DELPHI TOOLKIT

A tool to surface and assess innovative solutions

May 2021

gain Global Alliance for Improved Nutrition

Alliance Bioversity International CIAT International Center for Tropical Agriculture Since 1967 Science to cultivate change

EAT

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INTRODUCING THE DELPHI TOOLKIT

The Delphi methodology is a useful technique for eliciting expert opinions and forming consensus-based decisions around key questions. It is an iterative process that involves sending various rounds of questions to a selected group of experts on a particular subject. Responses to one round are summarised and used to inform the next round of questions, seeking to identify agreement and disagreements among participants and generating insights about the topic. In this way, disagreements and contentious points are surfaced, while avoiding confrontation (1-2).

The Global Alliance for Improved Nutrition (GAIN) recently conducted two Delphi studies to surface and assess innovative solutions. The *Nutritious Food Foresight* study, conducted in 2019 in partnership with the Global Knowledge Initiative, aimed to reach expert consensus on the innovations that were most likely to improve nutrition outcomes in emerging markets by 2025. The second study, Project Disrupt, was conducted from January to June 2020 in collaboration with the Alliance of Bioversity International and CIAT (International Centre for Tropical Agriculture) and the EAT Foundation. *Project Disrupt* posed the following research question: "Which innovations can be game-changers in making affordable, safe and nutritious foods available in an environmentally sustainable way by 2030?" It focused on three different settings: Bangladesh, Ethiopia and Mozambique.

As a learning product stemming from both experiences, we developed the *Delphi toolkit* to provide guidance for others who might be interested in using the Delphi methodology to surface and assess innovative solutions.

The GAIN Delphi toolkit provides a step-by-step guide and supplementary tools on how to conduct a Delphi study – including preparation, the Delphi rounds, the response analysis and reporting of final results.

SYMBOLS IN THE TOOLKIT

Throughout this toolkit, you will see the symbol shown on the right, which signifies that there is an accompanying supplementary tool that complements the information provided.

Keep an eye out for this symbol throughout the toolkit which indicates tips on IT (Information Technology) tools.

This warning symbol highlights potential areas of bias when performing the Delphi Study.

THE DELPHI METHOD: WHAT IT IS AND WHEN TO USE IT

What is the Delphi method?

The Delphi method was originally developed as forecasting tool in 1953 to the perspectives of US military officers regarding the number of bombs needed in case of war (1). It has since been applied in various domains to address a variety of complex questions (1).

In group decision-making about the future, some common biases include 1) the influence of dominant individuals; 2) noise arising from social complexities and distractions linked to maintaining group dynamics and 3) group pressure for conformity, where quieter members of the group go unheard (2). The Delphi method is used to overcome these barriers to group decision-making by having group members participate in an anonymous manner, permitting all members to have their voices heard, while minimizing the energy lost on maintaining group social order.

The Delphi method is a group problem-solving technique, involving an expert panel who answers iterative rounds of questionnaires, under partial or complete anonymity (3). It provides structured feedback to the participants, usually including statistical summary.

Each round of the Delphi consists of the following cycle (Figure 1):

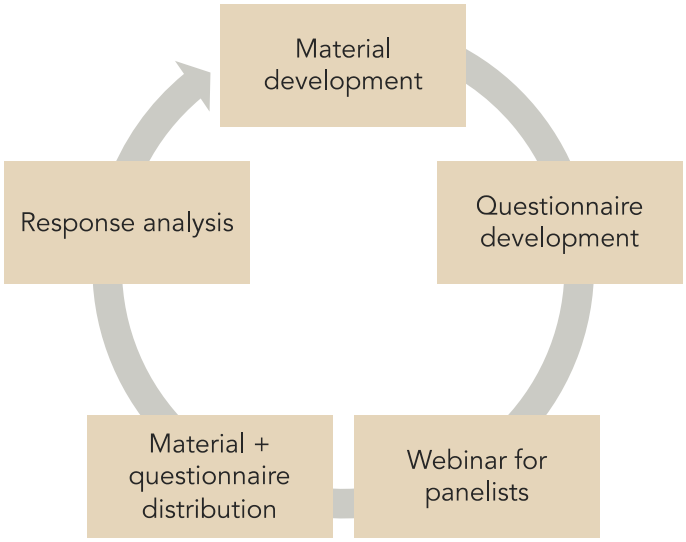

Figure 1: The Delphi round cycle

Depending on the scope and goals of the Delphi study, certain steps may be omitted or added. The Delphi study can consist of as many rounds as necessary to achieve its objective. In general, three rounds are used, but this can be adapted.

When to use the Delphi Method?

The Delphi method is recommended in situations where there is high uncertainty, where knowledge-based methodologies cannot be applied and where expert opinion is the best available option (3). Another way to think of this is to use the Delphi method to solve questions where "not enough is known to determine the answer, but enough is known so that something better than a sheer guess can be made" (2).

In addition to forecasting, the Delphi method has been adapted to serve as a decision-making tool in defining objectives or developing goal hierarchies, as an analysis tool and as a way of exploring alternatives (3). Furthermore, the Delphi method has been used to explore diverse of opinions, to budget, and to develop evaluation criteria (4). Since the objective of Project Disrupt was to surface and assess food system innovations, the Delphi method's ability to systematically explore alternatives as well as diverse opinions made it a suitable choice for the project.

When not to use the Delphi Method?

As mentioned above, the Delphi method relies on expert opinion. Therefore, the Delphi method does not substitute other methodologies for collecting data and should not be used to answer research questions where primary data gathering using more appropriate methodologies is possible. Evidence is more valid than opinion. In other words, the Delphi method should not be used to monitor or evaluate programmes, nor should it replace literature reviews or statistical modelling (although it could be used to gather expert opinion to enrich these). Moreover, the Delphi method is typically time consuming and human resource intensive and may therefore not be appropriate for projects with a short timeline or limited human resources.

WHEN TO USE THE DELPHI METHOD	WHEN NOT TO USE THE DELPHI METHOD
• Surfacing possible innovations • Decision-making • Forecasting future events • Exploring diversity of opinion • Budgeting • Developing evaluation criteria	• Monitoring and evaluating programmes • Literature reviews • Statistical modelling

Figure 2: Appropriate and inappropriate uses of the Delphi method

CONDUCTING A DELPHI STUDY

The GAIN Delphi toolkit was developed to guide a three-round Delphi study. The overall process consists of:

1. Preparation
2. The Delphi rounds
3. Summary
4. Results dissemination and further outputs

Figure 3 presents an overview of the Delphi process as conducted during Project Disrupt, and may be adapted to fit your study:

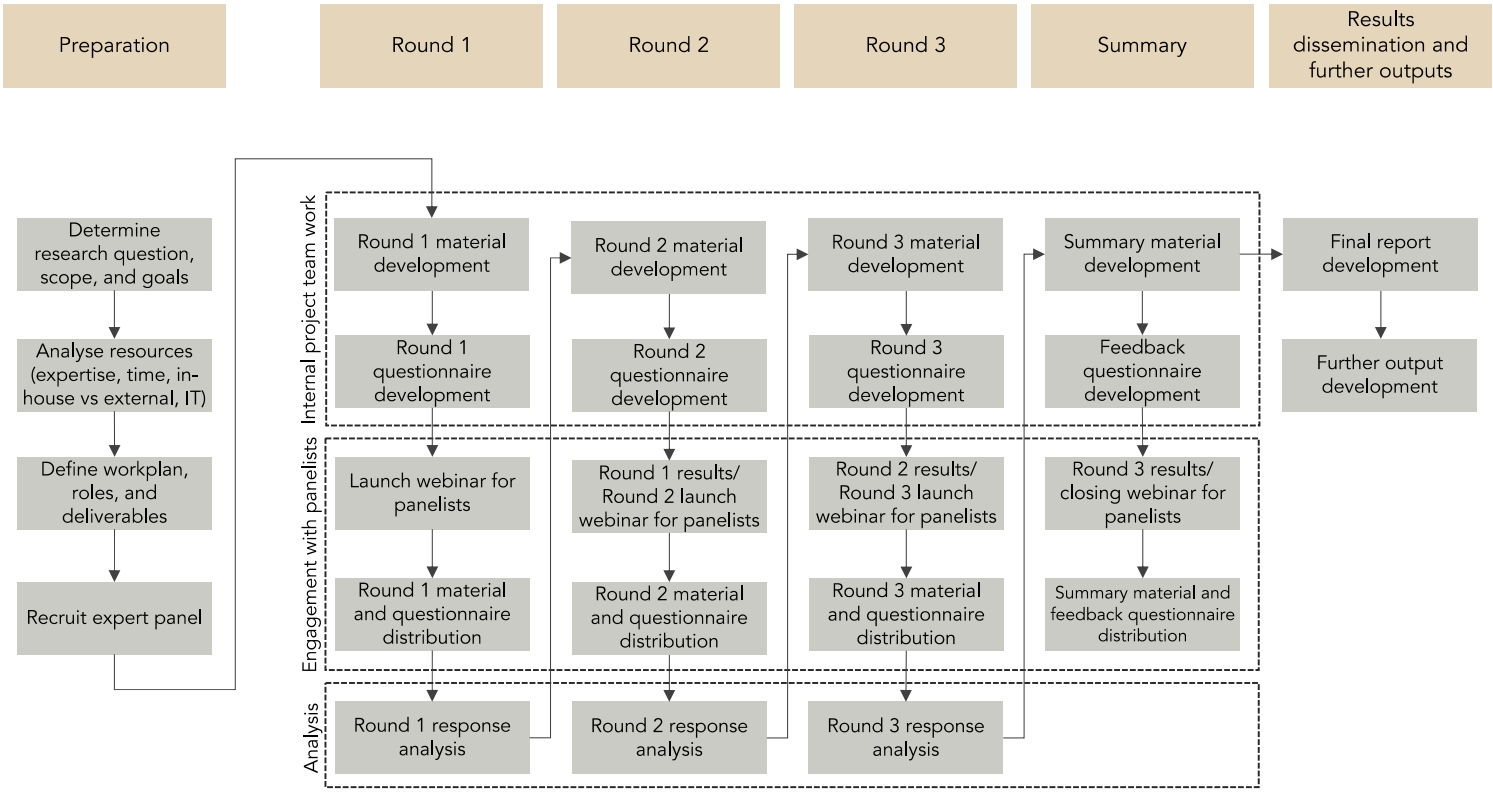

Figure 3: Delphi method overview with three rounds as conducted during Project Disrupt

PREPARATION

Preparation for the Delphi study includes the following steps:

1. Determining the research question, scope, and goals of the study
2. Resource analysis (expertise, time, in-house vs. external support, IT tools)
3. Defining workplan, roles and deliverables
4. Recruiting the expert panel

1. Determining the research question, scope, and goals of the study

It is important to first determine whether the Delphi method is appropriate for the study in question, or if other methodologies would be more appropriate. This depends on the overall aim and specific study objectives, which should be determined before defining a research question.

If the Delphi method is deemed suitable, the first step in the process is to determine the research question. This toolkit was modelled on Project Disrupt – which aimed to surface innovative solutions for dietary and planetary health – but it may be applied to surface solutions in other areas or be adapted to other research questions. The research question should be feasible and aligned with the aim and objectives of the project. Once an appropriate central research question has been established, the scope of the study must be determined.

To guide this process, a visioning meeting/webinar may be conducted with the Delphi team and, where possible, some members of the expert panel. During this meeting/webinar, the research question and scope of the study should be decided upon, as well as other aspects, such as the survey questions (or criteria to evaluate the subject in question).

Ambiguity of the research question (3)

Results of the Delphi rounds are dependent on the interpretation of the questions. If the question is ambiguous, consensus may not be reached since results will not be comparable (3). However, if the question is narrowed down to be very specific, the broad spectrum of viewpoints may not be fully captured (3). Therefore, if consensus is the aim of the Delphi study, the research question should be clear and unambiguous so as to avoid multiple interpretations.

2. Resource analysis (expertise, time, in-house vs. external support, IT tools)

Expertise, time, and in house vs. external support

The second step in the preparation phase is to determine what resources are available in-house and what must be brought in. The first point is expertise. This directly relates to the research question and the method of analysis. The Delphi team members should have expertise in the subject of the research question in order to better manage the project aspects such as survey development and report writing. Moreover, they should have project management/support skills, including communication and time management, in order to effectively engage with the expert panel. Furthermore, certain aspects of the analysis may require proficiency in specific data management and analysis techniques, including spreadsheets (or similar) and descriptive statistics.

The second factor to consider is time. Although each project is different, the Delphi technique can require significant time input for material development, questionnaire development, response analysis, material development based on the response analysis, and panellist coordination. Though dependant on the complexity of the study and number of staff dedicated to the project, a Delphi study generally requires at least a month per round. For optimal participant engagement, no more than two to three weeks should go by between the moment the questionnaire ends and the next point of contact (announcement of the next round through webinar invitation or sharing of the results of the round). Therefore, the Delphi team must ensure they have sufficient time to allocate to the project to complete the analysis of each round's results within no more than two to three weeks. If the internal project team does not include experts in the topic area and/or does not have sufficient time or resources, (e.g. staff with descriptive analytical abilities) to carry out the study, external support should be brought in if funding allows. External support can be identified and selected through a Request for Proposal (see ST-01). If funding is limited the project team may seek to link with relevant partners who are interested in contributing time and resources to the project. Figure 4 shows the decision tree used to determine if external support is required.

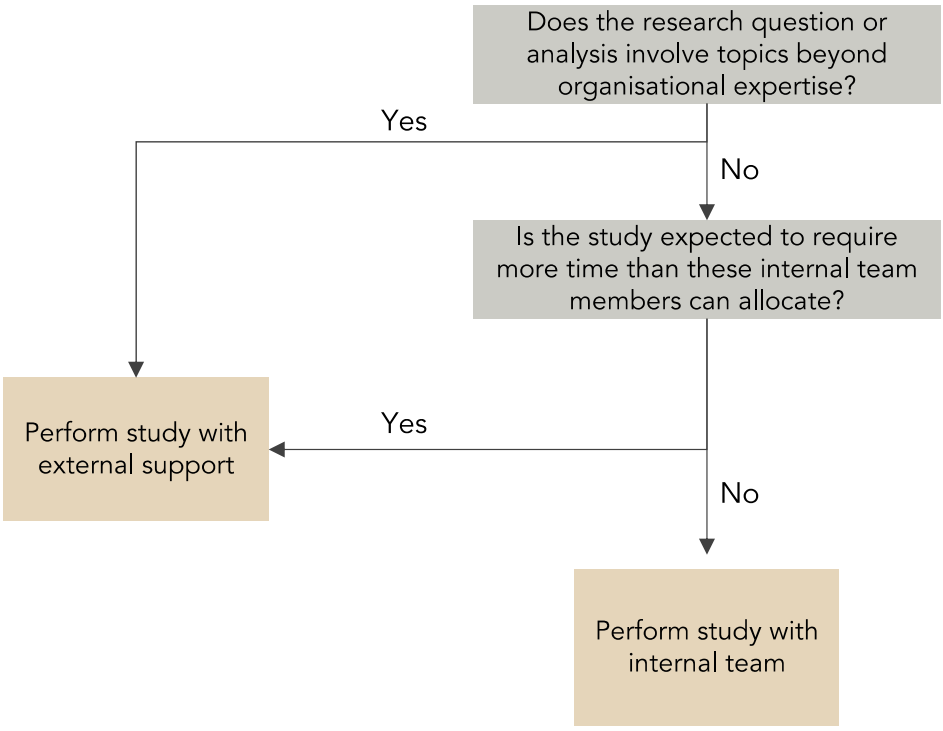

Figure 4: Decision tree for determining internal vs. external involvement in the Delphi study

See Supplementary Tool ST-01 for a template for a contract for external support.

IT Tools

A Delphi study is a collaborative process, making IT collaborative tools essential. These tools must be chosen carefully according to the specific needs of the study and available resources. Key tools include data collection, data management and communication tools. Commonly used IT collaborative tools are Office 365 and Google drive. Websites dedicated specifically to the Delphi method also exist, but

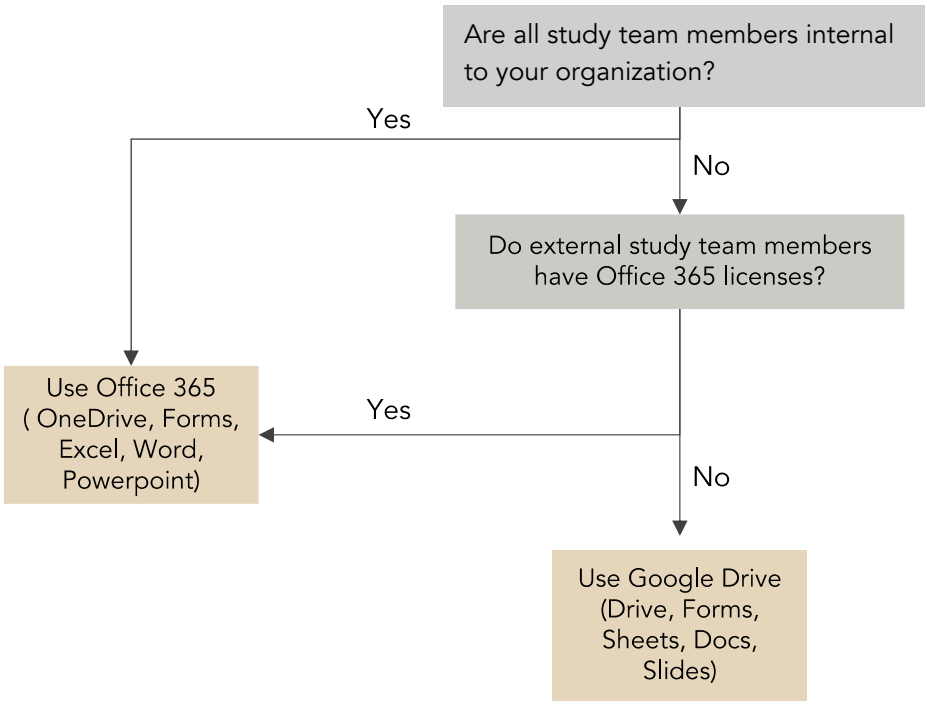

Figure 5: IT collaborative tool selection algorithm

they are not addressed in this document. Figure 5 illustrates the decision tree that can be used to choose IT tools:

Office 365 is often used, owing to general familiarity and ease of integration into existing business IT infrastructure, with many organisations having organisational licenses to Office 365. Live collaboration on documents is possible in Office 365, reducing the likelihood of multiple document versions. These documents can be stored in organisational IT infrastructure such as Microsoft Sharepoint and OneDrive.

In the case of organisations without organisational licenses to Office 365, Google offers a free online collaborative platform for file management, form building, document, spreadsheet, and presentation editing. The functionalities resemble those of Office 365.

In the cases of the Nutritious Food Foresight and Project Disrupt Delphi projects, surveys were made using Google Forms and results fed directly into Google Sheets spreadsheets. Files were managed with Google Drive. Google Drive was chosen because the projects involved several different partners who were all familiar with this tool. The key communication tools used were Zoom (for webinars involving the participants as well as communication amongst the team) and Skype (for communication amongst the team).

3. Defining workplan, roles and deliverables

Following the resource analysis, and after decisions have been made regarding external support, the next step is to define a workplan, roles, and deliverables.
The main components of the workplan are the tasks, the assignment of lead and support roles to execute these tasks, and the associated timelines. These components may be organised on your organisations management platform, if available, although this was not used in Project Disrupt.

Workplans can be made on Microsoft Excel, on Google Sheets, or on various other platforms such as Gantt chart or Kanban software

See Supplementary Tool ST-02 for a workplan and deliverables table template.

4. Recruiting the expert panel

It is crucial to assemble an expert panel with strong knowledge of the research topic who are able to provide diverse opinions. This step is directly linked to the scope of the Delphi study. Inclusion criteria are essential to secure a heterogenous group of experts in terms of experience, sector, gender, geography and other relevant criteria for your project. The inclusion criteria must be set before seeking out the experts and should be agreed upon by the project team to ensure that all team members know what to search for when identifying potential panellists (see Table 1 for inspiration).

Table 1: Examples of expert panel inclusion criteria

CRITERIA	OPTIONS
Experience	Theoretical/practical, # of years
Sector	Private, public
Sex	Female, male
Geographic	Community, country, region, economic development group

Once inclusion criteria are decided upon, the next step is to create an expert database. This database can be used to the contact and other relevant information (gender, institution, participation in different rounds of the Delphi study, and other information relevant to the research question). It can also be used to create a panellist bio-book.

Selection of experts (3)

The very nature of defining who is an 'expert' brings with it bias. This bias should be taken into consideration during the selection of experts and reported on. Selection criteria should be transparent. Self-rating of the experts' own expertise during the surveys may be beneficial since different experts may be more or less knowledgeable about specific aspects of the research

THE DELPHI ROUNDS

Each round of the Delphi process follows a cycle as was shown hereunder (Figure 6). The cycle begins with the internal Delphi team developing supporting material and setting out the questionnaire. The next step involves engaging the panellists with a webinar and distributing the questionnaire and supporting material. Finally, once responses have been provided by the panellists, an analysis is done to inform the next round. The cycle remains the same for all subsequent rounds of the Delphi study. The remainder of this section explains how to proceed with Round 1 and the subsequent rounds.

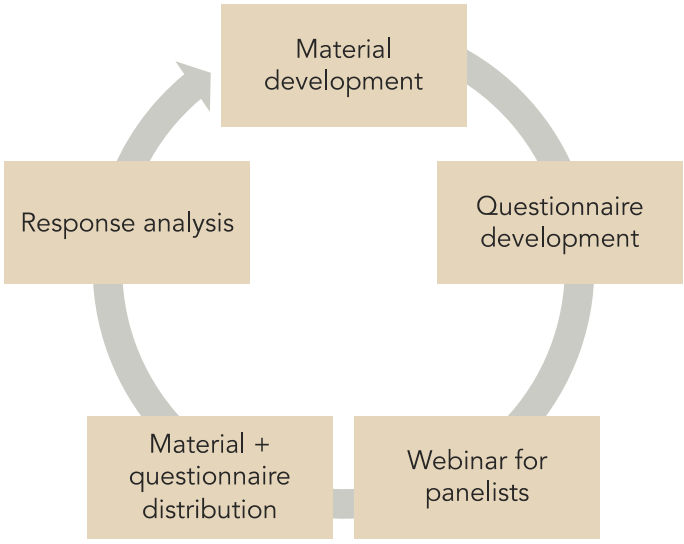

Figure 1: The Delphi round cycle

Each round has a different aim. Figure 6 shows three possible aims. The number of rounds can be adapted to suit the needs of the project, but most Delphi studies last two or three rounds.

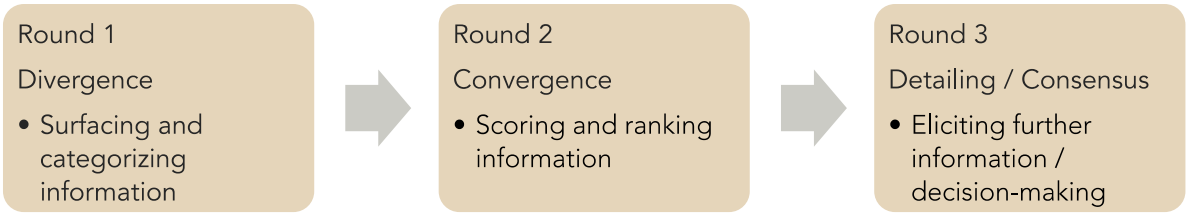

Figure 6: The aims of the three rounds of a Delphi Study

Round 1 questionnaire and supporting material development

The first step of Round 1 is the development of the questionnaire and supporting material for use in the first round of the Delphi study. The first round is generally an open-ended questionnaire (6). However, depending on the nature of the study, the first-round questionnaire can consist of rating and ranking questions. This is often the case for consensus-based Delphi studies with research questions of smaller scope.

The material for the first round should be developed alongside the questionnaire. If the Delphi study is simple and the experts are well-versed in the subject matter, the supporting material could be as simple as an introductory paragraph to the

questionnaire. In more complex or exploratory Delphi studies, the supporting material may be more extensive, such as a document, data set, or website.

See Supplementary Tool ST-04 for guidance on and examples of developing the Delphi questionnaires and supporting material for each of the Delphi rounds.

Webinar for panellists

The webinars indicate the launch of each round of the Delphi study. There are four goals to the webinars:

1. Engage participants in the process in order to increase likelihood of participation
2. Share results from previous rounds of the study (except for the Round 1 launch webinar)
3. Provide instructions for the upcoming round of the study
4. Facilitate discussion and feedback from panellists

Webinars can be hosted on Zoom or using a webcasting software. Zoom was used in the case of the 2020 project DISRUPT Delphi study.

See Supplementary Tool ST-05 for guidance on organising Delphi webinars and a template for an email invitation.

Questionnaire and supporting material distribution

The next step is to send out the questionnaire and supporting material.
Instructions on deadlines should be included in the same email to participants. A good rule of thumb is that participants should have two weeks to submit their

The questionnaire can be shared by sending a link to the online survey to the participants. The supporting material can be sent as an attachment in the same email, or in the case of large files, can be hosted on OneDrive/Google Drive and then shared through a download link.

responses. A reminder email should be sent 2-3 working days before the end of the response-accepting period.

Response analysis

Once participants have finished submitting their responses, the response analysis phase can begin. As a rule of thumb, this phase should not last longer than four weeks in total, with the webinar invitation for the subsequent round being sent out two weeks after the participants have finished submitting their responses. Timeliness is important to avoid dropouts. Participant interest can decrease if there is a long turnaround between rounds (4).

Response analysis for Round 1 generally consists of summarizing and classifying the information shared by the panellists during the Round 1 survey. The purpose is to digest the various information shared by the panellists in order to facilitate the next Delphi round. This can be done by gathering all inputs from the panellist in comprehensive documents e.g. Excel or Google spreadsheets and subsequently determining how the results can feed into the next round.

If Round 1 was a convergence round, that is, that the aim of Round 1 was to score and rank information, the analysis will be more quantitative in nature. It should be presented in tables or graphs as shown in the Round 2 section of Supplementary Tool ST-04.

Bias by study team (3)

After each round, the study team must analyse and send the summarized responses back to the panellists. This leads, at best, to inevitable bias through the decision of what to focus on and, at worst, the possibility of deliberate manipulation of responses by the study team (3).

Rounds 2 and 3

Round 2 consists of the same Delphi round cycle as shown in Figure 1 (again shown here for illustrative purposes). The aim of Round 2 is to converge, that is, to score and rank the information from Round 1. As demonstrated by the figure, the response analysis from Round 1 is used to create the supporting material for Round 2.

The webinar invitation should be sent out 2 weeks before the webinar, which should take place no more than 4 weeks after the end of the questionnaire completion period.

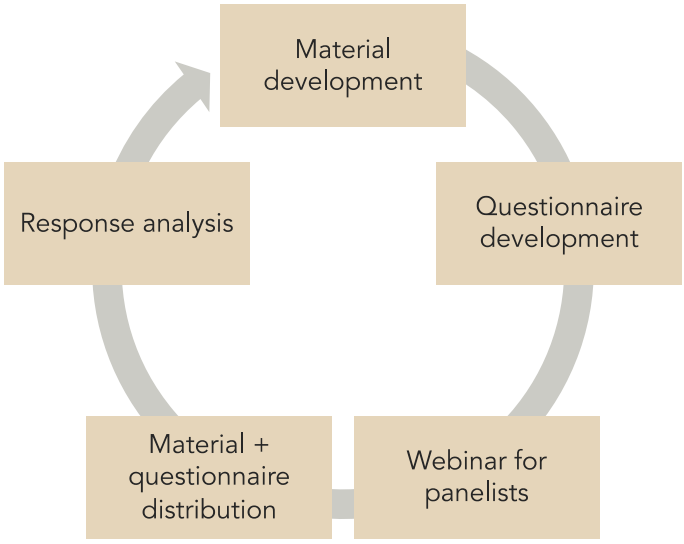

Figure 1: The Delphi round cycle

Round 3 follows the same Delphi round cycle in Figure 1. The aim of Round 3 is to elicit further information or to come to a consensus-based decision, or a combination of the two.

See Supplementary Tool ST-04 for guidance on developing questionnaires and supporting material for Rounds 2 and 3.

Changing panel membership

Especially with larger panels, it is common for some experts to drop out from the panel and others to join the panel later on (3). This may skew the results as the panellists dropping out may be those who disagree with the direction of discussion in the panel. Again, this should be reported on in order to acknowledge the bias. A possible way to reduce loss of panellists is to have them sign a contract of engagement (3).

SUMMARY

The summary is the last step of the Delphi Study that involves interaction with the panellists. The three steps to the summary are:

1. Creating summary material
2. Summary webinar
3. Panellist feedback questionnaire

Creating summary material

The purpose of this material is to provide the panellists with a summary of the process, to the panellists with a quick turnaround. This will provide panellists with closure to the Delphi study. This material is for the panellists, who should be advised to avoid circulating it widely. The final report will be produced separately.

See the Summary Phase section of Supplementary Tool ST-04 for further information and examples of the summary material.

Summary webinar

The summary webinar is the final webinar with the panellists. During this webinar, the results from Round 3 of the Delphi Study should be shared. The panellists should be invited to share their reflections on the process. Any further next steps such as implementation of the results or further outputs should be shared with the panellists. Finally, the panellists should be thanked for their contributions to the study and the feedback questionnaire should be introduced.

Panellist feedback questionnaire

The last engagement the panellists should have with the Delphi study is the feedback questionnaire. This questionnaire is valuable in order to gather panellists' opinions and experiences about the Delphi Study. The results of this questionnaire can be used in the final report or retained in order to improve the approach of further Delphi studies.

See Supplementary Tool ST-06 for guidance on creating the feedback questionnaire.

RESULTS DISSEMINATION AND FURTHER OUTPUTS

After the summary material has been distributed to the panellists, the final step of the Delphi Study is to disseminate the results. There are two steps to this phase:

1. Develop the final report
2. Develop further outputs

Developing the final report

The final report is the main output of the Delphi Study. The Project DISRUPT final report can be found here.

While reporting structure may differ, the 'Guidance on Conducting and Reporting Delphi Studies (CREDES) in palliative care' provides reporting standards for Delphi studies (7). According to this guideline, it is important to report on the following:

1. Purpose and rationale
2. Expert panel
3. Description of the methods
4. Procedure
5. Definition and attainment of consensus
6. Results
7. Discussion of limitations
8. Adequacy of conclusions
9. Publication and dissemination

For further information, find the CREDES reporting guideline here.

Furthermore, Diamond *et al*. (8) propose methodologic criteria to report in Delphi publications:

Study objective

- Does the Delphi study aim to address consensus?
    - Is the objective of the Delphi study to present results (e.g. a list or statement) reflecting the consensus of the group, or does the study aim to merely quantify the level of agreement?

Participants

- How will participants be selected or excluded?

Consensus definition

- How will the consensus be defined?
- If applicable, what threshold value will be required for the Delphi to be stopped based on the achievement of consensus?
    - What criteria will be used to determine when to stop the Delphi in the absence of consensus?

Delphi process

- Were items dropped?
    - What criteria will be used to determine which items to drop?

- What criteria will be used to determine to stop the Delphi process, or will the Delphi be run for a specific number of rounds only?

Developing further outputs

The very last step of the Delphi Study is to operationalise or implement the results. For this step, the deliverables from the workplan developed during the preparation phase should be consulted.
However, during the course of a Delphi study, further output ideas might develop. If this is the case, a Deliverables Table can be made or updated at any point.

See Supplementary Tool ST-02 for a template and example of a Deliverables Table.

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SUPPLEMENTARY TOOL ST-01

CONTRACT FOR EXTERNAL SUPPORT TEMPLATE

Background and instructions

If it has been determined that extra resources are needed in order to complete the Delphi study, this tool should be used to develop a workplan to be annexed to the contract for services.

Below is a template which can be used to map out the responsibilities of the service provider. The template is not a one-fits-all and may be adapted according to your needs.

THE SERVICES

I. OBJECTIVE

The Service Provider shall use a modified Delphi technique to [project objective], under the supervision of [project owner] and shall provide the following Services:

II. THE SERVICES

a) General tasks:

1. Phase I – Defining research scope and objectives: Background data collection and integration to clarify project goals, finalise research plan, define expert inclusion criteria and assembling the final panel.
2. Phase II – Conducting the Delphi rounds: Engage experts and conduct the rounds by sending out surveys and subsequently identify, validate, and rank results.
3. Phase III – Reporting and outreach: Report on the results of the Delphi study, define a promotional plan, including event engagement.

b) Deliverables and Fee Payment Table:

Deliverable	Date Deliverable Due	Fee Payable (if applicable)
Signed Contract	[date]	[amount] to be paid within [#days] days of signed contract
Phase I: Background Data Collection and Integration	[date]	Part of the first payment in [date]
Phase II: Expert Research Engagement	[date]	[amount] to be paid within [#days days
Phase III: Report and Promotional Plan	[date]	[amount] to be paid within [#days] days

Work plan:

Phase 1	
Activities	
Dates	
Phase 2	
Activities	
Dates	
Phase 3	
Activities	
Dates	

c) Written work reports:
Together with each invoice, the Service Provider shall provide [project owner] with a written work status report, detailing the Services completed, the progress made on the Services to be delivered, the meetings held and their outcome and the number of days spent per Service. These written work reports will follow the timeline listed above in the section b) Deliverables and Fee Payment Table and the Full Work Plan

SUPPLEMENTARY TOOL ST-02

WORKPLAN AND DELIVERABLES TEMPLATE

Background and instructions

This template is meant to help organise the work and all the end deliverables of the project and to assign leads and authorship to the different tasks.

The essential components of the workplan are the tasks, the lead and support role assignment, and the timelines.

An example can be found on the next page of the project timeline used in the 2020 Project DISRUPT Delphi study.

Project Implementation Plan

				L=lead, S=support							2019				Year 2 - 2020											
Activities			Status	CP	SJ	WG	LB	JA	SP	INT	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Engage with partner, service provider, and hire intern to execute study											x	x	x	x												
Scope of Delphi Study with environmental lens													x	x	x											
Create Innovation catalogue (for Round 1)													x	x	x											
Define criteria for evaluation of innovations													x	x	x											
Identify and engage experts to be involved													x	x	x											
Setup system to evaluate (via websurvey?)														x	x											
Execute round 1																x										
	Kick off webinar with experts			L					L							x										
	Send link to survey and support experts during process								L							x										
	Collect data from round 1								L							x										
	Analyse data								L	S						x										
	Prepare material for round 2			S	S	S			L	S						x										
Execute round 2																	x									
	Send link to survey and support experts during process								L								x									
	Collect data from round 2								L	S							x									
	Analyse data								L	S							x									
	Prepare material for round 3			S	S	S			L	S							x									
Execute round 3, conclude and make report + results																x	x	x	x							
	Send link to survey and support experts during process								L									x								
	Collect data from round 3								L									x								
	Analyse data								L	S								x	x							
	Make final report			S	S	S			L	S						x	x	x	x							
	Review and get approval - ready to print and disseminate			L				S	S										x							
	Closing webinar with experts			L					L																	
Ensure to embed methodology as asset within GAIN (KL)														x	x	x	x	x	x	x	x	x	x			

Optionally, especially for Delphi studies with multiple outputs, a deliverable table can be made. Although the workplan should provide a summary of all the tasks and assign team members to lead and support each task, a separate deliverables table can be helpful in organizing all the outputs of the study. Below is an example from the 2020 Project DISRUPT Delphi study (Table 1) as well as a blank template (Table 2).

Table 2: Example from the 2020 Project DISRUPT Delphi study

#	Deliverable	Lead	Authors	Template	Example	Comments/Questions
1	Report	[Team member 1]	GAIN + Bio-CIAT Alliance			
2	Discussion Paper	[Team member 1,2]	GAIN + Bio-CIAT Alliance			
3	Catalogue of innovations	[Team member 2,3]	GAIN + Bio-CIAT Alliance			
6	Scoring database	[Team member 4]	GAIN + Bio-CIAT Alliance			
7	Delphi tool	[Team member 5]	GAIN			
8	Bio book	[Team member 2]				
9	Scientific article	[Team member 2,3]	GAIN + Bio-CIAT Alliance			

Table 3: End deliverables table template

#	Deliverable	Lead	Authors	Template	Example	Comments/Questions
1						
2						
3						
4						
5						
6						
7						
8						
9						

SUPPLEMENTARY TOOL ST-03

BUILDING THE DEPHI EXPERT PANEL

Background and instructions

This supplementary tool provides examples and templates used in building the expert panel and managing the information related to the expert panellists. Building the expert panel is an important step in the Delphi process. A panellist database is always recommended in order to have the information of each panellist in an easily accessible form. Creating a bio-book is recommended in cases of recruitment of panellists from outside the organisation in order to help familiarise the panellists with each other and thus boost engagement. The steps to creating a Delphi panel are shown below:

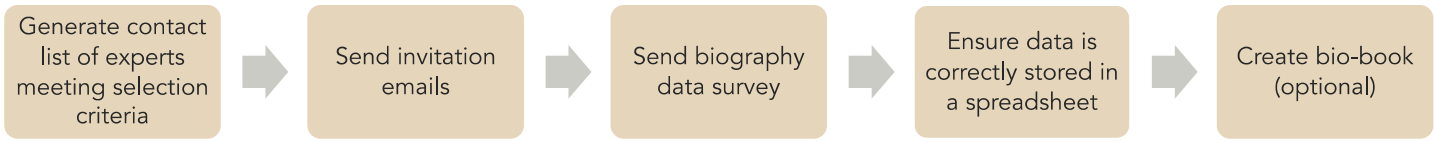


Figure 7: The steps to building a Delphi panel and optional bio-book

1. Generate list of experts meeting selection criteria

The first step in building the Delphi panel is to set inclusion criteria. These are specific to the research question and must be defined in order to manage the types of opinions that will be received during the study. Examples of selection criteria can be as shown in Table 1.

Table 4: Example expert selection criteria

CRITERIA	OPTIONS
Affiliation	Internal, external
Experience	Theoretical/practical, # of years
Sector	Private, public
Sex	Female, male
Geographic	Community, country, region, economic development group

The list of experts is generally sourced from professional contacts of the Delphi team members, but this depends on the topic. External recruitment is a lengthier process but can be chosen in order to decrease selection bias or access a specific type of expertise.

Email title: Invitation for Project Disrupt: Healthy Diets on a Healthy Planet

Dear X,

On behalf of the Global Alliance for Improved Nutrition (GAIN), the Alliance of Bioversity and CIAT (The Alliance), and EAT, we are excited to reach out to you.
We are collaborating to conduct a Delphi study with the goal to brainstorm and identify innovations that can be game-changers in emerging markets to increase the affordability of sustainable diets.
This consultative process will use a modified Delphi technique—a qualitative, prospective research methodology from the field of Futures Studies. This method relies on expertise and intuition to brainstorm and filter a set of ideas about the future through three successive rounds of research to elicit insights about which of these ideas have the most promising potential to have a transformative impact.
The aim of the study outcomes is to guide concrete strategic investments towards high potential innovation areas, suitable for local contexts, and develop strategies to address the social and other barriers they likely encounter.
We would like to invite you as an innovative, forward-looking thinker & do-er to participate!

Why have you been invited to take part?
As an expert in the field of environmental sustainability, nutrition, agriculture, food systems, food economics, or a related field, your view and innovative thinking is needed to move on the changes necessary to secure a future of improved nutrition in low-resource contexts.

What is in it for you?
You will make a difference. Your creative thinking rooted in your expertise will contribute to brainstorm and reflect on innovations considering specific contexts. There is increasing recognition that raising research quality and impact, requires collective action (e.g. here). The study outcomes will form a base for wider outreach and actions. They will be presented at the 2020 EAT forum, discussed in local and global contexts, and considered in new strategies, actions, and capacity building.
Your contribution will be recognized and widely appreciated. Those who choose to accept this invitation will join a panel of creative experts on a journey to identify high potential innovations capable of ringing in that change. Contributions are voluntary and individual responses will remain anonymous, but your contribution for the insight and time that you gave to this effort, will be highlighted in all the reports and products.
You will be exposed to a diverse group of food systems actors and leaders. The panel will bring together an exclusive group of ~ 30 individuals from diverse backgrounds. To facilitate a genuine exchange of ideas, you will be able to review the full results of each survey – after they're anonymized – to compare how others' perspectives correspond to your own. We also plan to coordinate 3 virtual meetings during this engagement for the group to exchange ideas and discuss pertinent topics.
It will be fun. In our daily activities, we're often confronted with many practical barriers and to-do lists, which hinder sometimes free-thinking and reflection. This activity will create space to think, look and act out-of-the box, and to do so in group, not just on a run or in your shower.

What will be the process of the study?
You will be asked to complete 3 online surveys over the course of 2 months, between March 3 and May 4. We will kick-off with an introductory webinar, on March 3, where we will present the set-up, survey, methodology and guidelines. A second webinar is planned around April 1, where results of the first round will be presented and discussed and guidelines for the second round will be provided. A 3rd and final webinar is planned around May 18th, to present and discuss results. The total time commitment should be no more than 6 hours.
To root the exercise in real contexts, we will use three cases as starting points: an urban highly populated setting in Bangladesh, a rural semi-arid area in Ethiopia, and a tropical coastal setting in Mozambique.

We very much look forward to your participation and would like to ask for your response to this invitation by next week Friday February 21.
On behalf of the GAIN, EAT and The Alliance Team,

Figure 8: Example email invitation from the 2020 Project DISRUPT Delphi study

2. Send invitation emails

The next step is to send invitation emails to the list of potential panellists. An example invitation email is shown below on the next page (Figure 2).

3. Send biography data survey

The next step is to send the biography data survey in order to collect the relevant information about the panellists. An example of questions is shown below. These questions can be adapted to suit the needs of the particular study.

Table 5: Example biographical data survey from Project DISRUPT's 2020 Delphi study

QUESTION	**QUESTION TYPE**	**OPTIONS (FOR MULTIPLE CHOICE AND CHECKBOX QUESTIONS**
Intro text Thank you for participating in "Project Disrupt: Healthy Diets on a Healthy Planet." We are very excited to have your input in this process! You will be part of a diverse group of food systems actors and leaders from various backgrounds. Please share your bio (and a photo) that we can use to help introduce you to the other experts on the panel and include in project reports and publications.	N/A	N/A
Email address	Short answer	N/A
Full name as you'd like it to appear in the project materials	Short answer	N/A
Title(s) and Institutional Affiliation(s)	Short answer	N/A
Short Bio - Please share with us your background and areas of expertise *150 -200 words max *	Long answer	N/A
Photo * Please confirm here that you will email a photo to our research support team (file size no larger than 10MB) Mark only one oval. bio photo to [email address], email subject "BIO PHOTO, your name"	Multiple choice	Yes I will send a photo No
Please choose which of the webinar sessions you will participate in. Select only one date.	Multiple choice	[Date/time #1] [Date/time #2] [Date/time #3] Not able to participate in any of these (*in this case you will be contacted by the research team)

2. **Ensure data is correctly stored in a spreadsheet**

If you are using Microsoft or Google Forms, the results of the biography data survey can be visualised in a spreadsheet.

If the survey was sent by email, the data must be added to a spreadsheet manually.

Either way, the resulting spreadsheet should have the following column headers:

- Email Address
- Participation Status
- Last Name
- Full name as you would like it to appear in the project materials
- Title(s) and Institutional Affiliation(s)
- Short Bio - Background and areas of expertise *150 -200 words max

Optional columns can be added to help with descriptive statistics and monitoring participation rates:

- Setting
- Gender
- Sector
- Expert category
- Base country
- Global South/North
- Webinar 1 participation
- Webinar 2 participation
- Round 1 participation
- Round 2 participation
- Other

3. **Create bio-book (optional)**

This final step of building the Delphi expert panel bio-book is optional but can help with participant engagement and satisfaction with the process. Creating a bio-book is generally more useful for Delphi panels with experts sourced from many various institutions but could still be made for Delphi studies within one institution.

Information to include are as follows (adjust as needed for the purposes of your study):

- Name
- Position
- Institution
- Photo
- Short bio

SUPPLEMENTARY TOOL ST-04

DEVELOPING DELPHI QUESTIONNAIRES AND SUPPORTING MATERIAL

IN THIS SUB-TOOL

Background and instructions

Questionnaires and supporting material are the cornerstones of the Delphi process. Questionnaires are the methods of data collection. Supporting material include the introduction and/or summary of responses that will be send to the panellists jointly with the questionnaire, to introduce the next round.
This subtool outlines the development of questionnaires and supporting material for a three round Delphi study. The general aims of each round are shown below:

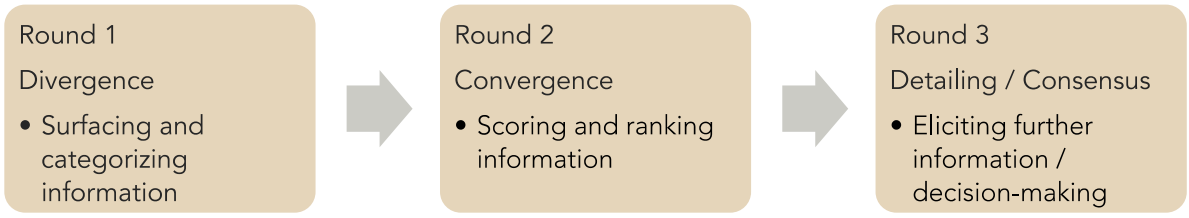


Figure 9: Aims of the three Delphi rounds

ROUND 1

The aim of Round 1, as shown by Figure 1 above, is to surface and categorise information related to the research question(s). It is also possible to surface and categorise information prior to the beginning of the Delphi rounds using methods such as literature reviews or focus group discussions. These two options are discussed below.

Supporting material development

Supporting material for the Delphi questionnaires can take many forms. The simplest form is as an introduction to the questionnaire. This can be used in the case of a relatively straightforward Delphi study, or if the participants have a deep understanding of the goal and scope of the Delphi study already.
In the case of complex Delphi studies or if the participants may not be experts in the domain of the study goal and scope, more extensive supporting materials should be prepared.
Round 1 does not always require supporting material. In the 2020 Project DISRUPT Delphi Study, no supporting material was sent out with the Round 1 questionnaire since the questionnaire was largely open-ended with the aim of divergence. The introduction in the questionnaire served as supporting material.
In the case that Round 1 is convergent, that is, based on scoring and ranking information — there is no divergence round where information is elicited — supporting materials should be prepared. An example can be found on the next two pages. These supporting materials were the result of a literature search for potential innovations in the food system in the 2019 Project DISRUPT Delphi Study led by GAIN and GKI. The literature search results were then compiled into a supporting document.

Round 1 supporting material example

INNOVATION PROFILES

Delphi Study on Nutrition Innovation

Expert Engagement: **Round 1**

December 2018

Table of Contents

Global Knowledge Initiative

gain Global Alliance for Improved Nutrition

Contained in this document are brief profiles of 68 innovations with potential to transform nutrition in emerging economies. Many of these innovations surfaced at the Global Knowledge Initiative's Visioning & Innovation Workshop in October 2018, which asked a group of expert participants to envision a future in which our nutrition goals have been met, and the innovations that can help achieve that future.

These innovations contained represent a diverse suite of innovation types, including technologies, business models, and process innovations, at different maturity levels. Each presents a unique solution to nutrition challenges in emerging economies – a goal of GAIN's Project Disrupt, for which this consultation is designed. **We're asking you to consider the potential of each of these innovation to improve nutrition outcomes in the next 5 years.**

Please read these innovation profiles with a critical eye. We then invite you to respond to our Round 1 questionnaires, which will ask you to rate the potential of each innovation and advocate for those you think are best poised to advance nutrition goals.

By no means do we consider this a complete list of innovations, and we welcome your additions within the survey. Additionally, if you consider an innovation profile to be incomplete or inaccurate, we welcome your suggested revisions. Round 2 of this consultation will offer the chance to expound upon those innovations that elicit the strongest positive feedback through this first round.

Thank you for your time!

Food Design

3D-printed Food

The Innovation ➢ 3D Printing includes a variety of processes whereby a computer assembles input materials into a three-dimensional object. Using this technology innovators have explored the concept of 3D Printed Food.

Innovation Development ➢ Long the dream of futurists and science fiction writers, as early as 2005 Hod Lipson and collaborators at Cornell University's fablab@home were experimenting with processes for 3D Printed Food.

Demonstrated Potential ➢ Now more than a decade since development companies specializing in 3D Printed Food have become commercially viable. Foodini offers a higher-end 3D printing culinary experience that can be found at Michelin Star restaurants. While most 3D Printed Food processes involve the layering of pureed input materials, a newer technology from Open Meals can construct food products by assembling 5mm x 5mm blocks.

AI-powered Nutrition

The Innovation ➢ Foods contain billions of bioactive peptides. The application of artificial intelligence (AI) can help identify specific peptides which can be harnessed to help improve the lives of people struggling with malnourishment and other diseases.

Innovation Development ➢ Dr. Nora Khaldi developed a software which is capable of identifying these molecules within food that could fight certain diseases. In 2014 she founded Nuritas to commercialize this opportunity.

Demonstrated Potential ➢ Nuritas is currently working to harness the power of AI and DNA sequencing to develop food products aimed at preventing diabetes. Nuritas is working toward an Irish-based clinical trial and pending regulatory approval should have their peptide integrated into food products as early as 2020.

Cellular Agriculture

The Innovation ➢ Cellular agriculture is the production of agricultural products from cell cultures, including synthetic proteins, fats, and cellular tissues such as meat.

Innovation Development ➢ Cell cultures, especially those of yeast, have been genetically engineered to produce desired petrochemicals such as vanillin and enzymes of rennet, which turns milk into curds for cheese. Approved in the U.S. in 1990, rennet is now widely used in cheese making.

Demonstrated Potential ➢ Organism engineers at Gingko BioWorks are performing research to scale bioprocesses, culture ingredients for flavor and fragrance, and engineer plant microbes for sustainable agriculture.

Figure 10: The first two pages of supporting material from the 2019 Project DISRUPT Delphi study co-led by GAIN and GKI.

Questionnaire development

The questionnaire for Round 1 is generally open-ended with the aim of divergence, that is, surfacing and categorizing information from the participants. It is possible to have a questionnaire focused on convergence, based on scoring and ranking information. Such a questionnaire would resemble the questionnaire presented here under the 'Round 2' section.

Below is an introduction text and a table containing an example of the questions used for the first round of a Delphi study. These questions were adapted to suit the scope and objectives of the study. This particular example comes from the 2020 Project DISRUPT Delphi study led by GAIN, the Alliance of Bioversity/CIAT, and EAT.

Microsoft Forms or Google Forms are the best options/ for surveys. Other online survey tools such as Surveymonkey could work as well. Finally, a Word document or an email-based questionnaire can work as well, but these limit automation (ie. responses automatically populated into a spreadsheet) and thus increase workload.

Round 1 questionnaire example

Example introduction text:

Project DISRUPT: Healthy Diets on a Healthy Planet

Delphi Process Round 1 Survey - Disruptive Innovation Scan

Welcome to "Project Disrupt: Healthy Diets on a Healthy Planet". We're excited to have you on board as part of our panel of experts and innovative thinkers and do-ers.

This collaborative Delphi study has the goal of brainstorming and identifying innovations that can be game-changers in emerging markets to provide affordable, safe, and nutritious food in an environmentally sustainable way by 2030. We root this into three contexts: semi-arid rural Ethiopia, tropical coastal Mozambique, and urban Bangladesh.

The aim of the study outcomes is to guide concrete strategic investments towards high potential innovation areas, suitable for local contexts, and develop strategies to address the social and other barriers they likely encounter.

If you have any questions during the process, don't hesitate to reach out to us, the core GAIN - EAT - Bioversity - CIAT Alliance team.

Example open-ended questionnaire structure:

QUESTION	**QUESTION TYPE**	**OPTIONS (FOR MULTIPLE CHOICE AND CHECKBOX QUESTIONS**
Email address	Short answer	N/A
Confirm that you consent to participate in this project. True to the Delphi Process, your answers will be shared with the group in an anonymous format. The research team is collecting your email for clarification of any details, if necessary.	Checkbox	I consent
Introduction text: For your setting, which innovations can be game-changers by 2030 in making affordable, safe & nutritious foods available in an environmentally sustainable way? In the following sections, please describe several innovations that excite or inspire you for potential transformative impact. We are asking for a minimum of 3 innovations / maximum of 5. We encourage you to reflect on "outside-of-the box" ideas. Let your mind run free!	N/A	N/A
1.1 Innovation name	Short answer	N/A
1.2 Provide a short description of the innovation	Paragraph (Long Answer)	N/A
1.3 - Why do you consider this innovation as having an important leapfrogging and transformative impact? *Innovations that "leapfrog" need not provide a technological leap per se, but show potential to significantly disrupt "business as usual" to improve the*	Paragraph (Long Answer)	N/A

availability of healthy diets AND protect environmental resources		
1.4 - Why do you think this innovation could have a specific role in this context setting?	Paragraph (Long Answer)	N/A
1.5 - Please indicate the maturity status of this innovation at present	Checkbox	Concept or Idea Prototype or Early Development Gaining Traction Moving to Scale Mainstream Other:
1.6. How would this innovation enhance nutrition and make affordable, safe and nutritious foods more available?	Paragraph (Long Answer)	N/A
1.7 - How would this innovation contribute to positive environmental change?	Paragraph (Long Answer)	N/A
1.8 - If you have materials related to your suggested innovation that you would like to share with the research group and the Delphi expert panel, please include a link(s) here **separate multiple links with a comma*	Paragraph (Long Answer)	N/A

ROUND 2

The aim of Round 2 is to score and rank information. This is done through Likert scales or point allocation to different options. As noted above, this may be done in Round 1 for a quicker study design. The supporting material and questionnaire development for Round 2 are discussed below.

Supporting material development

In Rounds 2 and onwards of the Delphi study, the supporting materials are made by analysing the responses from the previous questionnaire. The supporting materials thus serve as a summary of the panellist responses which are then sent back to the panellists to either rank, decide, or expand upon.

In the 2020 Project DISRUPT Delphi Study, the panellist responses were analysed by the Delphi team and compiled into a catalogue of responses to be used in the next round. Below is an example from that catalogue.

Round 2 supporting material example

PROJECT DISRUPT :

HEALTHY DIETS ON A HEALTHY PLANET

DELPHI ROUND 1 - INNOVATION CATALOGUE

Version 1 - 03.04.2020

Alliance

INTRODUCTION

This innovation catalogue is meant to standardize and gather the contributions you, as panelists, have made during round one of Project DISRUPT's Delphi panel. The contributions have been analysed and many have been merged as they appeared in multiple responses or have significant similarity. Innovations from a literature scan were included in order to add to the total number of innovations

Clusters of innovations emerged which aid in putting the innovations in context. Several indicators such as innovation maturity and supply chain level have been used to further analyse the innovations and make them more digestible. However, due to the complex nature of food systems and of the innovations to address their current shortcomings, these clusters and indicators are by no means mutually exclusive; it may be helpful to think of them as clouds which may overlap at some moments and seem distinct at others.

This catalogue is to be used to answer to the round two survey. Please refer to the innovation numbers beside the innovation names to better orient yourself when choosing the innovations you will analyse. May this catalogue of you and your colleagues' work inspire you in this round of Project DISRUPT's Delphi panel.

This is a work in progress for the Delphi process, but is not yet a deliverable meant to be shared more broadly. This innovation catalogue will further evolve at the end of the process in order to be a standalone product in and of itself. This will be a joint product, all of your contributions made this possible.

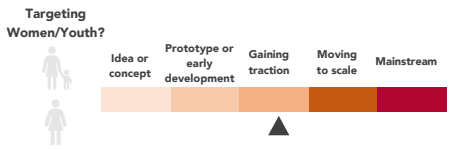
TABLE OF CONTENTS

CROPS AND ANIMAL AGRICULTURE

1. Aeroponics

DESCRIPTION

Growing food in densely populated areas is a challenge. Compact, space-saving techniques are needed in order to produce in even limited-space environments. This innovation presents aeroponics as a method to grow plants in limited-space environments. Aeroponics suspends plants in a closed or semi-closed setting and sprays nutrient-rich water on the exposed roots of the plants, which contrasts from the steady water supply of hydroponics or the soil used in conventional plant growth. Rice grown in this way, for example, can be used to feed surrounding communities which would shorten the supply chain.



Context: Urban setting - Bangladesh

Questionnaire development

The Round 2 questionnaire is structured to permit scoring and ranking of the information generated in Round 1. The basis of the questionnaire is a series of multiple questions to present a Likert scale with which to score the options according to various criteria.

Below is an example of a Round 2 convergence questionnaire with the aim of scoring and ranking. This particular example is a continuation of the 2020 Project DISRUPT Delphi Study, in which innovations surfaced during round 1 were scored and ranked on a Likert scale using a set of 14 criteria.

Questionnaire Criteria

It is important to define the criteria that will be used in the Round 2 questionnaire. This way the panellists can refer to the definitions in order to answer more consistently, since different experts may have different interpretations of the criteria. In the example below, the criteria definitions for each Likert scale are presented.

Note: As shown in the example below, it is useful to have a "don't know" option on the Likert scale. This offers the experts the opportunity to abstain from offering their opinion on something they are not comfortable assessing. Another option to take into account the experts' comfort levels is to have a 'self-rating of expertise' scale as the question directly after the rating question. This too could be a Likert scale, with 1 as 'no previous knowledge' and 5 as 'extensive prior knowledge' of the subject matter.

Round 2 questionnaire example

Example introduction text:

Project DISRUPT: Healthy Diets on a Healthy Planet

Delphi Process Round 2 Survey - Exploring and scoring Innovations

Based upon your input in Round 1 of the Delphi process, we built an innovations catalogue including 85 innovations, structured in 6 categories.

Now in Round 2 we ask you to choose your "Top 10" innovations and evaluate them across 14 criteria for their potential impact as game-changers in emerging markets to provide affordable, safe, and nutritious food in an environmentally sustainable way by 2030.

Remember that the goal of Project DISRUPT is to identify innovations that *could* positively disrupt business-as-usual over the next 10 years in the settings that we're focusing on. In this step in the Delphi process we are asking you to now choose those innovations from the innovations catalogue that really excite you and that you believe can contribute to significant positive changes in both human and planetary health.

In Round 3 of the study we will work towards building consensus amongst the group about which innovations have the highest potential as game-changers. This will include identifying ways to reduce barriers and create or support enabling environments for these innovations to move forward. To this end, as you choose your "Top 10" innovations now, keep in mind that just because an innovation may strike you as having significant challenges to scaling up or taking hold today, this doesn't mean that over the next 10 years that will remain the case.

INSTRUCTIONS:

1) CHOOSE "Top 10" -- Please read through the Innovations Catalogue PDF and select your 10 favorite innovations. We ask you to choose at least 1 from each of the 6 categories, plus an additional 4 innovations from any of the categories.

2) EVALUATE BY CRITERIA -- When you are ready with your "Top 10" list, continue with the survey to record your responses. We expect this to take 30-45 minutes if done in one sitting.

* *If you are unable to complete the survey in one sitting or worried about internet connectivity issues, at the end of each innovation question set you can save/return later by:*

1) selecting "save responses and return later" at the bottom of the question set

2) submitting your responses so far

3) then check your email for the link to return to your responses

***If you'd prefer not to take the survey online you can send us your innovation and criteria rankings via email using the word document version.*

We look forward to your input and appreciate your time. If you have any questions during the process, don't hesitate to reach out to us.

- the core GAIN - EAT - Bioversity - CIAT Alliance team

CRITERIA DEFINITIONS

Enhancing Diets Criteria (6)

1. **QUALITY**: Potential of innovation to improve the nutritional quality of the food basket, i.e. that it provides beneficial nutrients (e.g. vitamins, minerals, proteins, essential fats, dietary fibres) and minimises potentially harmful elements (e.g. anti-nutrients, high quantities of saturated fats, salt and sugars)
2. **SAFETY**: Potential of innovation to minimize biological, chemical or physical contamination of food product(s)
3. **AVAILABILITY**: Potential of innovation to improve the ease of consistent procurement of nutritious foods by consumers. Please take into account seasonal shifts in supply, the importance of stability, changes in policy & trade, and excesses/shortages of raw materials needed for a food's production or processing
4. **AFFORDABILITY**: Potential of innovation to reduce the consumer price or increase purchasing power for nutritious foods
5. **DESIRABILITY**: Potential of innovation to improve the desirability of nutritious foods or healthy diets, i.e. to make foods or healthy diets more aspirational, tasty, culturally appropriate, convenient, and/or easy to prepare

Supporting Planetary Health Criteria (7)

1. **CLIMATE MITIGATION**: Potential of innovation to reduce the greenhouse gas footprint of our food systems e.g., by reducing emissions or by capturing carbon
2. **CLIMATE ADAPTATION**: Potential of innovation to increase the adaptation capacity to climate change of our food systems e.g., by providing options for severe weather events, droughts, flooding, changing seasons, or other climate related issues
3. **WATER USE**: Potential of innovation to decrease the water footprint of our food systems e.g., by increasing water use efficiency, recycling water, or reducing water needs
4. **SOIL HEALTH:** Potential of innovation to improve soil health, restore degraded land or avoid land degradation, e.g. by building soil organic matter, contributing to soil biodiversity and soil nutrient availability, reducing soil erosion and risk for gullies
5. **REDUCING BIODIVERSITY LOSS**: Potential of innovation to decrease biodiversity loss related to our food systems e.g., for example by reducing pressure on land, by reducing chemical pollution, by enhancing conservation of species at risk, by creating habitat in agricultural land, etc.
6. **INCREASING BIODIVERSITY**: Potential of innovation to increase biodiversity in our food systems e.g., by diversifying production systems, diversifying ingredient portfolios, enhancing use of underutilized species, etc.
7. **REDUCING POLLUTION**: Potential of innovation to decrease pollution from our food systems e.g., by reducing nitrogen or phosphorus run-off, by reducing the risk of plastic pollution, or by reducing other types of pollution

Additional Criteria (3)

1. **LEAPFROGGING**: Potential of the innovation to positively disrupt business as usual to improve both human and environmental health
2. **EQUITY:** Potential of the innovation to reduce the disparities between groups who have different levels of underlying social advantage/disadvantage as related to both enhancing nutrition and/or improving planetary health

Example questionnaire structure:

QUESTION	**QUESTION TYPE**	**OPTIONS (FOR MULTIPLE CHOICE AND CHECKBOX QUESTIONS**
Email address	Short answer	N/A
Confirm that you consent to participate in this project. True to the Delphi Process, your answers will be shared with the group in an anonymous format. The research team is collecting your email for clarification of any details, if necessary.	Checkbox	I consent
Please select your favourite innovation from this category.	Drop down list	*List of innovations sourced from Round 1
QUALITY: How much potential impact does this innovation have to improve the nutritional quality of the food basket? (i.e. that it contributes to beneficial vitamins, minerals, proteins, unsaturated fatty acids, fibre, and limits excessive quantities of salt and sugar)	Multiple choice	High Moderate Low/None Negative Impact Don't know
SAFETY: How much potential impact does this innovation have to minimize biological, chemical or physical contamination of food product(s)?	Multiple choice	High Moderate Low/None Negative Impact Don't know
AVAILABILITY: How much potential impact does this innovation have to improve the ease of consistent procurement of nutritious foods by consumers? (Please take into account seasonal shifts in supply, the importance of stability, changes in policy & trade, and excesses/shortages of raw materials needed for a food's production or processing)	Multiple choice	High Moderate Low/None Negative Impact Don't know
AFFORDABILITY: How much potential impact does this innovation have to reduce the consumer price of nutritious foods?	Multiple choice	High Moderate Low/None Negative Impact Don't know
DESIRABILITY: How much potential impact does this innovation have to significantly improve the desirability of nutritious foods or healthy diets? (i.e. to make foods or healthy diets more aspirational, tasty, culturally appropriate, convenient, and/or easy to prepare)	Multiple choice	High Moderate Low/None Negative Impact Don't know
CLIMATE MITIGATION: How much potential impact does this innovation have to reduce the greenhouse gas footprint of our food systems? (e.g. by reducing emissions or by capturing carbon)	Multiple choice	High Moderate Low/None Negative Impact Don't know
WATER USE: How much potential impact does this innovation have to decrease the water footprint of our	Multiple choice	High Moderate

food systems? (e.g. by increasing water efficiency, recycling water, or reducing water needs)		Low/None Negative Impact Don't know
SOIL HEALTH: How much potential impact does the innovation have to improve soil health, restore degraded land or avoid land degradation? (e.g. by building soil organic matter, contributing to soil biodiversity and soil nutrient availability, reducing soil erosion and risk for gullies)	Multiple choice	High Moderate Low/None Negative Impact Don't know
REDUCING BIODIVERSITY LOSS: How much potential impact does this innovation have to decrease biodiversity loss related to our food systems? (e.g. by reducing pressure on land, by reducing chemical pollution, by enhancing conservation of species at risk, by creating habitat in agricultural land, etc.)	Multiple choice	High Moderate Low/None Negative Impact Don't know
INCREASING BIODIVERSITY: How much potential impact does this innovation have to increase biodiversity in our food systems? (e.g. by diversifying production systems, diversifying ingredient portfolios, enhancing use of underutilized species, etc.)	Multiple choice	High Moderate Low/None Negative Impact Don't know
REDUCING POLLUTION: How much potential impact does this innovation have to decrease pollution from our food systems? (e.g. by reducing nitrogen or phosphorus run-off, by reducing the risk of plastic pollution, or by reducing other types of pollution)	Multiple choice	High Moderate Low/None Negative Impact Don't know
LEAPFROGGING: How much potential impact does this innovation have to disrupt business as usual to improve both human and environmental health?	Multiple choice	High Moderate Low/None Negative Impact Don't know
EQUITY: How much potential impact does this innovation have to reduce the disparities between groups who have different levels of underlying social advantage/disadvantage as related to both improving human and environmental health?	Multiple choice	High Moderate Low/None Negative Impact Don't know
As part of the Delphi process, in Round 3 we will work towards building consensus about innovations with the highest potential to be "positively disruptive." If you'd like to advocate further for this innovation, you can make your case here and this input will be shared (anonymously) with the panel.	Paragraph	N/A
Please feel free to add any other additional comments or notes here about this innovation.	Paragraph	N/A

ROUND 3

The aim of Round 3 is to elicit further details about the surfaced information or to come to a consensus. Panellists are presented with the results from Round 2 and are offered the chance to provide further opinions about the results or, if the aim of Round 3 is to come to a consensus decision, further advocate for a specific option from a shortlist.

Supporting material development

Supporting material for Round 3 is a summary of the results from Round 2. The results from Round 2 should be analysed and presented in tables or charts which indicate the ranks of the information from Round 1. The ranking method should be transparently reported to the panellists and, if possible, the raw data themselves should also be presented.

An example of the raw data presentation is shown below in which an interactive table was made to present the results to the participants. This could also be as simple as sharing the results in an excel table for those who wish to see the raw data. However, responses must be anonymized if this option is chosen.

Overall scores

Red scores indicate that the score is under median value for a given criteria

Search

Innovation	Cluster	Frequency	Contexts	Nutrition score	Planet score	Leapfrogging score	Equity score	Overall score
1 aeroponics	Crops & Animal Agriculture	1	1	3.5	6.5	1	0	63.84
10 integrated household poultry production	Crops & Animal Agriculture	7	1	3.79	3.57	0.64	0.93	55.17
11 intensive household gardening approach	Crops & Animal Agriculture	2	2	3.5	3.5	0.25	0.75	32.41
12 microbial harvesting and soil supplementation	Crops & Animal Agriculture	1	1	4.5	7	1	0.5	71.88
13 multi-target crop breeding for climate resilience & enhanced nutrition	Crops & Animal Agriculture	15	3	3.17	3.83	0.6	0.4	65.23
14 mushroom diversification	Crops & Animal Agriculture	5	2	2.8	3.7	0.6	0.4	44.61
15 novel animal feed	Crops & Animal Agriculture	8	3	2.19	3.06	0.62	0.31	44.61

Below, find an example of the supporting material that was shared to be used by participants in Round 3 of the 2020 Project DISRUPT Delphi Study.

Round 3 supporting material example

PROJECT DISRUPT:

HEALTHY DIETS ON A HEALTHY PLANET

DELPHI INNOVATION CATALOGUE - ROUND 2 RESULTS

Version 2 - 25.05.2020

Alliance

INTRODUCTION

This innovation catalogue represents the results of the Round 2 survey in the Project DISRUPT Delphi process. A total of 48 of you responded in this round, providing insightful scoring and commentary on the innovations you've proposed in Round 1.

This catalogue is to be used to answer to the Round 3 survey. Please refer to the innovation numbers beside the innovation names to better orient yourself when choosing the innovations you will analyse. May this catalogue of you and your colleagues' work inspire you in this round of Project DISRUPT's Delphi panel.

This is a work in progress for the Delphi process, but is not yet a deliverable meant to be shared more broadly. This innovation catalogue will further evolve at the end of the process in order to be a standalone product in and of itself. This will be a joint product, all of your contributions made this possible.

TABLE OF CONTENTS

1. NOTES ON THE CATALOGUE

2. PRIORITY INNOVATIONS

CROPS AND ANIMAL AGRICULTURE

2 AGROFORESTRY FOR FRUIT PRODUCTION AND SOIL HEALTH

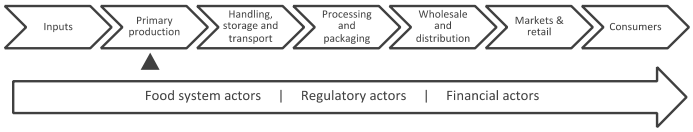
DESCRIPTION

Soil degradation includes soil fertility decline, nutrient imbalance and erosion. Such phenomena can lead to decreased capacity of soils to regulate water flows as well as a loss of biodiversity. This innovation proposes to implement fruit tree plantations through agroforestry practices. This could regulate land degradation, provide income, nutritional benefits and carbon sequestration. Further, planting trees in (mountain) watersheds generates resilient and effective watersheds. Drought-resistant fruit trees could be opted for, but a diversity of outputs could be possible such as fodder crops, creating multi-functional landscapes.

LINKS AND FURTHER READING

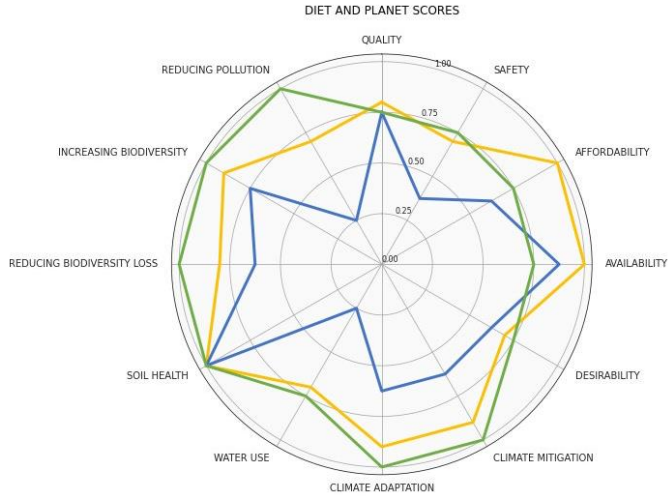
Kuyah et al. (2019)

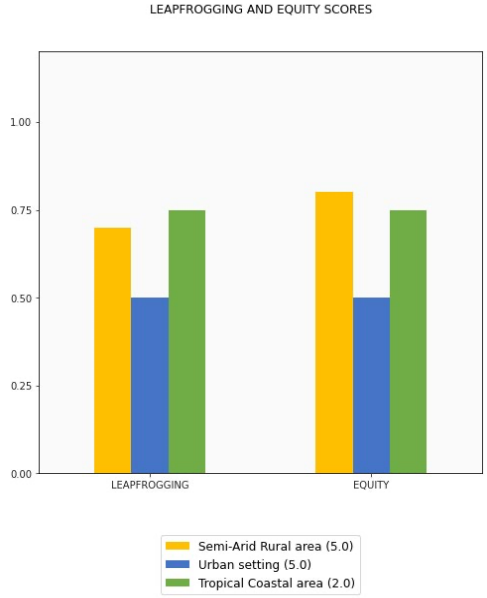
Bharucha et al. (2020)

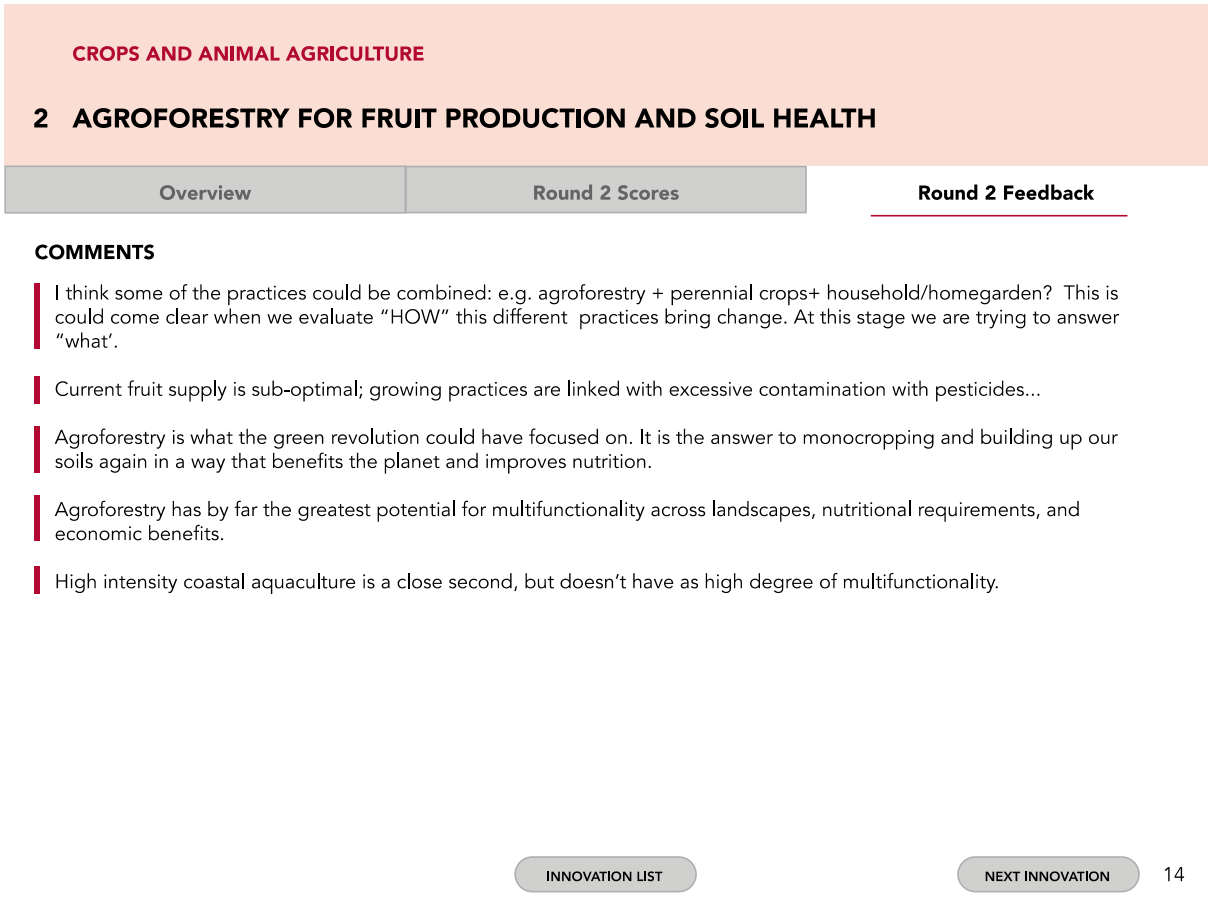


CROPS AND ANIMAL AGRICULTURE

2 AGROFORESTRY FOR FRUIT PRODUCTION AND SOIL HEALTH







Questionnaire development

The Round 3 questionnaire has the aim of (2) eliciting further details about the information ranked highest in Round 2, (3) further achieving consensus by again ranking using the shortlist, or both.

(1) In order to elicit further details about the information ranked highest in Round 2, open and closed questions can be used to investigate certain criteria.

(2) In the case of achieving consensus from a short-list, multiple choice Likert scale questions can be used (similarly to Round 2) and the top [X] number of options are selected as the consensus options.

An example of a Round 3 questionnaire with the objective of eliciting further information can be found below. This was the third questionnaire in the 2020 Project DISRUPT Delphi Study. It used a backcasting approach to gather information on the pathway to ideal implementation of the innovations surfaced in Round 1.

Round 3 questionnaire example

Example introduction text:

Project DISRUPT: Healthy Diets on a Healthy Planet

Delphi Process Round 3 Survey - Exploring & Scoring Innovations

Based upon your input in Round 2 - and in following the Delphi process for building consensus from within the participant group - we have generated a shorter list of 23 innovations with high potential as game-changers in emerging markets to provide affordable, safe, and nutritious food in an environmentally sustainable way by 2030.

In this final round in the Delphi process we ask you to identify what is necessary for these innovations to foster a major step-change towards having significant positive impact on both human and planetary health.

INSTRUCTIONS:

1) Please read through the Priority Innovations catalogue

2) Through your setting lens, choose 2 innovations from 2 different clusters

3) record your responses (we expect this to take 20-30 minutes per innovation)

We encourage you to choose innovations that excite you but may be outside of your immediate area of expertise, to the extent that you feel comfortable working with them. We have provided additional background information and links to further resources for each innovation. We have also included the scoring results and comments from your fellow panellists for all of the Priority Innovations. This is not meant to be an exhaustive profile, but rather supplementary reference materials for you to use if useful.

We look forward to your input and appreciate your time. As always, if you have any questions during the process, don't hesitate to reach out to us.

- the core GAIN - EAT - Bioversity - CIAT Alliance team

Example questionnaire structure:

QUESTION	**QUESTION TYPE**	**OPTIONS (FOR MULTIPLE CHOICE AND CHECKBOX QUESTIONS**
Email address	Short answer	N/A
Confirm that you consent to participate in this project. True to the Delphi Process, your answers will be shared with the group in an anonymous format. The research team is collecting your email for clarification of any details, if necessary.	Checkbox	I consent
Imagine it is 2030 and this innovation is effectively used in your setting. It has had a major positive impact in making affordable, safe & nutritious foods available in an environmentally sustainable way, helping to meet the 2030 Sustainable Development Goals (SDGs) for both human dietary and planetary health. Please indicate the first innovation that you'll be working with from the list on page 1.	Drop down list	*List of innovations sourced from Round 1

Innovation number and name		
1.1 WHAT DOES THIS LOOK LIKE? - Describe and elaborate on the "ideal scenario" where this innovation has changed business as usual. Explain how the innovation would work and what your major specific assumptions are in how it has been effectively used. *Keep in mind that it does not have to be used everywhere in your setting, but focus on how and where it may have the most positive impact. We encourage you to think of this innovation as part of a larger strategy for addressing these critical SDGs in your setting. Don't worry - for the moment - about barriers, challenges or limitations as we will ask you to address this in a later question.*	Paragraph (long answer)	N/A
1.2 USERS and BENEFICIARIES - Who are the users of this innovation? And who benefited, either directly or indirectly? *Please list target user groups and beneficiaries*	Paragraph (long answer)	N/A
1.3 DIETARY IMPACT - How did the intervention impact dietary health? *Please explain diet and health impacts. You are welcome to elaborate in a few sentences or simply provide a list*	Paragraph (long answer)	N/A
1.4 PLANETARY HEALTH IMPACT - How did the innovation impact planetary health? *Please explain planetary health impacts. You are welcome to elaborate in a few sentences or simply provide a list*	Paragraph (long answer)	N/A
1.5 SPILLOVER EFFECTS and TRADEOFFS - In your "ideal scenario" of the effective use of the innovation in 2030 can you identify any possible unintended consequences or major tradeoffs? *For example, creating new lock-ins, inequities, or aggravating current or predicted environmental or health challenges? You may write a short paragraph or simply provide a list*	Paragraph (long answer)	N/A
2.1. KEY STEPS - Walk us through the key steps that are necessary for this innovation to reach transformative impact by 2030. Please elaborate on the critical elements - e.g. policy, consumer behavior change, technological innovation, dependency on a supply chain, etc. If helpful, consider what steps need to happen above and below the innovation in the supply chain, or dependencies that are essential for making the innovation successful. *You may write a short paragraph or simply provide a list*	Paragraph (long answer)	N/A

2.2 BARRIERS - Why hasn't this happened yet? What are key barriers or challenges to be overcome? If useful, ask yourself what is stopping this innovation from being used or having impact today. *You may write a short paragraph or simply provide a list*	Paragraph (long answer)	N/A
2.3. PORTFOLIO BUILDING and INNOVATIVE SYNERGIES - What strategies or creative solutions are necessary to help this innovation overcome these barriers? As you begin to identify solutions, are there other innovations, actions or ideas that can help "foster the leap" towards supporting this innovation in reaching transformative impact? *Feel free to select innovations from the full innovations catalogue for this project or include any other innovations/ideas/solutions that you'd like to suggest. You may write a short paragraph or simply provide a list*	Paragraph (long answer)	N/A
2.4. STAKEHOLDERS and MAJOR ACTORS - Who drove the innovation? Who needs to play key roles in helping to move the innovation forward (and at which points)? *You may write a short paragraph or simply provide a list*	Paragraph (long answer)	N/A
2.5. INCLUSION - How can we ensure the benefits of this innovation are realized by vulnerable groups? What strategies are necessary to do this? *You may write a short paragraph or simply provide a list*	Paragraph (long answer)	N/A
Please feel free to include any other comments you'd like to share here about barriers and pathways for this innovation.	Paragraph (long answer)	N/A
3.1. Did the COVID-19 pandemic influence your choice of this innovation during the project? And if yes, why or how?	Paragraph (long answer)	N/A
3.2. POST-COVID-19 and FOOD SYSTEM RESILIENCE - How could this innovation help to increase food system resilience to these types of shocks - responding to the longer term health, environmental, and equity challenges that may now be accelerated and exacerbated by COVID-19 in your setting?	Paragraph (long answer)	N/A
3.3. Please share any other comments about this innovation and its relevance to the current COVID-19 global pandemic, for your setting or otherwise.	Paragraph (long answer)	N/A

FURTHER ROUNDS

Delphi studies can theoretically have more than three rounds. They can consist of as many rounds as necessary to answer the research question(s). However, in order to avoid respondent fatigue, it is not recommended to have more than 3 rounds. Most Delphi studies consist of two or three rounds.

Should multiple further rounds seem appropriate, perhaps the scope of the Delphi study was too broad and the research questions too ambiguous. The best results come from well-defined research questions and a specific scope in order to produce the desired results from two or three rounds.

SUMMARY PHASE

The summary phase is meant to both present the results of Round 3 of the Delphi study as well as present a summary of the overall process. Below, a discussion of the summary material development is discussed, and an example of summary material is presented.

Summary material development

The summary material consists of the results from Round 3, as well as the results from the previous rounds.

This summary material is specifically for the panellists, as the final report and other deliverables will be disseminated separately. Therefore, it should be noted on the cover page or introduction that the summary materials are not meant to be widely circulated.

Below, find an example of the summary material from the 2020 Project DISRUPT Delphi Study. First, the Round 3 results are presented. After, a three-page summary of the process is presented. Both of these were circulated to participants after Round 3 of the Delphi Study.

Summary material example

PROJECT DISRUPT:

HEALTHY DIETS ON A HEALTHY PLANET

DELPHI INNOVATION CATALOGUE - ROUND 3 RESULTS

Version 1 - 06.07.2020

Alliance

1

CROPS AND ANIMAL AGRICULTURE

2 AGROFORESTRY FOR FRUIT PRODUCTION AND SOIL HEALTH

DESCRIPTION

Soil degradation includes soil fertility decline, nutrient imbalance and erosion. Such phenomena can lead to decreased capacity of soils to regulate water flows as well as a loss of biodiversity. This innovation proposes to implement fruit tree plantations through agroforestry practices. This could regulate land degradation, provide income, nutritional benefits and carbon retention. Further, planting trees in (mountain) watersheds generates resilient and effective watersheds. Drought-resistant fruit trees could be opted for, but a diversity of outputs could be possible such as fodder crops, creating multi-functional landscapes.

LINKS AND FURTHER READING

Kuyah et al. (2019)

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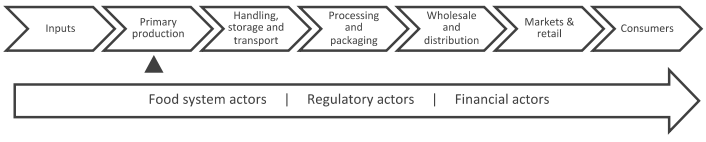
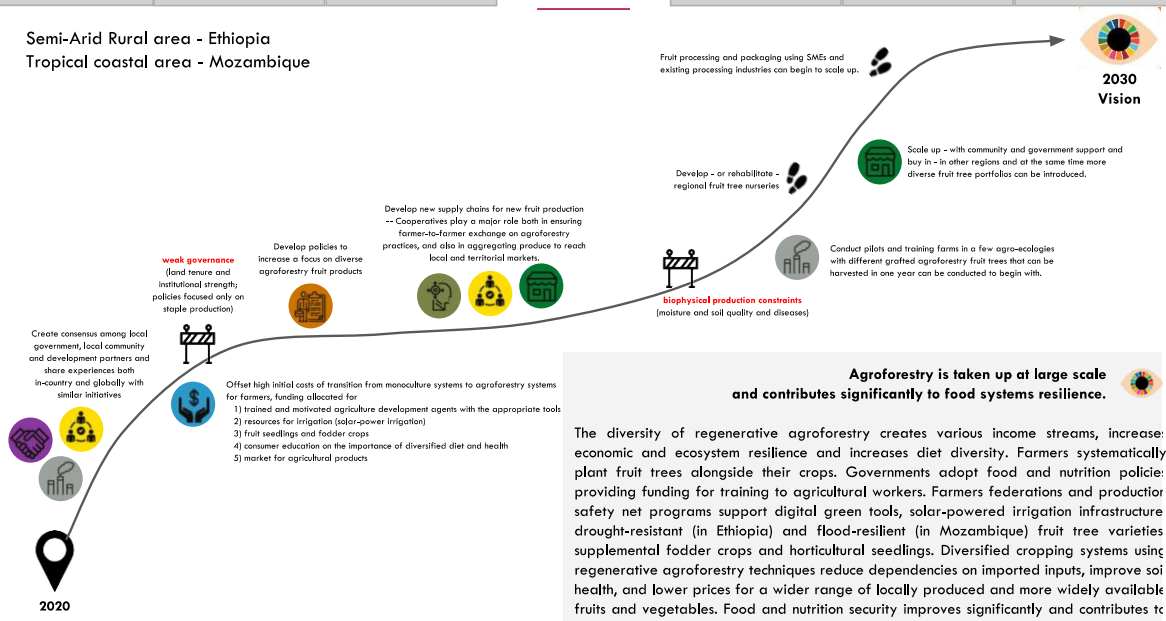


CROPS AND ANIMAL AGRICULTURE

2 AGROFORESTRY FOR FRUIT PRODUCTION AND SOIL HEALTH

Semi-Arid Rural area - Ethiopia
Tropical coastal area - Mozambique



Agroforestry is taken up at large scale and contributes significantly to food systems resilience.

The diversity of regenerative agroforestry creates various income streams, increases economic and ecosystem resilience and increases diet diversity. Farmers systematically plant fruit trees alongside their crops. Governments adopt food and nutrition policies providing funding for training to agricultural workers. Farmers federations and production safety net programs support digital green tools, solar-powered irrigation infrastructure drought-resistant (in Ethiopia) and flood-resilient (in Mozambique) fruit tree varieties supplemental fodder crops and horticultural seedlings. Diversified cropping systems using regenerative agroforestry techniques reduce dependencies on imported inputs, improve soil health, and lower prices for a wider range of locally produced and more widely available fruits and vegetables. Food and nutrition security improves significantly and contributes to shifts into middle-income economies.

INNOVATION LIST | NEXT INNOVATION

CROPS AND ANIMAL AGRICULTURE

2 AGROFORESTRY FOR FRUIT PRODUCTION AND SOIL HEALTH

WHAT DOES THIS LOOK LIKE?

In an ideal scenario in both the semi-arid highlands of Ethiopia and tropical coastal areas of Mozambique, farmers across the region are encouraged and empowered to systematically plant fruit trees alongside their crops. Food and nutrition security improves significantly and contributes to the countries' shifts into middle-income economies. The Ministries of Agriculture have adopted food and nutrition policies providing funding for training to agricultural workers. Farmers federations and production safety net programs support digital green tools, solar-powered irrigation infrastructure, drought-resistant (in Ethiopia) and flood-resilient (in Mozambique) fruit tree varieties, supplemental fodder crops and horticultural seedlings. Shifts towards diversified cropping systems using regenerative agroforestry techniques result in the reduction of dependencies on imported fertilizers and pesticides, improved soil health, higher yields of nutritious foods, and lower prices for a wider range of locally produced and more widely available fruits and vegetables. This leads to improved access to and availability of more diverse and nutritious diets (across vitamin, mineral and protein targets).

PORTFOLIO AND SYNERGIES

1. Increased government support to purchase agricultural inputs could foster the leap towards the support of this innovation in parallel with increased in-country capacity for food processing and packaging. Taking this to scale must occur as part of a broader shift towards diversified, agroecological approaches. It does not require new markets per se, but the improvement of transport and logistical links to local/territorial markets would be crucial given that farmers will have a more diverse offering of produce to sell.
2. Given the knowledge-intensive nature of agroecology and agroforestry, the key shift would be repurposing knowledge and extension systems to support various forms of diversification, including the promotion of farmer-to-farmer exchange.
3. Modes of policy support focused on short-term transition payments would help, as well as premium payments for ecosystem services, e.g. based on the number of trees planted.

KEY STEPS

1. Create consensus among local government, local community and development partners by sharing experiences both in-country and globally with similar initiatives.
2. Develop and advocate for clear policy support for diverse agroecological production systems, including not only subsidies but also funding and mandates for agricultural extension services.
3. In parallel, policy incentives must be developed to reduce the sole focus on staples and increase a focus on diverse agroforestry fruit products.
4. To offset the high initial costs of transition from monoculture systems to agroforestry systems for farmers, funding needs to be allocated for 1) trained and motivated agriculture development agents with the appropriate tools, 2) resources for irrigation (solar-power irrigation), 3) fruit seedlings and fodder crops, 4) consumer education on the importance of diversified diet and health, and 5) market for agricultural products.
5. New supply chains must be developed and supported to market new fruit production. Cooperatives should play a major role both in ensuring farmer-to-farmer exchange on agroforestry practices, and also in aggregating produce to reach local and territorial markets.
6. A pilot in a few agro-ecologies with different grafted agroforestry fruit trees that can be harvested in one year can be conducted to begin with.
7. Then nurseries can be developed or rehabilitated in each region, focusing on agroforestry fruit trees.
8. Scale up - with community and government support and buy in - can begin in other regions and at the same time more diverse fruit tree portfolios can be introduced.
9. Fruit processing and packaging using SMEs and existing processing industries can begin to scale up.

INNOVATION LIST | NEXT INNOVATION

3 page process summary:

DRAFT - Not for circulation

Project Disrupt:
Healthy Diets on a Healthy Planet

THE CHALLENGE

Our current food system is in dire need of change. To enable resilient, affordable, safe, and nutritious diets for the current and growing population while restoring and safeguarding our environment, we need to think and act out of the box. GAIN, the Alliance of Bioversity and CIAT, and EAT joined forces to conduct a three-stage Delphi study, to identify and investigate game-changing innovations for improving diets and restoring environments by 2030.

"Which innovations can be game-changers in making affordable, safe & nutritious foods available in an environmentally sustainable way by 2030?"

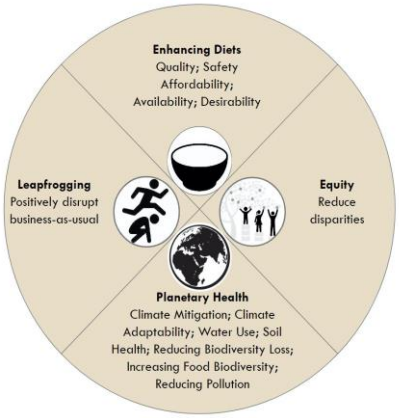


Figure 1: Set of interdisciplinary criteria for exploring innovations

INTERDISCIPLINARY WORK for MULTI-USE OUTCOMES

The food system is the major driver of global environmental degradation as well as ill health and premature mortality. The way we produce, use, and dispose of our food contributes to climate change, land and soil degradation, biodiversity loss, and interferes with the global nitrogen and phosphorus cycles, amongst others. Despite this massive resource use, the food system is not meeting the global nutritional requirements; almost a quarter of all children under 5 years of age are chronically undernourished and one in every three people is overweight or obese. Not one country is on course to meet all ten of the 2025 global nutrition targets and just 8 of 194 countries are on track to meet four targets. Progress in food systems is also deeply unfair, with the most vulnerable groups being most affected (Global Nutrition Report, 2020).

There is an urgent need to reimagine food systems and empower transformative solutions that address these interlinked issues together, while delivering healthy diets in an equitable way. To do this, project Disrupt used a set of 14 criteria (see Figure 1 & criteria descriptions) to assess the potential impact of food system innovations.

DIVERSE EXPERTISE leading to EXCITING IDEAS

A diverse panel of 52 experts (see panel bio-book) was engaged throughout the Delphi process. Experts in nutrition, the environment, food systems, economics, innovations and digital technologies, artists and journalists shared their experiences and perspectives from across the private and public sectors, the NGO and international development communities, as well as from universities and research centers around the world.

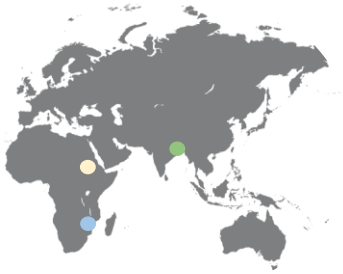


Figure 2: Grounded in three real-life settings: semi-arid rural Ethiopia, tropical coastal Mozambique, and urban Bangladesh

GROUNDING the challenge in REAL LIFE SETTINGS

The research question was rooted in the concrete challenges of specific geographical contexts and food system settings. These included a semi-arid rural setting in Ethiopia, a tropical coastal setting in Mozambique and a tropical urban setting in Bangladesh (see setting descriptions). Many of the panelists live in or are from the three settings, while others were assigned to those settings based on their relevant international professional experience.

THREE-STAGE PROCESS

Project Disrupt used an adapted three round Delphi study with a divergence round, convergence round and a detailing round. Over the course of the project - March through June of 2020 - panelists were invited to actively participate in the 3 rounds (Figure 3), each including a virtual discussion session (see webinar slides and recordings) followed by an online anonymized survey (see surveys) to capture the experts' input and insights. A final 4th webinar was facilitated by the research team, summarizing project results to date, reflections on the process and next steps and participants were invited to provide any additional thoughts and feedback in a 4th survey.

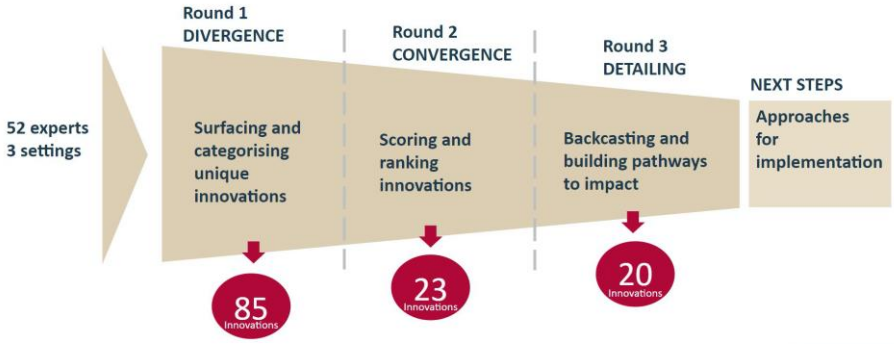


Figure 3: The three rounds of the Delphi process

During the process, an innovations catalogue was built and elaborated on. The initial 85 innovations surfaced by the expert panel have a broad range of targets, involve various stakeholders, and benefit a diverse range of users. These included a combination of complementary types of solutions: technological solutions, nature-based solutions, policy/social approaches.

There is no single innovation that will fix the food system; multiple actions must be taken at different levels and in aligned with broader societal challenges. This is reflected in a set of 20 focus innovations that act along the entire supply chain (Figure 4) and that were selected based on expert scoring for the 14 criteria.

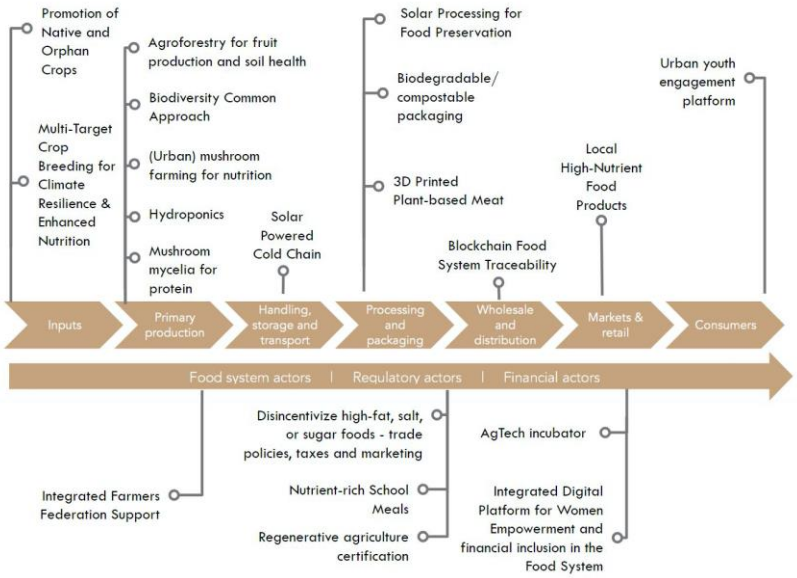


Figure 4: Set of 20 selected focus innovations along the supply chain

BACKCASTING to unleash the IMAGINATION

Daring to imagine possibilities, spillovers and tradeoffs while creatively designing steps towards the ideal uptake of these solutions is essential for building more sustainable and equitable transition pathways. A backcasting approach was used for this purpose. Experts were asked to imagine and describe their vision and a pathway for selected innovations to reach its maximal dietary and planetary potential impact by 2030 in their specific setting.

Explore the different creative pathways in the innovation catalogue

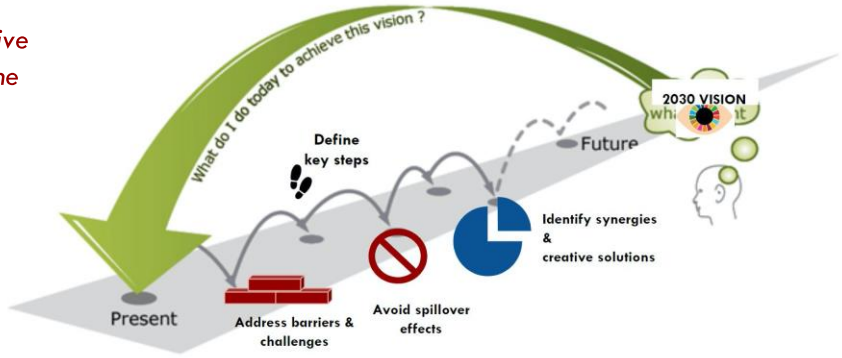


Figure 5: Backcasting - starting with the vision in 2030 and working backwards to map pathways to achieve it

PROCESS REFLECTIONS: cross-pollination and moving forward

Thanks to the insightful contributions of the 52 experts, 85 innovations surfaced and detailing for a diverse set of 20 selected focus innovations that include technological, nature-based and policy/institutional solutions, was possible. Essential actions for transition pathways have been identified and will inform action strategies. The Delphi consensus-building methodology did not lead to unimaginable futures, rather it emphasized that existing technologies, when contextualized in place, and analyzed across environmental, health, and social impact criteria have significant potential for positive transformation. Cross-pollination between experts, innovations, and context settings was a motivating benefit of the process and resulted in a constructive exchange of solutions. The process revealed that game-changing is also about portfolio-building, creating enabling environments, facilitating flexibility, and supporting across value chain interactions.

This study is just the start of our collective exploration. The innovations surfaced and elaborated on here represent an initial selection of the potential innovation sphere and the study indicates that there is massive potential in the pipeline and many more innovations can be surfaced or elaborated on. Moreover, this exercise has no merit unless the ideas are taken up by food system actors, businesses and development partners and sufficiently resourced by both public and private sector actors to reach the scale necessary to truly transform our food systems – for better nutrition, better planetary health, and greater equity.

We welcome you to continue this journey with us!

Via this link you can indicate if and how you would like to stay involved in the next steps

Or contact us:

cpedersen@gainhealth.org
r.remans@cgiar.org

SUPPLEMENTARY TOOL ST-05
ORGANISING DELPHI WEBINARS

Background and instructions

The webinar marks the launch of the Delphi study, the launch of a new round, and the closure of the Delphi study. There are four goals to the webinars (Figure 1).

FOUR GOALS OF DELPHI WEBINARS

1. Engage participants in the process in order to increase likelihood of participation
2. Share results from previous rounds of the study (except in launch webinar)
3. Provide instructions for the upcoming round of the study
4. Facilitate discussion and feedback from panellists

Figure 11: Goals of Delphi webinars

Following the goals of webinars shown in Figure 1, the main points to include in a webinar are:

1. Quick review of the study research questions, scope, and goals
2. Summary of results from the previous round
3. Instructions for next round

When to organise webinars

Not all Delphi studies require webinars. If a Delphi study is short (i.e. 2 rounds), with an internal expert panel, webinars after each round may not be needed. Sharing the results in a summary document by email could be sufficient. Conversely, if the Delphi study is long (i.e. 3 or more rounds), with mixed or external experts, simply sharing the results of previous rounds via email may not be enough.

Timing

The webinars should mark the launch of a Delphi round. As a general rule, invitations to webinars should be sent out 2 weeks in advance, with reminders 2-3 working days before the webinar. Find below an example of a webinar invitation (Project DISRUPT 2020).

Subject: Webinar on results from Round 2 and moving to Round 3 (final round) of Project Disrupt: Healthy Diets from a Healthy Planet

Dear All,

Thanks very much for your great response in Round 2 of our Delphi process!
We have 48 responses, resulting in a very rich innovation scoring base. It is also interesting to note the cross-pollination between the settings, with many innovations selected across the three settings - you can find a preliminary insight related to that here.
We really look forward to sharing and discussing the results, analyses, and insights with you, and using those to move to the third and final round of our Delphi process. We plan to do so in a webinar in the week of May 11 and have scheduled again three time slots for you to choose from. Kindly indicate your availability here.
Similar as before, the webinars will be recorded, and your participation and interactions make them extra rich.
Looking forward, best regards, and hope you're all well,

Roseline - on behalf of the project team

SUPPLEMENTARY TOOL ST-06

PANELLIST FEEDBACK TEMPLATE

Background and instructions

At the end of the last round of the Delphi study, it is useful to gather feedback from the panellists. The purpose of this exercise is to gather feedback that can be used to improve the experience of panellists in future Delphi studies. This is useful from the Delphi team's perspective as it can help increase retention rate, but also useful from the participants' perspective as it can help to magnify features the panellists found to be valuable for their own professional practice.

Below is an introduction text and a table containing an example of the questions used for feedback surveys at the end of a Delphi study. These questions are a guideline which can be adapted to suit the scope and objectives of the study.

Microsoft Forms or Google Forms are the best options/ for this survey. Other online survey tools such as Surveymonkey could work as well. Finally, a Word document or an email-based survey can work as well, but these limit automation (ie. Responses automatically populated into a spreadsheet).

Example introduction text:

Thank you again very much for participating in our Delphi survey rounds of "Project Disrupt: Healthy Diets on a Healthy Planet."

With this very short and final form, we want to give you an opportunity to share your reflections on our Delphi process. We welcome your candid and constructive feedback.

Likewise, we want to invite you to stay involved with the next steps of this process. Over the next months the core team will be continuing to work on 1) building an interactive innovations catalogue, 2) engaging in the EAT at home virtual forum, 3) communicating & pitching insights and products of the process to multiple audiences & networks, 4) building consortia for multi-innovation transition pathways. Your continued input and interest is most welcome and we're also open for other suggestions on next steps.

We want to thank you again very much for all your valuable input in this process.

Example survey structure:

QUESTION	**QUESTION TYPE**	**OPTIONS (FOR MULTIPLE CHOICE AND CHECKBOX QUESTIONS**
Email address	Short answer	N/A
What are your main takeaways from this Delphi process?	Paragraph (Long Answer)	N/A
Will you use any outputs or lessons learned of this project in your work? If yes, what seems most relevant to you and how do you plan on using it?	Paragraph (Long Answer)	N/A
What did you think worked well?	Paragraph (Long Answer)	N/A
What could have been handled better or differently? How could the process & products be improved?	Paragraph (Long Answer)	N/A
Would you like to stay involved in some of the next steps of this project? If you select 'yes' you can let us know in the next question in what ways you would like to be involved.	Multiple choice	Yes No Don't know Other
If yes, how would you like to stay involved?	Checkboxes	To help review specific innovation descriptions To help build an interactive innovations catalogue To engage in the EAT@Home forum (mid-August) To communicate and/or pitch insights and/or products of

		this process to multiple audiences To build consortia for multi-innovation transition pathways Please keep my e-mail in your database to keep me posted on the project Don't know Not applicable *Other
Do you have any other comments or thoughts that you would like to share with us?	Paragraph (Long answer)	