IFPRI Podcast Series
Episode 1: Playing Games to Save Water in India

Sivan: Hi and welcome to "Research Talks", a podcast series that explores how research is making an impact on people and policies (with a focus on the 'how'), brought to you by IFPRI . I am your host, Sivan Yosef, and today we will dive right into a story from India about playing games! Let's hear a little preview from Ruth Meinzen-Dick, a senior research fellow with IFPRI.

Ruth: Managing resources sustainably, and equitably requires cooperation. There isn't a single magic bullet for this, but we have to find ways to get people talking about what will lead to greater cooperation. And so, if games are one instrument that can help that to happen, great. And maybe if we can do it for groundwater in places in India, we can do it for other water resources. Maybe we can even build it up to address some of the other great challenges.

Sivan: Experimental games have a huge potential to get people to cooperate in conserving shared resources like water. IFPRI partnered with an Indian non-profit organization called the Foundation for Ecological Security or FES, to improve water use. The foundation started out focusing on treegrower cooperatives but now does work on rehabilitating whole ecologies—or systems—to improve rural people's lives. Here is Jagdeesh Rao, the founder CEO of FES.

Jagdeesh: In the mid eighties, the extent of land which was lying degraded, became apparent to policy makers. They actually called for the national wide reforestation, re-vegetation mission to restore such degraded lands.

Sivan: So Jagdeesh's organization started setting up treegrower cooperatives in 5 states in India, replicating the milk cooperative model that had been so successful in the country.

Sivan: So your aim was to create these tree cooperatives so that the rural poor could have fuelwood and fodder for the animals. Did it go well?

Jagdeesh: No, not at all. We had conceived of cooperatives as a wonderful social construct which would bring people together and go about planting saplings, taking care of their common lands**.** By the nineties, we started seeing a couple of symptoms of things not working well. The very people whom we wanted to serve, the very poor people, women, pastoralists, livestock keepers, they were being somehow kept aside. They were not included in these cooperatives.

Sivan: The cooperatives were also promoting a business model for recovering land, whereby firewood was suddenly up for sale.

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Jagdeesh: The village people, importantly, were not looking at it as some merchandising kind of a model. They were looking at these lands to become natural forest so that the improvement in forest cover would bring them better fodder and would bring them a range of medicines, berries, fruit, tubers, mushrooms. And importantly, water availability in the villages would increase.

We were making serious mistakes, some millions of dollars of mistakes. By our very design, we were disenfranchising about half of the village. We were only looking at trees and not other elements of the ecosystem, like the birds and butterflies and flows of water and insects and so on. What we realized was we were only touching on the tip of the iceberg.

Sivan: Jagdeesh and his colleagues realized that they wanted not cooperatives, but rather-- cooperation. And they wanted to look at not just trees, but the entire ecosystem. This led them in search of inspiration on how to help people work together to manage all of the natural resources that make up the ecosystem, resources like water, forests, and pastures. This is called collective action. In 2006, their staff went to an IFPRI course on natural resource management and collective action run by senior researcher Ruth Meinzen-Dick. Here is Ruth.

Ruth: We were doing a training course for mid-career professionals in NGOs, in government agencies in India; people who are working on natural resources to discuss the lessons from our research. A number of FES staff were attending, and we were really impressed with how diligently they, did their homework, but also how they could address the links between the research and their own work. So Jagdeesh contacted me, so we met and we started to collaborate on, uh, developing first of all, a source book that would distil a lot of those lessons into something that was an easier to understand language.

Jagdeesh and I met again in Hyderabad and he said, "okay, all of this is good, but we really need something for the first mile delivery."

Sivan: What does first mile delivery, what does that mean?

Ruth: So, they work a lot directly with the communities and, they wanted to know, how do we take our research on collective action and do something that's directly useful for the communities?

Sivan: Here is Jagdeesh again.

Jagdeesh: The village people started talking more and more that by protecting forest, what they increasingly see is, improved stream flows. But with increasing water availability, people started changing their cropping patterns too. So places where there was no paddy, no sugar cane, and people were bringing in this commercial crops and changing the land use. This brought us into a totally new domain as such. When we started talking to the village people, they said that If I don't take the water, If I don't use the land for growing paddy, my neighbor would do it.

Ruth: While people are used to cooperating around forests or even surface water; resources that you can see, what was happening with groundwater is people can pump out a lot more water than is replenished, but they don't often realize the connections or they can't see what each other are doing as well. So, it's one of the really hardest, common pool resources, or shared resources to manage effectively.

Sivan: So Ruth, you and Jagdeesh are talking and he’s proposing that you apply all of your research on collective action and work directly with communities on this groundwater puzzle. What was your reaction?

Ruth: Oh, I was, well, very intrigued. I got into this field because I wanted to make a difference for communities, but I knew that groundwater is really a difficult nut to crack.

There was growing amount of work of using experimental games to measure people's likelihood of cooperating. And some friends of mine Juan Camilo Cardinez and Marco Janssen, in particular had been using these games and noticing that after they did these games, sometimes there was a higher degree of cooperation. So, we decided to test whether those games could be used as an intervention in the communities.

Sivan: Had you ever used a game before in your research?

Ruth: No, I actually hadn't. I thought it could actually be a useful tool, and it's also a lot more fun and engaging than just lecturing people.

So, Marco, Janssen of Arizona State University designed a groundwater game and we piloted it in Andhra Pradesh.

Sivan: Okay, so it's 2013 and you're doing the early runs of this groundwater game. Can you describe what that's like?

Ruth: The first time we used a school house, and then the second time we tried it out under great big banyan tree. And that was my favorite. It's, you know, beautiful place, people are in the shade. We got a group of five women together and a group of five men, just laid out the game, showed them what was going on and then played it with them.

Sivan: So, the game goes like this. People are given the choice between Crop A, which doesn't use up much water and gives a lower financial return, so less profit, and Crop B, which uses up a lot of water but also gives you a higher financial return, so more money.

Ruth: So if everybody takes crop A, the water table is very sustainable. If everybody takes crop B, the water is gone in, I think, it's four rounds

Sivan: In the beginning of the game, no one is allowed to talk before making their decision. But after a few rounds, the players are allowed to start talking to one another. And then they decide again, in secret, which crop they will each plant.

Ruth: People really got into it. And even though we called it crop A and crop B, they would start saying, "oh, this is paddy." And, you know, they were really relating it to their own situation. "This year. I need a lot of money because I'm marrying my daughter off." And, or sometimes when the water table was getting really low, some people said, "Well, I won't grow a crop at all so that the water table can recover." So, we did see some real generosity going on too.

Sivan: So, what were the results at the end of these various series of pilots?

Ruth: We played the games one year, and then we went back again to the same communities the second year. Because they had played it before, we did tend to get higher degrees of cooperation. We also found that the communities where they had played the game, they were significantly more likely to have adopted rules or done something about their water resources, compared to the communities where the same NGO program had been done teaching people about groundwater, but where they hadn't played the games.

Sivan: Were you surprised by these results?

Ruth: There were a couple of surprises. The first year we found that women actually were more than likely to choose the water consumptive crop than men. And that's not what we had expected. And it was because we had designed the game only about irrigation. And so, I was at, one of the times that a woman, an older woman said, "But if [we] if the water goes down, we won't have, drinking water." And the other woman said, "No, no, no, no. You're not supposed to think about this. This is just about irrigation." The other reason why we think women may have chosen the more water consumptive crop, was that people weren't supposed to leave the game until either they had gone through all the rounds of it, or the water table was depleted. And again, one of the women in one of the sessions we overheard saying, "Okay, okay, we get it. We need to go home and cook lunch, so let's all choose the water consumptive crops, so that we can, you know, deplete the ground-water and we can all go home." Which taught a really, really important lesson that you have to be very respectful of people's time.

Sivan: Now Jagdeesh

Jagdeesh: Systems' thinking is very, very, common sensical in villages. They connect one to the other. So I wasn't surprised about the outcome. I was surprised at the-- I was curious how the game would unfold and whether it would yield the results or not. It turned out that actually the experimental game really brought about some kind of interactive conversation between villagers who would otherwise not at all talk about groundwater.

Sivan: The communities themselves also ended up changing the game.

Jagdeesh: They themselves had come up with ideas like why don't we change the crops from excessive water demanding to somewhat less water demanding. How about changing the spacing between the rows in the way they're planted.

Ruth: The other big thing that they said was, "Look, you have the same recharge every year. But we know that's not the case. Some years there's good rainfall, and there's a lot of recharge and other years there's low rainfall." And so, we said, 'fair enough. We can, change that so we could make the recharge be random.' And the way we did that was we, you know, rolled out the dice and then based on which, you know, what came up on the dice, that would affect the amount of recharge, and just to make it a little bit more interesting, we said, okay, " Well it can't be somebody who's playing the game, who rolls the dice. So, we've got to have an outsider." And often they chose a little kid to be the rain god. We have this great video of the players; this old man bowing down, and salaaming the rain god as this little boy rolls the dice, and you know, but that illustrates why the games were really good; because people had fun with them

Sivan: FES has run the groundwater game and teaching tool in 120 villages. It plans to expand it to 6,000 villages across India.

Jagdeesh: What we are facing today is unprecedented. It's a calamitous, the kind of water scarcity, diseases. Unless we start looking at issues which are not only on increasing this availability but seriously questioning our consumption patterns. That's the need of the day. What we need is a much, it's not a different way of working, it is a different way of thinking, probably.

Sivan: A big thanks to Ruth and Jagdeesh for sharing these fascinating stories from the field! For our listeners, to learn about FES, please visit http://fes.org.in/. If you are interested in learning more about experimental games, you can visit https://gamesforsustainability.org. And don't forget to subscribe to our podcasts so you don't miss a single episode from IFPRI. Til next time!