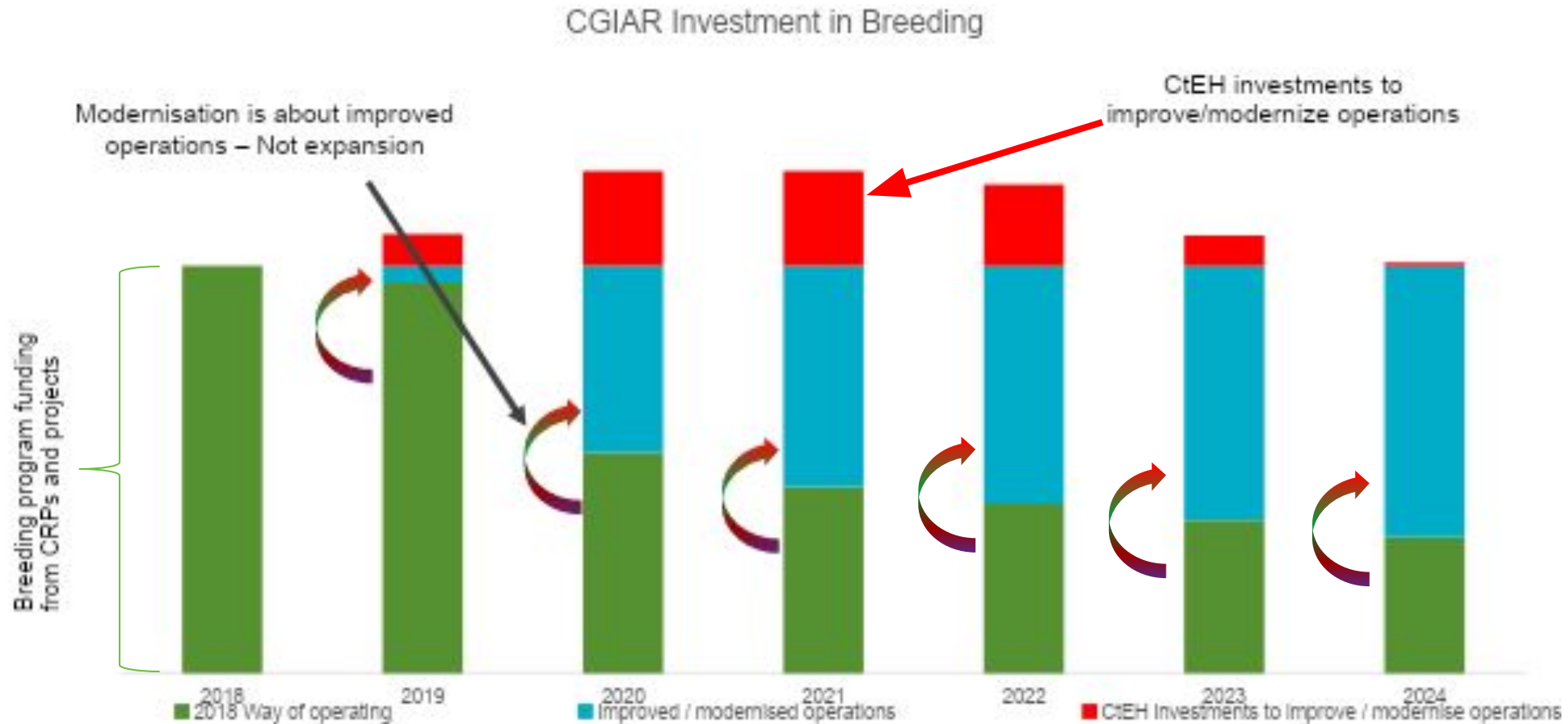
'Need clearer next steps for priorities for funding support'
'Attention and time of many/most of the key GMP staff are spread very thinly across multiple objectives/activities'

Turning feedback into actions to better support breeding programs



- Better coordination amongst modules and coordinated communication to customers
 - Meeting regularly to coordinate module outputs and engagement
 - Updating core module objectives of modules in materials & website
- Improve templates and explain terminology
 - Working to redesign templates to be less cumbersome
 - Will provide templates through toolbox (and email)
 - Defining, standardizing and harmonizing terminology across platforms
 - Improved format for improvement plans being developed
- Lack of clarity about funding
 - Will be a period of transition from center based to Initiative based
 - For CtEH: working on improved, more transparent approval process that includes breeding program input

What does modernization mean and where do resources come from?



Crops to End Hunger Investments



- For single investments to transition breeding programs to become more effective and efficient
- The funds are intended to accelerate transformation, implement new technologies and tools, and facilitate improvements
- Not for expansion, not for routine operational activities or sustained staff salaries
- We (EiB) are working on an improved and more structured and transparent process and guidelines for development of projects that includes breeding program input



EiB survey on barriers to technology adoption: some key results

NARS

- **Culture:** Change of mindset. Getting used to doing something differently is uncomfortable
- **Clear leadership and direction on using the technology**
- **Job Security:** People are afraid they'll lose their jobs to technology

CGIAR

- **Procurement and logistics**
Pandemic induced equipment deliveries and difficulty getting into offices and access the equipment
- **Lack of centralized services** Seed counters not centralized so a lot of people need access/training
- **Staffing** (breeders too busy, too few technicians)

NARS+CGIAR

- **Printer supplies** difficult to get
- **Lack of technical support** for equipment and software
- **Few digital equipment** e.g., hand-held devices through EiB
- **Internet** access and connectivity is limited
- **Training** (timing, customized, frequency and quality) not available

Come and join module 7: Adoption and Outreach to discuss solutions!



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Successes on overcoming barriers: highlights



1. **Unclear targets:** first-ever full inventory of all (142) CGIAR breeding pipelines, along with investment cases.
2. **Inconsistency:** Development of standardized methods of calculating realized and predicted genetic gain.
3. **Skills gaps:** Launch of Breeding Operation Network for Development (BOND) and Training and Adoption Network (TrAIN).
4. **Unclear roles:** Development of CGIAR-NARES partnership model.
5. **Lack of centralized data management:** Enterprise Breeding System (EBS), Breeding Management System (BMS) and BreedBase.
6. **Lack of clarity:** Breeding Informatics Network (BrIN) defined best practices for experimental design, stage 1 analytics, genomic selection, and more.
7. **Access issues:** mid-density genotyping platform accessed by 54 institutes (CGAIR & NARES) in 31 countries.





EiB Experts and Support Staff to Help You Inspire, Implement and Achieve Impact



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Looking Forward - Funders' six requests



To deliver the highest possible rate of genetic gains in farmers' fields, in the form of nutritious, climate-resilient, market-demanded cultivars, CtEH Funders request Centers to:

1. Develop pipeline investment cases.
2. Incentivize management and staff to deliver higher genetic gain.
3. Develop strategic plans for delivery to farmers and varietal turnover
4. Quantitatively optimize pipelines to increase genetic gain.
5. Implement shared services.
6. Build NARS breeding networks and capacity.

The image features a light blue background. On the left side, there is a grid of 15 white paper boats arranged in 5 rows and 3 columns. A single red paper boat is positioned to the right of the grid, slightly above the center. A dotted white line starts from the bottom of the grid and curves upwards and to the right, ending at the red boat. The word "Change..." is written in a bold, dark red font at the top left of the image.

Change...

**Progress is impossible
without **change**, and those
who cannot change their
minds cannot change
anything.**

George Bernard Shaw

From yesterday to tomorrow – Driving Progress



- Past CG breeding efforts have been successful and are having success!
- Opportunities exist to modernize and increase effectiveness and capacity of breeding efforts
- Opportunities exist to consolidate/centralize activities that can be done regionally or globally □ **N4ETTSS**
- 2 key areas to drive progress:
 - Operational excellence
 - Scientific excellence
- Opportunities exist to manage across centers and crops □ GI management structure and ABI
- Opportunities exist to integrate new science e.g., genomics, analytics, and doubled haploids that will change breeding
- Future selections will be based on genotype (lab) and phenotype (field) data to enable radically different breeding schemes



Breeding: Starting from first principles



- Must have **clear targets**: **ABI: ReFOCUS + MIPP**
 - Target population of environments – representative of the production environment
 - Market segments - people needing approximately similar products
 - Target Product Profiles – Description of the product that will be successful in a targeted market segment
- **Elite gene pool** - Parental lines with high GEBV for the target market and TPE
- **Phenotyping** – Ability to identify superior progeny **ABI: ACCELERATE + N4ETTSS**
- Supported by **infrastructure** and **processes**:
 - Produce high quality and pure/clean seed
 - Enable excellent plot quality and collection of high-quality phenotypic data
 - Generate good quality genotypic data
 - **CtEH investments**
- **Partnerships**: We go further together. **ABI: TRANSFORM**
- **Breeding scheme optimization** brings it all together





First Principles: Modern breeding schemes



- Taking a “population improvement approach”
 - Change in mindset: Prioritising cycle time, accuracy and genetic diversity over intensity
 - **ABI: ACCELERATE + N4ETTSS**
- Line evaluation – get to testing (STG1) as quickly as possible
- Select parents early (STG 1)
- High accuracy, esp. in STG 1 – more environments, managed envs, testing all important traits, genomics, plotsmanship, data integrity, relevance – on farm trials, etc. **ABI: ACCELERATE + N4ETTSS**
- Actively managing genetic diversity
 - Parent selection when recycling
 - Strategic introgression of novel traits to elite gene pool. **ABI: DISCOVER (+ Genebank)**
 - Separation of trait deployment from variety development. **ABI: ReORGANIZE**

How close is your program? What are your next steps?



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Detailed plans / vision – Initiative proposals



Review deliverables under GI / 1CG Breeding.

www.cgiar.org/how-we-work/governance/system-council/initial-set-of-submissions-for-the-cgiar-2022-2024-investment-prospectus/

Review section 6 and 7 for deliverables (outputs and outcomes). These describe what CGIAR breeding teams will deliver in next 3 years.

And, ABI Town Hall – Dec 2nd.



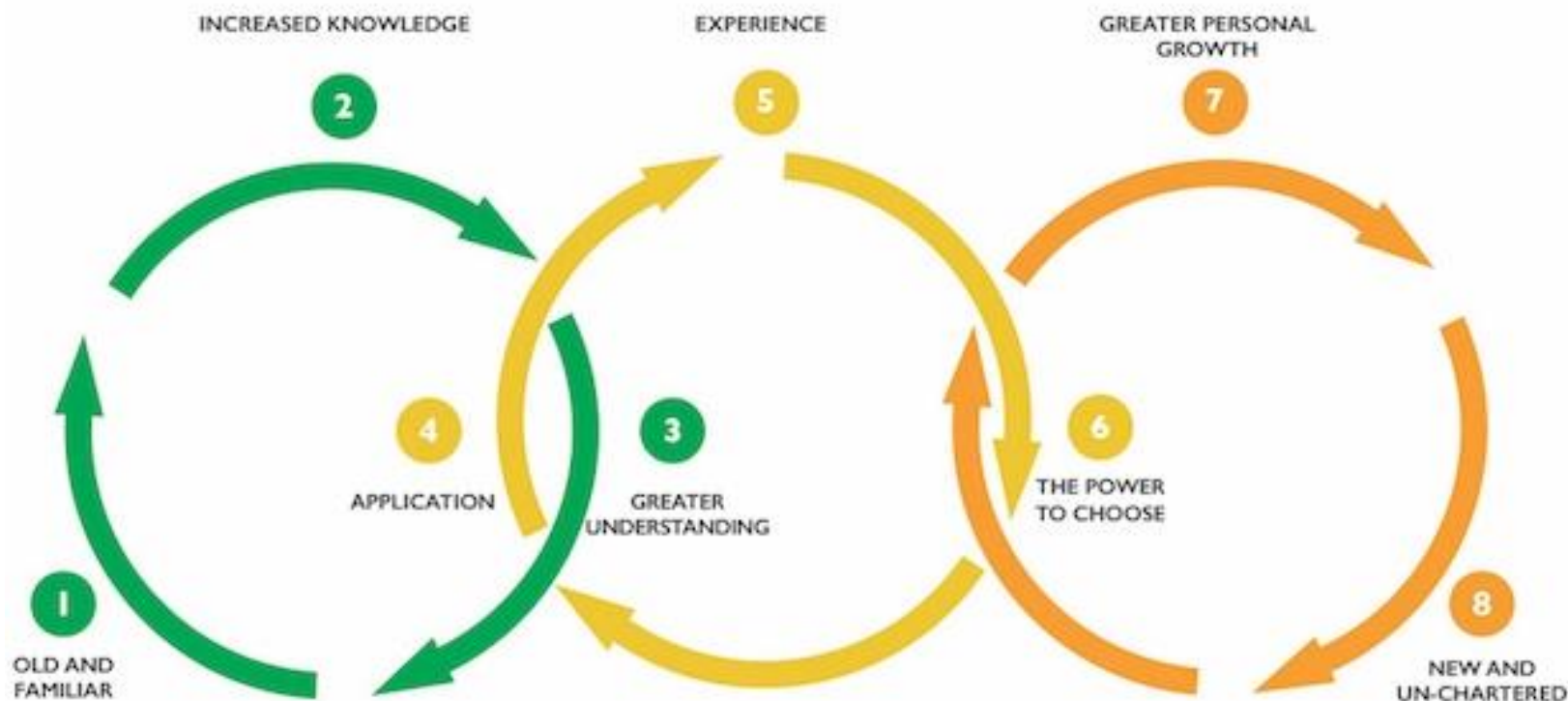
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Change is a Process, Not an Event

KNOWLEDGE + APPLICATION = PERSONAL POWER

We (EiB) are Committed to Help You Grow through Change



Conclusion



Our roles as scientists, leaders, managers, technicians, funders, and policymakers is to **drive positive change!**

We are seeing substantive changes. In mindsets and tangible changes on the ground!



Many ways to take large steps toward the goals of increased **genetic gain and increased variety turnover.**

What are **three things** that you will take from this event and implement to **create change** toward increased genetic gain and variety turnover?



Thank you! Questions?

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