SESSION TRANSCRIPT

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Session Title: Mapping the smallholder irrigation ecosystem in Rwanda
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Grace: **Welcome**

Welcome to this on-demand presentation at the 2021 Water for Food Global Forum focused on mapping the smallholder irrigation ecosystem in Rwanda. We have an experienced group of presenters here to share their processes and insights with you over the next thirty minutes. We will start with a briefly introducing our speakers, defining what an ecosystem map is and what it is used for, and then discussing step-by-step how to create an ecosystem map, using the "Rwanda smallholder irrigation ecosystem map" recently published by DWFI as an example.

Introduction

Your presenters today include myself, Grace Mukarusagara, as well as Natacha Akaliza & Raïssa Urujeni, who are all program consultants for the Daugherty Water for Food Global Institute. I would now like to turn the discussion over to Natacha to define an ecosystem map.

Ecosystem Map Definition

Natacha: Thank you Grace. First let's start by understanding what we mean by ecosystem. We are referring to the general use of the word ecosystem, which is a complex network or interconnected system. Now defining an ecosystem map, it is a visual representation capturing all the people and groups that have influence on the target customer and service environment.

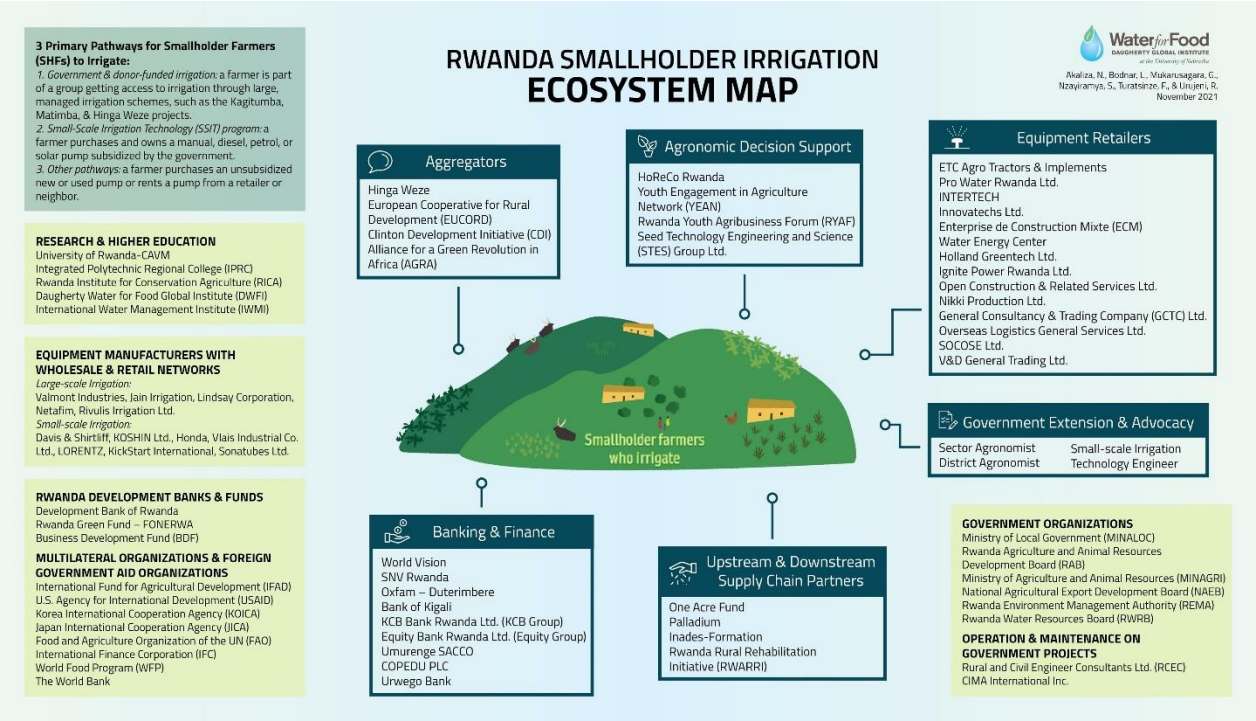
In the context of irrigated agriculture, at the center of the map is a farmer who irrigates, the target customer. The surrounding entities are categorized into different functional groups based on how they primarily provide value to the customer. These functional groups are then tiered on whether they work directly or indirectly with farmers.

The main goal of the "Rwanda smallholder irrigation ecosystem map" is to show all the key players surrounding farmers, and their role. This map can be used by

entrepreneurs interested in starting an irrigation business to identify potential customers, suppliers, partners, investors, donors, and other resources. The map can also be used by organizations who want to support entrepreneurship and access to irrigation to learn who is involved, where current efforts are focused, and where there are gaps or opportunities for services and investment. The overarching objective is to strengthen the irrigation entrepreneurship ecosystem, which creates opportunities for innovative solutions to scale-up irrigated agriculture.

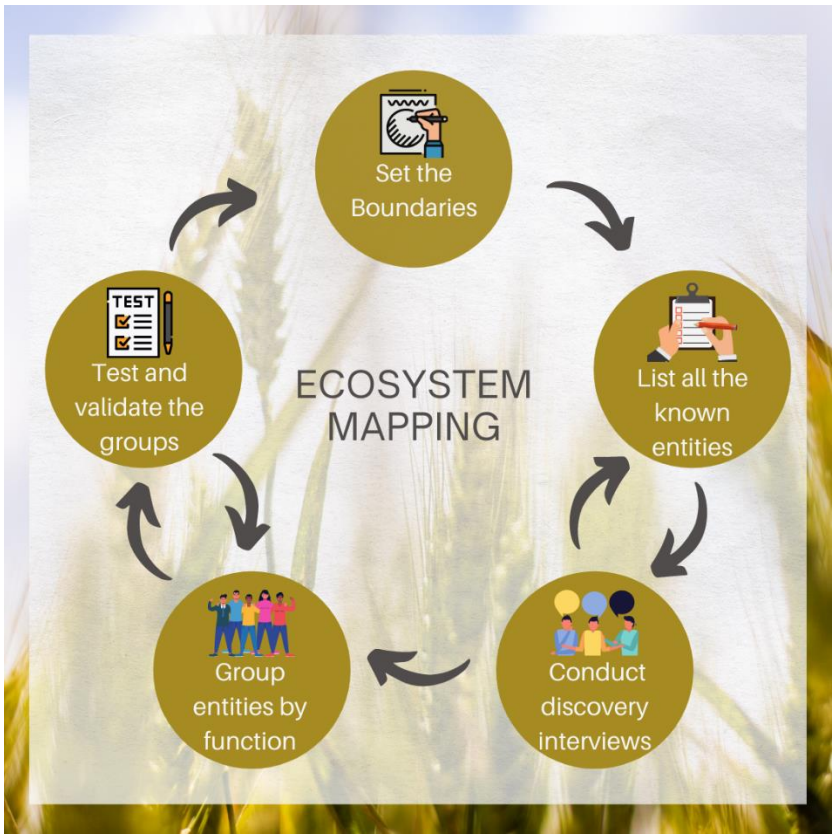
Raissa: Let's take a closer look at the "Rwanda smallholder irrigation ecosystem map," which captures irrigation businesses serving smallholder farmers as well as the broader irrigation ecosystem in the country. It includes a range of partners, funders, industries, university programs, and advocates that intersect with and support the irrigation pump market. At the center of the map is the smallholder farmer who irrigates. Those entities shown in green have direct contact with farmers. Organizations shown in blue have influence in the irrigation ecosystem but are not primarily working directly with farmers.

In the next 20 minutes, we're going to tell you exactly how we created this map, using a step-by-step process which you can replicate to study other ecosystems of interest to you.



Raïssa **Ecosystem Mapping Process**

Now let's have an overview of the ecosystem mapping process. We have drawn this as a circle because the process is iterative, not linear. As you progress through these steps and gain additional information through interviews, testing and & validation, you will likely find you need to go back and adjust the boundaries, add more known entities, or add and modify functional groups. We will discuss how we worked through this process to create the Rwanda smallholder irrigation ecosystem map.



Grace **Set the Boundaries** – The first step in creating an ecosystem map is to set the boundaries, to determine what will be inside and outside the scope of your map. One way to do this is to determine who is the target customer in the ecosystem, and who will be using the map. These two concepts are related. For example, if you are an entrepreneur interested in starting your own company, or a business owner interested in growing your customer base, at the center of the map will be your target customer, the type of person or group that will buy and use your product or service.

If you are a researcher, government planner, or non-profit program manager, you need to consider who or what it is that you are trying to study and support. In our case, we are seeking to study entrepreneurship and understand the private-sector small pump market, with a goal of increasing smallholder farmers' access to irrigation. Though we are studying business owners, we did not put an irrigation business owner at the center of the map. Instead, we put that businesses' customer, a smallholder farmer, at the center. This allows us to get the whole picture of the flow of goods, services, and information.

Another way to set the boundaries is to decide what will be the title of your map. Let's consider our example, which is entitled "Rwanda smallholder irrigation ecosystem map." This tells us key points about the map boundaries:

1. First, we are focused on Rwanda.
2. Secondly, we are interested in smallholder farmers, not medium farms or large commercial agricultural enterprises.
3. And finally, we are focused on smallholder farmers who irrigate, not all smallholder farmers in general.

Natacha **List all Known Entities –** Once you have defined the boundaries of your ecosystem, the next step is to make a list of all the entities that have an interest in, influence on, or interaction with your target customer. At this point, you should not try to limit or condense your list, because you can do that later. Now is a chance to think broadly and put as many ideas down as possible. It helps if you do this in a group setting, so that you can brainstorm as a team.

In our case, we did this as a group exercise over Zoom using Etherpad, a free and interactive word processing tool. We set a time limit and listed out the people and organizations that are active in smallholder irrigated agriculture (broadly). For this exercise, the focus was on trying to capture everyone who is directly or indirectly involved in smallholder irrigation in Rwanda or who has a stake in it.

Natacha **The third step is to conduct Discovery Interviews –** The ability to create a comprehensive and complete list of entities comes from having knowledge of how systems work "in the real world," meaning you have to "get out of the building" and talk to people to truly understand the ecosystem. Our team accomplished this with discovery interviews. You can use the list of entities you created to identify your first round of interview subjects. We are giving a live session on discovery interviews as part of this Forum on Tuesday, October 12th. We encourage you to either attend this live event or to watch the session

recording afterwards. For now, I will focus on two aspects of discovery interviews especially relevant to ecosystem mapping:

1. First, ask open ended questions, talk less, and listen more. Be prepared to hear things you did not expect. Don't just seek confirmation of what you already believe to be true. This is not a sales pitch. The point of a discovery interview is to learn about the needs of your customers, and the business models of other entities around your customer, including their unique value propositions, customer segments, marketing channels, and key resources and partners. This information will be necessary to group entities by their function in the ecosystem.
2. Secondly, use discovery interviews to expand your network and awareness of ecosystem actors. There is a saying that "you don't know what you don't know," meaning that there may be gaps in your understanding of the ecosystem, but you don't know that until someone else points it out to you. Our team in Rwanda conducted dozens of interviews with smallholder farmers, cooperative groups, business owners, government officials, NGO program managers, and more. At the end of each interview, we would always ask, "Based on our conversation today, is there anyone else you recommend we talk to?" This question allowed those we interviewed to refer us to others, and possible offer a warm introduction to these new contacts. As such, we were able to fill in some gaps in our map and gain a broader understanding of the ecosystem.

Listing entities in the ecosystem and conducting discovery interviews is an iterative process. We went through multiple rounds of listing entities, conducting interviews, and then updating the list and scheduling more interviews.

Raïssa **Group Entities by Function** – Once you have a good understanding of the actors in the ecosystem and what they do, you should start to group these people and organizations by their function. This is usually the hardest part of creating an ecosystem map, because you want to avoid superficial similarities between groups – such as similar names – Instead focus on how entities provide similar value propositions to the target customer. These categories should be informed by the discovery interviews, by what people tell you face-to-face about how an organization functions "in the real world," not just how an organization crafts its image through marketing and public relations.

To create these functional categories, we asked ourselves the following questions: "How do these entities relate to smallholder farmers? What is the

primary value they are providing to farmers? Are they working directly with farmers, or are they one or two steps removed?"

One strategy to help with this is to create short descriptive names for the categories you are developing, and to make these names reflect the key action or service. For example, looking at the Rwanda smallholder irrigation ecosystem map, we can think of many of the group's names as both a noun and a verb – reflecting both who is in the group and what the group does. A Technical Aggregator *aggregates* multiple services; an Input Dealership *deals* seeds and agrichemicals, and Equipment Retailer *retails* pumps, pipes, and accessories; and a Financier *finances* grants and loans to smallholders. So, if you are struggling to name your categories in your ecosystem, consider making the name include their key activity.

We also organized the groups on our map into two tiers. The first tier, in green, are those entities that have direct contact with farmers. Organizations shown in blue have influence in the irrigation ecosystem but are not primarily working directly with farmers.

At this point, you may also find that you have some relevant information about the ecosystem, which cannot be conveyed through the categories you are developing. In this case, consider adding a note to the map. We did this in the yellow box at the top of our ecosystem map, where we identify the three primary pathways for smallholder farmers in Rwanda to irrigation. The information in this box is important to provide context and correctly understand the ecosystem, but it is not part of the ecosystem itself.

Grace

Test and Validate the Groups – Finally, once you have created and filled functional groups and created a first draft of your ecosystem map, you need to test and validate your map. We recommend doing this through group discussion. As a team, we had several, internal ecosystem mapping workshops, where we asked ourselves the following questions and discussed the answers:

1. Are there any entities missing from this map? As you add more entities to your list, are you able to fit these entities into the functional groups you have identified? If an entity does not fit, then do you need to add a new group to the map?
2. Do the organization in the categories truly have similar functions? Are there too many organizations in this category that we should consider splitting it into two categories? Conversely, are there too few examples of category to merit it being a separate group or being on the map?

3. Do you think the organizations listed on the map agree with their categorization? If not, why? How can you justify the grouping if someone disagrees? Can you back this up with a source from your discovery interviews?

Assigning entities to functional groups and testing and validating the map is an iterative process. We went through multiple drafts of the ecosystem map as we continued to conduct discovery interviews, each better than the last.

Knowing when to stop working on this map development process, and to finish the ecosystem map, is a matter of judgement. Remember, this map is a *representation* of the key actors and their roles in an ecosystem. As a representation, there is no right or wrong answer we are searching for, and no hard and fast rule of when the map is complete. In our case, we decided to publish our map after the entire team discussed the map multiple times and agreed that they had a high comfort level with the decisions that had been made. The team used their professional judgement, acquired through months of working in Rwanda and conducting interviews, to state that in our opinion the map accurately reflects the irrigation ecosystem for smallholder farmers as witnessed by us.

Grace **Conclusion**

We hope that this map will be useful for you, in understanding the irrigation ecosystem in Rwanda, and in encouraging you to apply the same process to new markets and environments.

If you would like more information about the work that the Daugherty Water for Food Institute is doing to support irrigation entrepreneurship, please visit our website at waterforfood.nebraska.edu.

Thank you for choosing this presentation, and good luck in your own ecosystem mapping!