



# Linkages between Small-Scale Irrigation and Women's Empowerment: Evidence from the Upper East Region, Ghana

**Elizabeth Bryan**

Environment and Production Technology Division  
International Food Policy Research Institute  
[e.bryan@cgiar.org](mailto:e.bryan@cgiar.org)

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GAAP<sup>2</sup> phase 2

Gender, Agriculture & Assets Project

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## Feed the Future Innovation Lab for Small-Scale Irrigation (ILSSI): Partners



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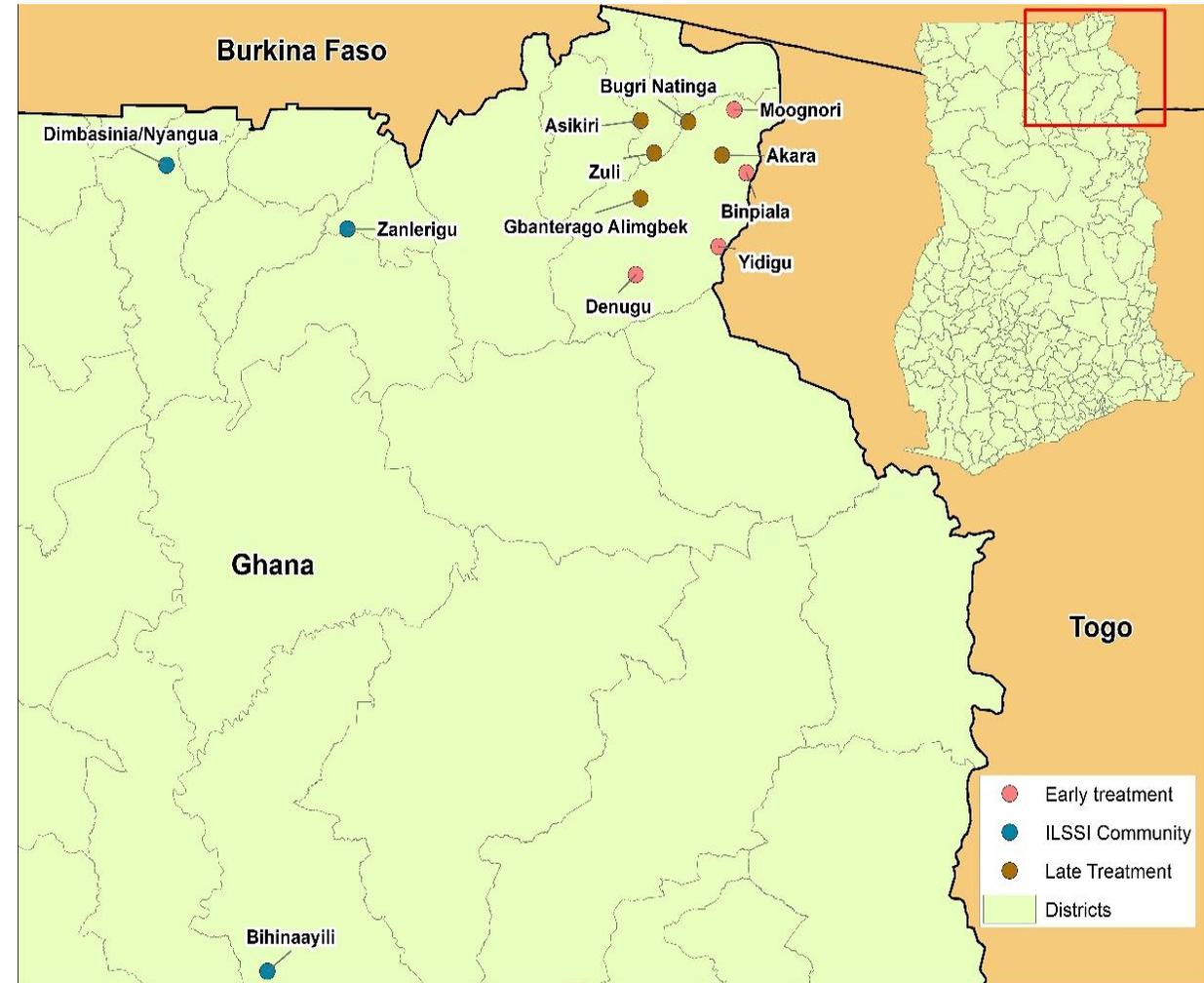
# Presentation Outline

- Project Background
- Study Area
- Data Collection
- Conceptual Framework
- Results
- Conclusions



# Background and Study Area

- Research emerged out of several projects:
- ILSSI: Examines linkages between small-scale irrigation, nutrition, and women's empowerment in Ethiopia, Ghana and Tanzania
- WLE: Expanded project area in Ghana through partnership with iDE
- GAAP2: Piloting pro-WEAI and qualitative work on local definitions of empowerment in project contexts



# Study Area

- One rainfall season and long dry periods
- Dry season production of onions (mainly), okra, tomato, pepper, watermelon
- Sources of irrigation water (groundwater, dam, river, pond and lake)
- Buckets and jerricans are the main method of obtaining and applying water, reported by 86% of irrigators.
- Few households use motor pumps or even manual pumps
- Irrigators that use any type of pump or gravity irrigate close to 50% more land, and hence have higher potential for increased income and productivity gains.



Lottery by trust groups in one treatment community

# Seasonal Calendar Shows Gender Division of Labor

Cont: ~~Crop~~

|                        | Dec                                              | Jan     | Feb               | Mar | Apr | May | Jun | Jul          | Aug     | Sept              | Oct              | Nov                                                    | Notes   |
|------------------------|--------------------------------------------------|---------|-------------------|-----|-----|-----|-----|--------------|---------|-------------------|------------------|--------------------------------------------------------|---------|
| <del>Crop</del> Beans  | Threshing<br>Winnowing<br>Storage with chemicals |         |                   |     |     |     |     | Plant        | Weeding |                   |                  |                                                        |         |
| Men                    | X                                                |         |                   |     |     |     |     |              | X       |                   |                  |                                                        | Harvest |
| Women                  | X                                                |         |                   |     |     |     |     | X            |         |                   |                  |                                                        | X       |
| Girls                  | ...                                              |         |                   |     |     |     |     | ...          |         |                   |                  |                                                        | X       |
| Boys                   | ...                                              |         |                   |     |     |     |     |              | ...     |                   |                  |                                                        | ...     |
| <del>Crop</del> Onions | Fertilizer<br>Weeding<br>Watering                | Harvest |                   |     |     |     |     |              |         | Nursing of Seeds  | Land Preparation | Transp-<br>lanting<br>of seedlings<br>Watering Weeding |         |
| Men                    | X                                                | X       |                   |     |     |     |     |              |         | X                 | X                | X                                                      |         |
| Women                  | X                                                | X       |                   |     |     |     |     |              |         | X                 | X                | X                                                      |         |
| Girls                  | ...                                              | ...     |                   |     |     |     |     |              |         | ...               | ...              | ...                                                    |         |
| Boys                   | ...                                              | ...     |                   |     |     |     |     |              |         | ...               | ...              | ...                                                    |         |
| <del>Crop</del> Okro   | Watering                                         | Harvest | Selling<br>Drying |     |     |     |     | Plough Plant | Weeding | Harvest<br>Drying |                  | Plant                                                  |         |
| Men                    | X                                                |         |                   |     |     |     |     | X            | X       |                   |                  |                                                        |         |
| Women                  |                                                  | X       | ...               |     |     |     |     |              | X       | X                 |                  | X                                                      |         |
| Girls                  |                                                  | ...     | ...               |     |     |     |     |              | ...     | ...               |                  | ...                                                    |         |
| Boys                   | X                                                | X       | ...               |     |     |     |     | X            | X       |                   |                  | X                                                      |         |

# Hypotheses: Pathways to Women's Empowerment through Small-Scale Irrigation

- Women's are heavily involved in dry season farming activities, which means both women (and men) may benefit from irrigation technologies
- Current irrigation practices (buckets) are labor intensive so motor pumps may reduce women's labor burden
- Motor pumps also provide more water which would allow women to plan different crops (including high value, nutritious crops) which could increase women's income and nutritional status
- Higher productivity/higher income from dry season production could potentially increase women's decision-making authority in the household



# Data Collection for Qualitative Study

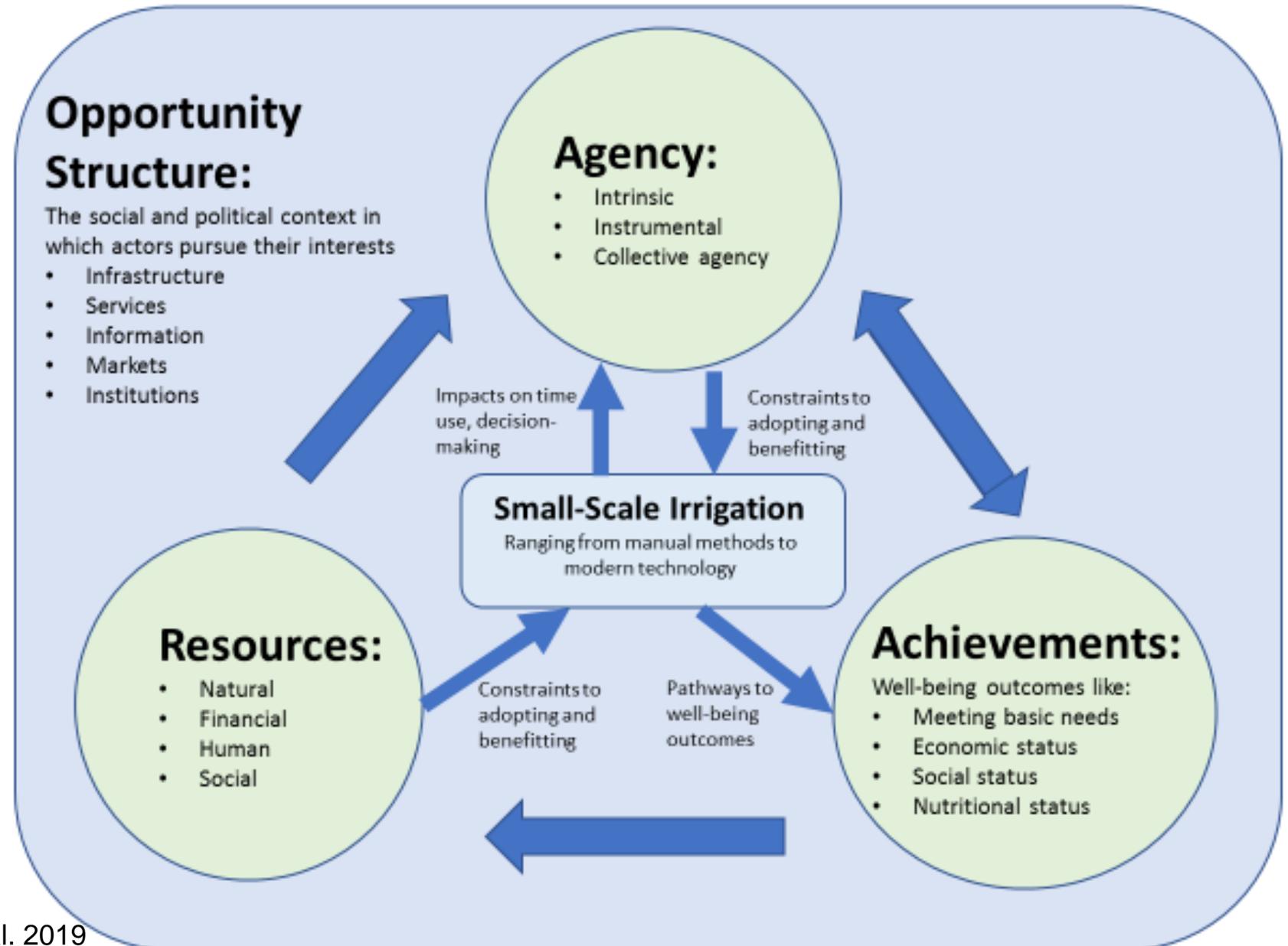
| Community              | Pumps | # of farmers | # of trust groups |
|------------------------|-------|--------------|-------------------|
| Mognoori               | Yes   | 295          | 59                |
| Akara                  | No    | 157          | 31                |
| Gbanterago<br>Alemgbek | No    | 114          | 23                |
| Asikiri                | No    | 58           | 11                |
| Yidigu                 | Yes   | 57           | 11                |
| Denegu                 | Yes   | 39           | 8                 |
| Bugri Natinga          | No    | 39           | 7                 |
| Binipiala              | Yes   | 21           | 4                 |
| Zule                   | No    | 20           | 4                 |
| <b>Total</b>           |       | <b>800</b>   | <b>158</b>        |

- Collected between July 25-August 2, 2017
- Villages for qualitative research
  - 2 villages where pumps were distributed
  - 2 control villages of comparable size
- In each village:
  - FGDs on empowerment topics
  - One seasonal calendar
  - Life history interviews
- Interviews with market traders in Basyonde (2) and Garu (2)

**Note:** Qualitative data collected from communities in blue

# Conceptual Framework: Irrigation-Empowerment Linkages

- Two-way relationship between SSI and empowerment
- Resources and agency influence women's ability to adopt, use and benefit from SSI
- Use of SSI by women influences agency and achievements

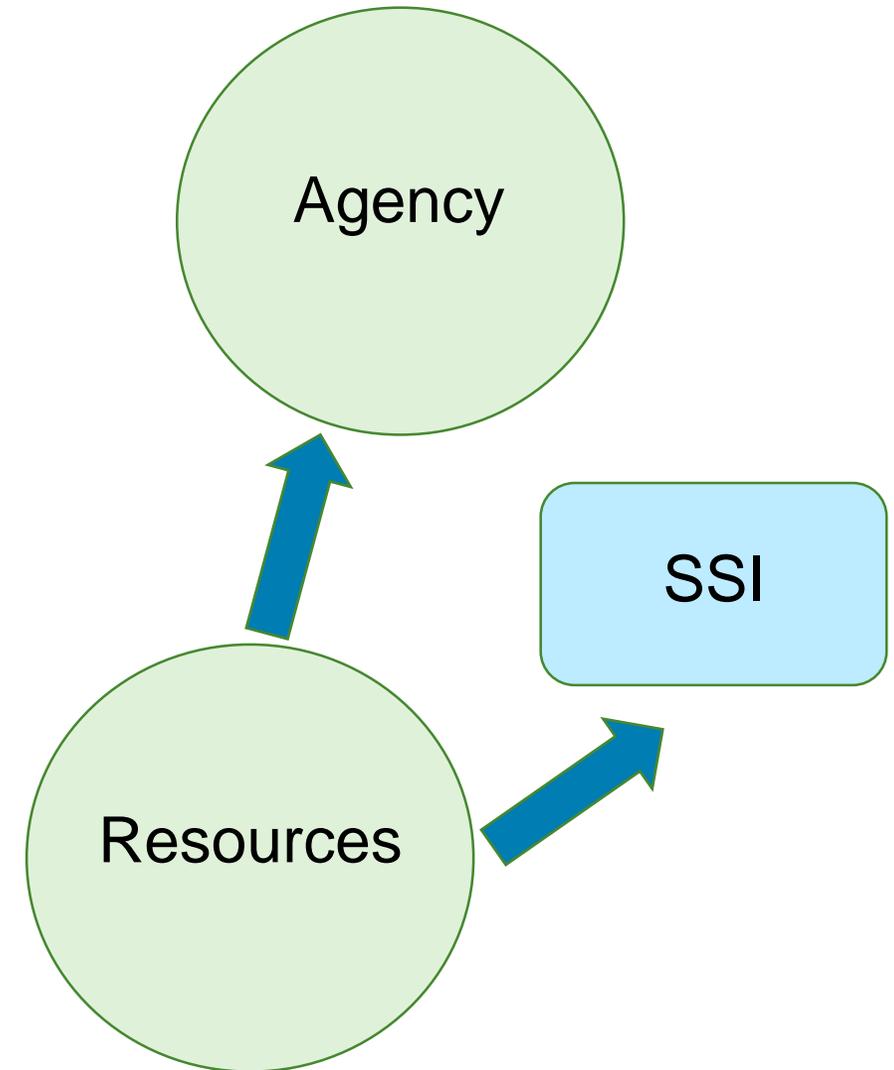


# Methods: Codes in NVIVO of Key Themes Linked to Framework

| Nodes                                                                                                               | Description                                                             |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Income and expenditure decisions                                                                                    | Indicator of instrumental agency                                        |
| Intrahousehold relationships                                                                                        | Indicator of intrinsic, instrumental, and collective agency             |
| Leadership and community                                                                                            | Collective agency, enabling environment                                 |
| Markets                                                                                                             | Enabling environment                                                    |
| Mobility                                                                                                            | Instrumental agency                                                     |
| Nutrition and health                                                                                                | Achievements                                                            |
| Other decisions                                                                                                     | Instrumental agency                                                     |
| Production decisions                                                                                                | Instrumental agency                                                     |
| Irrigation (achievements, agency and resources)                                                                     | Irrigation and the intersection with resources, agency and achievements |
| Psychological aspects                                                                                               | Intrinsic agency                                                        |
| Resources (e.g. inputs, assets, human capital, financial resources, natural resources, infrastructure, inheritance) | Resources and enabling environment                                      |
| Shocks                                                                                                              | Achievements                                                            |
| Time                                                                                                                | Instrumental agency                                                     |

## Access to Resources: Essential for Adoption and Agency

- Not all resources that are critical for empowerment are essential for irrigation adoption (e.g. education)
- Natural resources like land and water are essential, women are more constrained
- Women are more constrained in access to agricultural inputs (fertilizer, fencing)
- Access to labor (physical strength) is a constraint for women (especially when dry season irrigation involves hand-dug wells)
- Lack of financial resources (credit) is a constraint for both men and women to purchase motor pumps



## Access to Resources: Water

“Water was the challenge [for some people to use the pump]. The water was in the rivers, there were some places you could use the machine, other places you couldn’t use the machine to get water to those places.”  
(Yidigu FGD men)

- Communities located near a dam have more access to water for irrigation, including women
- Women have more difficulty doing dry season cultivation when water is obtained from hand-dug wells—they lack access to labor and are considered not strong enough to dig
- Water in the river bed is often insufficient for irrigation, even with a pump

# Access to Resources: Land

- Patrilineal inheritance system
- Land becoming more fragmented
- Declining soil fertility
- Need to apply more fertilizers
- Land near water source is not always available
- Plots for dry season irrigation may be far from the homestead

“He can be powerful, because he has land to do what he wants, so why wouldn't he be powerful?...If you don't have money and go and beg, the land they will give, you will collect but it is just useless land and when you collect that land, even what you will feed on, it will not take you anywhere unless you buy to supplement.” (Yidigu FGD women)

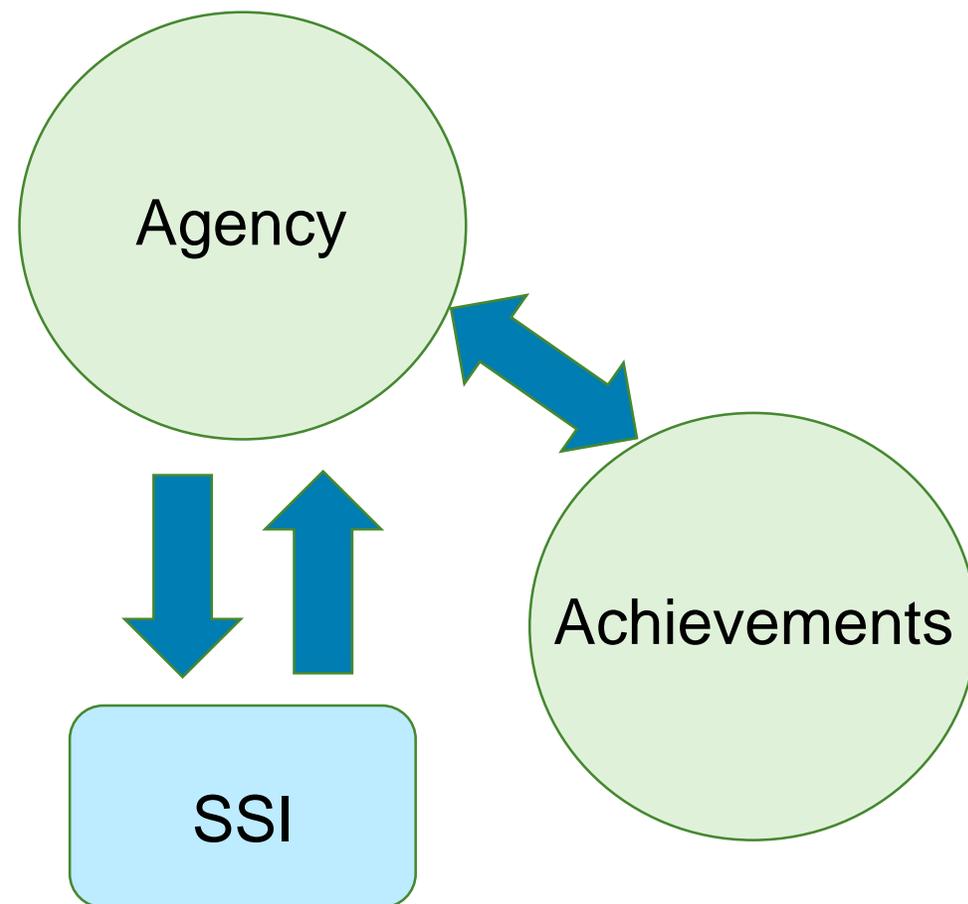
# Access to Resources: Inputs and Assets

“...with the pepper, you need to apply chemical and fertilizer every week, so when the men get fertilizer to apply today, we can't get any to apply today, we will have to wait two or three weeks before we apply, so the men will apply like 3 times and we will apply one, so the one that doesn't get enough fertilizer will not do well.”  
(Mongnoori FGD women)

- Fertilizer is an essential input given declining soil fertility. Women use less fertilizer on plots they manage
- Fencing is also essential for dry season irrigation to keep out livestock. Again women often cannot build the fences due to labor constraints
- Pumps are considered owned by men even if women are in groups that received the pump

# Agency: Two-Way Relationship with Irrigation

- Intrinsic agency is essential for irrigation because it is hard work
- Instrumental agency is also essential
  - Production decisions
  - Income decisions
  - Time
  - Mobility
- Collective Agency
  - Within households, families
  - Within groups, communities





## Intrinsic Agency

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- Varies according to personal circumstances and linked with achievements
- Lack of intrinsic agency hinders women's ability to do dry season irrigation:

“The men work more in the dry season than the women. The strength of the women cannot match that of the men and because of their strength, they can work more than we the women. So we are always lagging behind in farming.” (Akara FGD women)

- Women who are able to irrigate have pride in their work:

“People will see them [women who irrigate on their own] as proud women.” (Yidigu FGD men).

# Instrumental Agency: Production Decisions

- Trend is towards women participating more in decision-making (level of input ranges across hhs)
- Perception that joint decisions will bring better outcomes
- Work on men's plots generally takes priority and men are the final decisionmakers
- Women generally manage production on their own plots (rainy and dry)
- Irrigation increases women's instrumental agency

“Because he [husband] owns us we do what he wants. So we will not disagree with what he says.” (Akara interview, woman, empowered non-irrigator)

“When you take decisions with your wife, you get good results but if you take them on your own, you may not always get a good outcome.” (Asikiri FGD men)

# Instrumental Agency: Spending Decisions

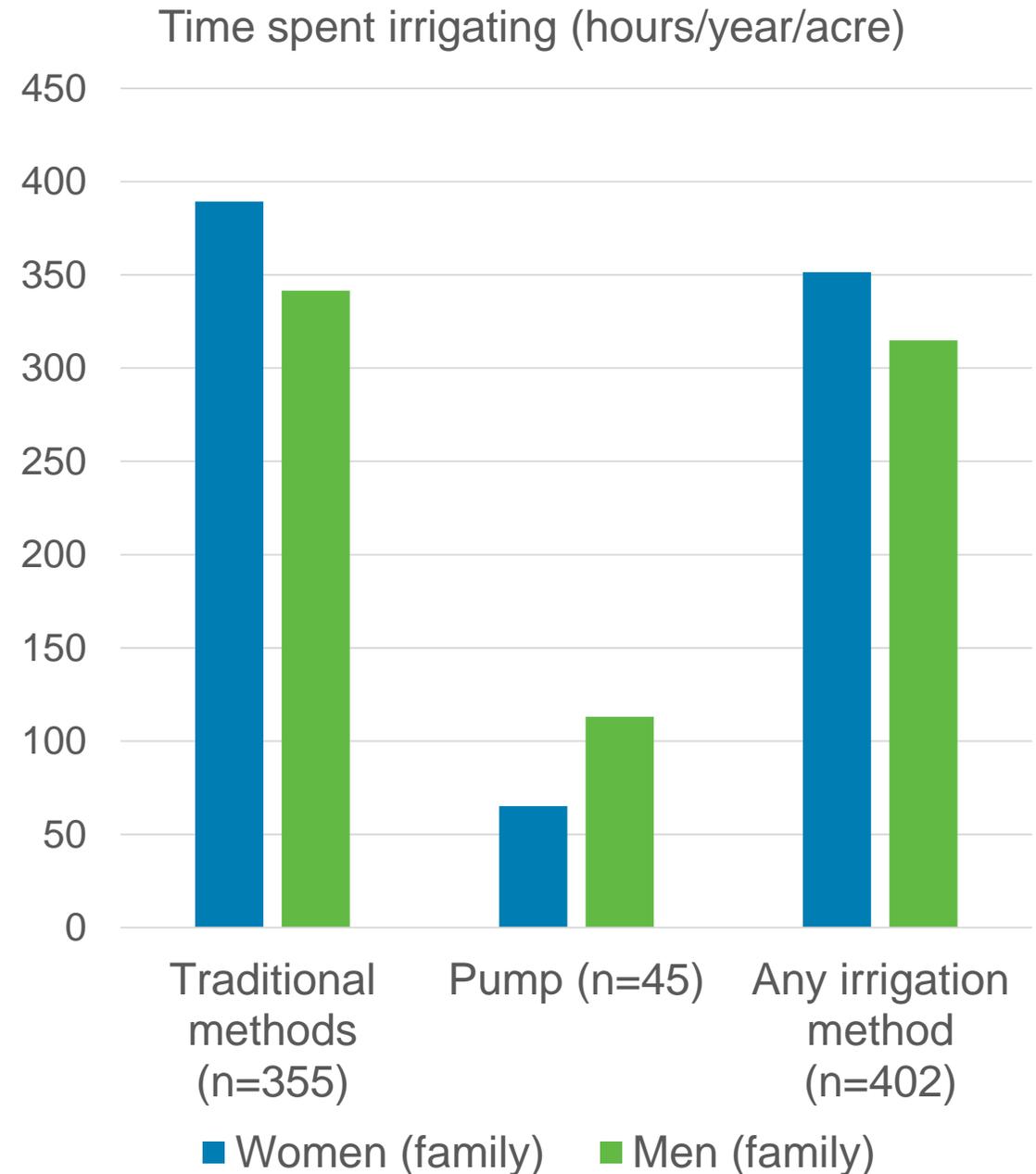
“We [women] also get money when we sell the [irrigated] crops.”  
(Mongnoori FGD women)

“When it is dry season, you the man will tell the woman, if I got this I would have sown, if she has something, she will help you. If she doesn't have, she will tell you that if I had, I would have help, but I don't have so you the man will have to go and search for it.” (Yidigu FGD men)

- Women contribute more income to the household through their own agricultural and other livelihood activities
- Men seem relieved that women can reduce their financial burden
- This can be a burden for some (those without resources) and a source of pride for others
- Women get more control over income through irrigation—either from their own plots or from an increase in hh wealth

# Instrumental Agency: Time

- Women have a heavy workload with domestic responsibilities, production activities, and other livelihood activities
- Irrigation is a labor-intensive activity, especially where water comes from hand-dug wells and buckets are used for watering
- Women see the economic benefits and want to engage
- Men wanted to spare women from having to do dry season farming while admiring those who do it
- Use of motor pumps reduces time women spend irrigating



# Instrumental Agency: Time

“I can’t say no [to farming my own dry season plot]. I thought that if I do it, it will help me and that is why I accept it. So looking at the benefits, I wouldn’t say no.” (Akara, interview woman disempowered irrigator)

“Your husband farms [in gardens] and you water and thank God associations have come and we can now get access to machines [pumps] and the men will use to irrigate, so now we only observe and they irrigate.” (Mongnoori FGD women)



# Instrumental Agency: Mobility

- Women do not have serious mobility constraints
- Rather irrigation activities may require greater movement of women:
  - Women are often responsible for selling irrigated produce in the market
  - Women may have to travel to irrigated plots

“Here, we don’t have irrigational dams to do dry season farming. Because of that we normally go to a distant place to get land to farm. In that case, they [women] may move.” (Mongnoori FGD men)”



# Collective Agency

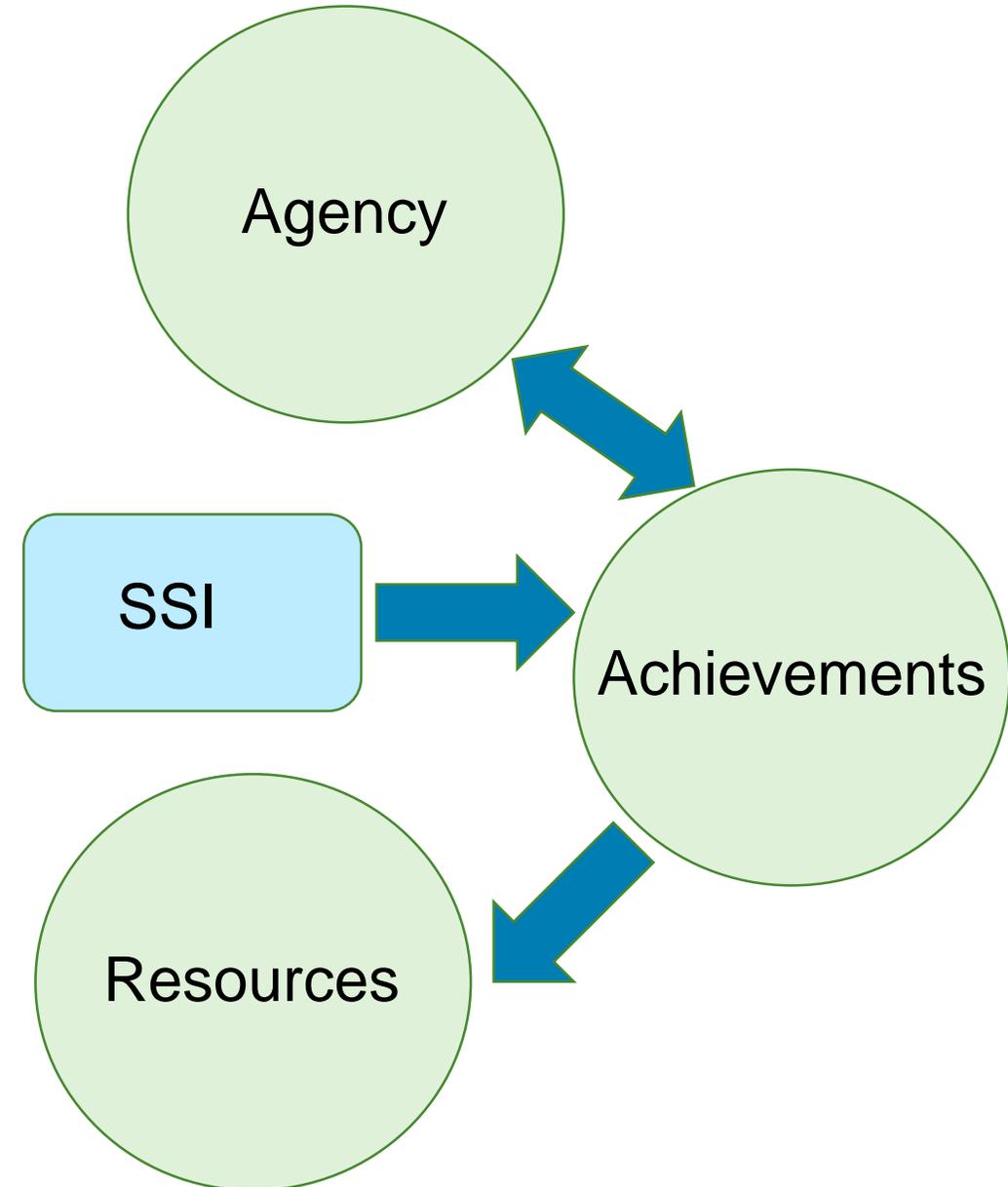
- Collective agency is highly valued and seen also as an outcome (unity in the household and participating in groups at the community level).
- Groups facilitate women making strategic choices (e.g. savings and loan groups, begging for land as a group)
- Collective agency (at home and in groups) facilitates women's adoption of SSI

“The garden, the work is hard/difficult, so if a woman doesn't have someone to help her, she can't do it.” (Yidigu FGD men)

“They [pumps] are available but for hiring. People buy them....Others come together as a group to buy and use on their farms.” (Akara FGD women)

# Achievements

- Economic well-being (from being able to meet basic needs to helping others)
- Food and nutrition security
- Education (of oneself and children)
- Social status (being admired, respected)
- Resilience (capacity to absorb and adapt to shocks and stressors)



## Achievements: Food Security and Nutrition Benefits of Irrigation

“If you don’t work in the garden, you will sell the food crops you harvested during the rainy [season] and you will be in hunger.” (Mongnoori FGD men)

“Because we [women] also plant vegetables, if you are in need of vegetables, we don’t go to buy again, you will get the vegetables and you go to do by day and use it to buy your ingredients to cook your soup.” (Mongnoori FGD women)

“They see them be good women [those who irrigate in the dry season]. When you farm, it is that you will send to the market and sell to buy your foodstuff and other essentials” (Akara FGD women)

## Achievements: Education Benefits

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“This time, no child sits in the house, all the children go to school, and if you don’t turn things around, you will not be able to take care of your children school fees.” (Yidigu FGD women)

“It is a good thing [for women to do garden work], those women are helping to take care of the house, like children school fees.” (Mongnoori FGD men)



School-aged girls

# Opportunity Structure

Importance of infrastructure for irrigation, nutrition and market access:

- Infrastructure
- Institutions
- Services
- Information
- Markets

“If there is a dam, it will help because they rivers we use usually dry out after Christmas so if there are dams it will help in our irrigation. If you don’t beg the men and they dig for you, you the woman you can’t dig a well and use the cans to fetch the water to come and irrigate the onions for it to do well but if there is a dam, it will help we the women.” (Asikiri FGD women)

“In other places they can go fishing because they have a dam to catch fish for nutrition but we don’t have it here. We need good roads to be able to link ourselves to other communities. For instance, when it rains our roads are not good.”

# Key Messages

- Irrigation interacts with all aspects of women's empowerment: resources, agency and achievements
- Irrigation increases women's empowerment through an increase in women's agency—primarily through changes in time and control over income.
- This enhances achievements: economic status, social status, education, nutrition
- However, irrigation also contributes to the trend of increasing women's financial burden
- Not all women benefit—many vulnerable members of the community are stuck in a poverty trap (elderly, disabled, resource constrained, etc.)
- Changes to the opportunity structure would be positive for women (and men) including investments in water infrastructure and roads, access to information, financial services
- Information/programs need to encourage a more diverse set of cash crops

# Key Messages: Observations for Project Implementers

| Assumptions                                                                                      | Insights                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| It's easy to reach women given their role in dry season production                               | <ul style="list-style-type: none"><li>• True in areas where women have greater access to land near the water source (dam) and where there is sufficient water</li></ul>                                                                                             |
| Increased water availability increases women's production and income from high value crops       | <ul style="list-style-type: none"><li>• Women do seem to control income from crops they produce themselves in the rainy and dry season.</li><li>• This is both a benefit and a burden—women are increasingly expected to contribute to household expenses</li></ul> |
| Improved technologies provide labor savings for women                                            | <ul style="list-style-type: none"><li>• Adoption of motor pumps saves women time—but men take over irrigation activities</li></ul>                                                                                                                                  |
| Motor pump asset and improved income increase women's decision-making authority in the household | <ul style="list-style-type: none"><li>• Women can't own large assets like livestock or pumps</li><li>• Irrigation contributes to the underlying trend towards greater participation productive decision-making</li></ul>                                            |