



DIGITAL GREEN INSTITUTIONALIZATION STUDY RESULTS

February 08, 2021

Acknowledgements

We would like to thank the Digital Green staff who contributed to the development of this evaluation, including Shreya Agarwal, Pritam Nanda, K Archana, Sanjeev Kumar, Ranga Charyulu, Masthan Vali, and Thaduru Surender.

This report and its analyses were produced by IDinsight staff: Madhav Seth, Rupika Singh, and Daniel Stein. Field collection efforts were led by Syed Maqbool, Marapelly Karunakar, and Venkatesh Teegala.

We would also like to thank officials from the government of Andhra Pradesh for their time speaking with us.

IDinsight's engagement with Digital Green was supported by the Bill & Melinda Gates Foundation.

Cover photo: A Farmer Producer Group meets to learn about FarmStack in Visakhapatnam, Andhra Pradesh. c. William Slotznick.

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List of Abbreviations

Abbreviation	Description
RySS	Rythu Sadhikara Samstha
DG	Digital Green
CRP	Community Resource Person
VRP	Video Resource Person
DPM	District Program Manager
VBE	Video-based extension
AP	Andhra Pradesh
QA	Quality Assurance
MT	Master Trainer
CoCo	Collect Online, Collect Offline

INSTITUTIONALIZATION OF VIDEO-BASED EXTENSION IN ANDHRA PRADESH

Executive Summary

Digital Green (DG) has been working with Rythu Sadhikara Samstha (RySS) - a not-for-profit company fully-owned by the Government of Andhra Pradesh - to implement and scale video-based extension (VBE) in Andhra Pradesh. The long-term goal of this engagement is to transfer complete ownership of this implementation to the state government, i.e., to *institutionalize* video-based extension.

This report presents the findings of a qualitative study examining how intensively video-based extension has been institutionalized in Andhra Pradesh.

The study was conducted across four districts in Andhra Pradesh (Krishna, Kadapa, Kurnool, Visakhapatnam) from November 2020-December 2020 to understand the degree of institutionalization in Andhra Pradesh. This involved 85 in-depth interviews with DG leadership and state teams, as well as state, district, sub-district, and village level government officials. It also included qualitative interviews with farmers.

Following are our main observations and conclusions from the study:

- **The government has taken ownership of significant parts of video-based extension**, including content selection, final video approval, video dissemination, data collection, and follow-up verification of adoption of practices. Additionally, the government has allocated a specific budget for video-based extension, and VBE-related indicators are included in the government's agriculture data collection and monitoring systems.
- **DG continues to play a key role in video production, as well as training for video production and video dissemination.** Respondents across designations noted that the government did not view video production as a core part of their job, and believed that this was best suited to DG, or an alternative third-party agency (if DG chooses to focus primarily on new technologies).
- Key drivers of institutionalization include **co-investment in video-based extension**, the **interest and motivation of key state and district staff**, **internal champions**, and **clear evidence of the efficacy of video-based extension**. These drivers help ensure that DG does not remain solely responsible for quality implementation of video-based extension.
- **Most state and district officials believe that video-based extension approach is cost-effective at scale.** They reported saying it helped reach more farmers with fewer

people. However, some state officials have reservations about the cost of procuring additional PICO projectors when scaling up.

- Differences in institutionalization in districts are driven by a mixture of **personnel factors** (interest of District Program Managers), as well as **geographic factors**, such as remoteness and cropping patterns.

Based on our interviews, we recommend DG consider the following opportunities for both institutionalization in AP, as well as VBE implementation in new states:

- 1. Set up a long-term specialised support system for the government on video production. Structure model either as an internal government unit or outsourced to third-party vendor.** Based on government's internal capacity and experience of using video production technology, DG should work with the government to create either an in-house unit for owning video production and post-production support or identify a cost-effective, high-quality third-party vendors. DG could also take the third-party long-term role depending on interest from the government.
- 2. Advocate for the benefits of PICO projector-based VBE to the government.** PICO projector-based screenings are uniquely inclusive, allowing uneducated farmers to learn about new farming practices at a larger scale than purely in-person extension or mobile phone-based disseminations.
- 3. Work with the government to rationalise indicators and processes for data collection.** While DG's direct scope of control is limited, DG should use its standing in the government to push for a simplification of reporting formats.
- 4. Continue delegating equipment management responsibilities to designated government officials.** While staff in some districts have started independently managing equipment problems as they arise, DG still plays a key role in resolving day-to-day equipment issues. DG should continue encouraging district governments to view equipment management as a key part of their role.

Digital Green's institutionalization of video-based extension has been remarkably successful along several dimensions. However, for some activities of the video-based dissemination DG's support continues to be critical. This report intends to provide insights into what these areas are, and how Digital Green can plan their approach in future partnerships.

1. Background

Digital Green creates digital solutions to improve agricultural, health and nutrition outcomes in communities. Digital Green partners with local organizations and governments to scale these solutions to wider populations. One of these solutions is community-created video-based agriculture extension.¹

Digital Green has worked with the Andhra Pradesh Department of Agriculture and Cooperation since 2015 to scale video-based extension across the state. This report presents the findings of a qualitative study examining how intensively video-based extension has been ‘institutionalized’ in Andhra Pradesh. In context of this report, institutionalization is defined as **the ability of the government to implement all key aspects of video-based extension (video production, video dissemination, training, and quality assurance) independently.**

This study examines the drivers of institutionalization, the distribution of roles in video extension across DG and the AP government, the perceived cost-effectiveness of video-based extension, and the variance of institutionalization across districts. It also considers possible changes that DG could adopt to strengthen institutionalization for the sustainability of the video-based extension by achieving long-lasting “systems change”. The objective of this report is to inform what promotes and inhibits the sustainability of the video-based extension model, and draw lessons for future government partnerships.

2. Research Questions

Given that the objective of this study was to pick lessons from the AP government partnership, we aimed to answer two broad research questions to inform successful institutionalization of Digital Green’s partnership with government stakeholders.

1. WHAT HAS INSTITUTIONALIZATION LOOKED LIKE IN THE PAST?

This question looks at evaluated by looking at the following four research questions:

- A. What is the system level change that has occurred, and what are the drivers of this change? Does the state have the *required infrastructure* needed to implement video-based extension independently, and is it using this infrastructure to achieve desired *outcomes*?
- B. How does institutionalization vary across districts? Do sampled districts have the required infrastructure needed to implement video-based extension independently, and is it using this infrastructure to achieve desired outcomes?
- C. Is video-extension perceived to be relatively more cost-effective at scale?

¹ DG Annual Report 2018-19

D. How does self-reported farmer adoption vary across districts?²

2. WHAT SHOULD INSTITUTIONALIZATION LOOK LIKE IN THE FUTURE?

This question looks at how DG's approach to institutionalization and supporting partners can be adapted in the future. We consider possible 'hybrid'³ models, where the government takes on a given level of ownership over video-based extension. This level can vary depending on DG's priorities (see section 4.5 for a more detailed discussion).

The objective of these research questions is to identify the bottlenecks where partners may need support from Digital Green and identify potential solutions and guidelines to enable long-lasting and sustainable adoption of DG's model by state partners.

3. Methodology

In order to assess the institutionalization of video-based extension in Andhra Pradesh, IDinsight conducted a **qualitative study** with various stakeholders involved in the implementation of video-based dissemination in the state. The study involved structured and semi-structured interviews with DG state and district team and Andhra Pradesh government officials at state, district, block, and village-level. We also interviewed a few farmers in the sampled districts to gather ground-level information about experience of video-based extension.

3.1. SAMPLING

The study was conducted in four districts in Andhra Pradesh. [All 13 districts in AP were ranked](#) on the basis of several indicators that demonstrate the government's ownership and institutionalization of the model. These indicators were previously measured by DG, and included:

- % of planned trainings delivered
- % of planned videos produced
- % of equipment functional out of total available
- % of planned outreach villages mobilised
- % of planned disseminations held
- % of QA activities achieved
- % of planned review meetings held

² Note: This section was based on 21 qualitative interviews with farmers, and does not provide a representative quantitative description of adoptions across AP

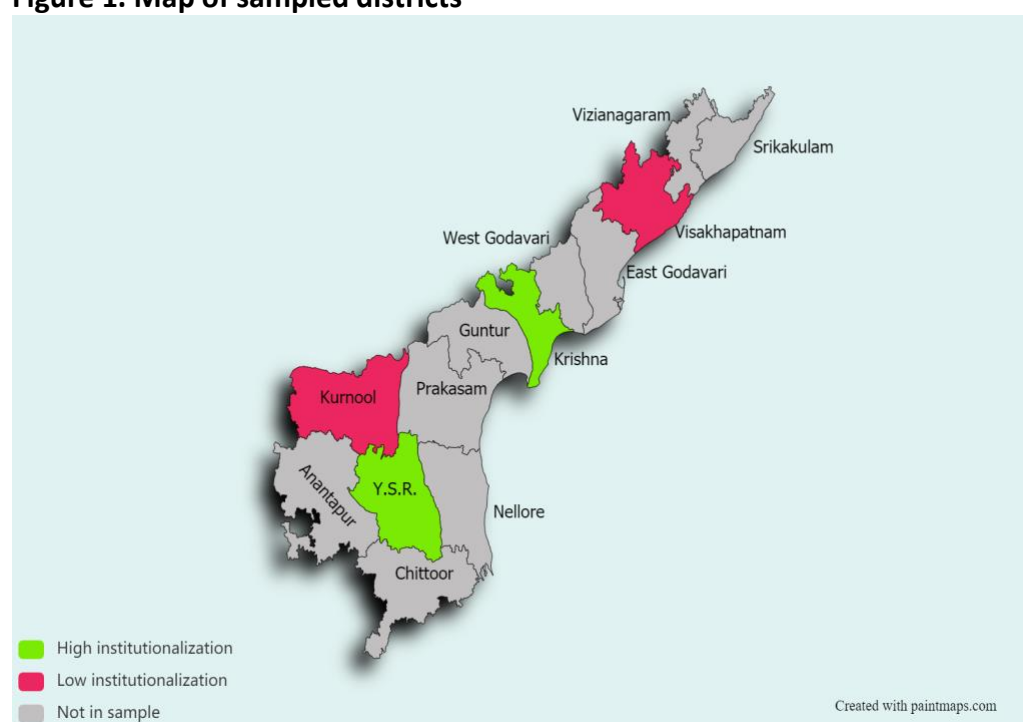
³ A discussion on what 'hybrid' models might look like is included in section 4.5.

These indicators were taken as a proxy for how ‘well’ institutionalization had happened in these districts. We took a simple average of these indicators for every district in AP, and the two highest and lowest scoring districts were selected for the study.

3.1.1. SAMPLED DISTRICTS

The final districts selected were Krishna and Kadapa (high institutionalization), and Kurnool and Visakhapatnam (low institutionalization).

Figure 1. Map of sampled districts



Key state, district, and sub-district officials involved in video-based extension were interviewed in this study. A list of all key stakeholders was created based on DG’s suggestions. Sub-district officials were randomly sampled from a list of potential respondents provided by DG. In total, 85 respondents were interviewed. This included senior and junior state-level officials, district-level officials, sub-district and village-level functionaries, and farmers. A detailed breakdown of respondents by designation and district is provided below:

Level	Respondents	Number
State	DG global and state leadership	4

	AP state government officials	4
District	DG District Program Manager	3*
	RySS District Program Manager	4
	Additional district-level govt employees	8
Sub-district	Master Trainers	12
	Video Resource Persons (VRP)	4
Village	Community Resource Persons (CRP)	25
	Farmers	21

* One of the DG program managers was responsible for two of the study districts

3.2. DATA COLLECTION

Phone survey data

Due to travel restrictions caused by the COVID-19 pandemic, all interviews were conducted remotely via online teleconferencing applications, or via standard mobile phone networks. Phone numbers for the respondents were provided by DG.

District officials, sub-district officials and farmers were called around six times across various days and times, until a voluntary response was recorded. Senior state level officials were interviewed after formal introductions were done by the DG state team.

Interviews were conducted in the respondent’s preferred language. All interviews were recorded with consent. Non-English interviews were transcribed and translated into English. On average, interviews lasted 85 minutes.

Administrative data (CoCo and government MIS)

Where applicable, the analysis was supplemented with DG and government MIS data. For this report, we utilized the following metrics:

- Number of videos produced: The total number of videos produced
- Video grade: The quality grade assigned to videos (decided in routine video quality assessment meetings with DG and government representatives)

The initial plan was to analyze video screening and farmer adoption data and observe trends in video production over time. However, due to technical reasons, DG's CoCo system was not able to receive data called from the AP Department of Agriculture's MIS through APIs. This led to DG not having up-to-date, shareable adoption and screening data needed to conduct this analysis.

3.3. ANALYSIS

3.3.1. QUALITATIVE CODING

Interviews were coded using Dedoose, a web application designed for qualitative analysis. Coding was used to identify and categorize common or significant patterns and themes. Codes were primarily designed to highlight information that answered one of the study's research questions. A detailed description of the coding process can be found in Appendix B.

3.3.2. REPORT STRUCTURE AND FRAMEWORKS

Institutionalization is a multidimensional and complex concept. Our interviews with respondents gave us rich and insightful information that speaks to institutionalization in the AP context. The analysis of this information has been organized by research questions.

Past Institutionalization

Within these research questions, where applicable, adapted versions of frameworks measuring different aspects of institutionalization have been used. This has been done both to facilitate comparison of institutionalization in AP with other geographies, as well as provide an at-a-glance summary of the current status of institutionalization. These frameworks include:

- **DG's institutionalization framework.** This is DG's internal framework that evaluates VBE implementation in AP along key institutionalization principles previously identified by DG. This framework is used to partially describe the system-level change that has occurred.
- **Adapted Readiness Capacity/Primary Outcomes framework.** This framework, originally designed by the International Food Policy Research Institute for an institutionalization study of DG's operations in Ethiopia, examines the existence and usage of critical institutionalization infrastructure in AP. This framework has been disaggregated into a state-level framework, used to partially describe the system-level change that has occurred, as well as a district framework, used to describe district variation in the sample districts.

For other research questions, findings have been structured and discussed using the qualitative analysis process described in Section 3.3.1.

Future institutionalization

Based on the findings we have identified some challenges in the partnership model and suggested potential solutions.

4. Results

4.1. WHAT IS THE SYSTEM LEVEL CHANGE THAT HAS OCCURRED, AND WHAT ARE THE DRIVERS OF THIS CHANGE?

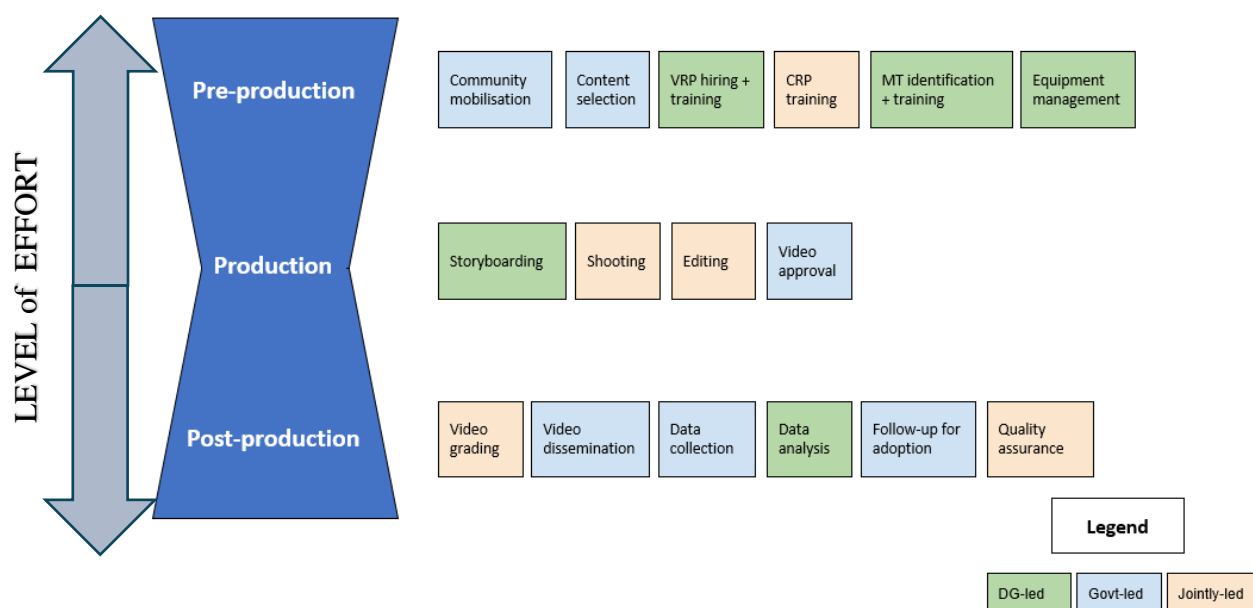
4.1.1. SYSTEM CHANGES

In this report, we describe system changes as **video-based extension-related roles taken on by the state and district government**, as well as the degree to which **basic infrastructure for video-based extension exists and is used at the state-level**. This section first describes the video-based extension-related roles taken on by the government. It then evaluates state-level institutionalization along standards set by DG. It then looks at the degree to which basic infrastructure for video-based extension exists and is used. It concludes with a discussion for what drives this institutionalization. It also layout incentives/disincentives faced by different agents in the video-based extension model to promote or discourage institutionalization.

Roles taken on by the government

Several key tasks related to video-based extension have been incorporated into the state and district government's routine work, though some activities are still primarily DG's role. As the figure below describes, the government is responsible for mobilising communities to attend video extension meetings, selecting content that will be produced, granting final approval for videos that are screened, conducting video disseminations, collecting data, and providing follow-up support to farmers. Additionally, the government plays a joint role with DG on training Community Resource Persons (CRPs) - frontline extension workers - for video disseminations, and provides support in the shooting and editing stage of video production. The government also provides input on final grading of videos to approve as per acceptable quality for dissemination. DG plays a key role in leading training frontline workers, hiring VRPs, managing equipment, supporting in storyboard creation, and analysing data. DG's core state and district team is also described by the state team as being responsible for coordinating the overall logistics of the program. The figure below describes the distribution of roles in video-based extension between the government and DG in Andhra Pradesh.

Figure 2. Distribution of roles in video-based extension in Andhra Pradesh



Note: Width in the hourglass figure is meant to indicate areas with larger volumes of recurring tasks, i.e., the bulk of implementing VBE lies in pre- and post-production tasks.

Video-based extension has even led to systemic changes outside the government’s video-dissemination operations. The government officials and the DG team highlighted that the video screenings had increased demand for organic inputs at the local level. DG and government functionaries reported that the government had set up more Non-Pesticidal Management shops (key areas where farmers can procure organic inputs) in response to this demand.

Existence and usage of institutionalization infrastructure

As discussed in section 3.3.2, two frameworks were used to capture existence and usage of institutionalization infrastructure in AP. The first is DG’s own institutionalization framework, which aims to measure institutionalization as per key principles previously identified by DG. In fully institutionalized contexts, these principles are expected to be completely met. They include **buy-in** (formal and informal support of the efficacy of video-based extension), **partnership** (a formal agreement to conduct video-based extension), **co-invest** (allocation of government funds to support implementation), **adopt/scale** (plans to scale video extension further), and **ownership** (inclusion of video-based extension work in government policies and plans). The results of applying this framework to institutionalization are described in Table 1 below.

Table 1. DG state-level institutionalization framework

Indicator	Status	Discussion
-----------	--------	------------

Buy-in		There is widespread buy-in into the usefulness of video-based extension across government levels. Senior state and district officials said video-based extension enabled them to reach more farmers with higher quality information. Video-based extension is consistently viewed as an integral part of the Agriculture Department’s toolkit.
Formal Partnership		The government of AP has had a formal partnership with DG for several years.
Co-invest		The AP government bears nearly all the costs associated with video-based extension. Extension staff are government employees, video resource people are paid a government-funded honorarium, and the government pays for the procurement and maintenance of video-based extension equipment. The government also partially pays for DG’s involvement in VBE in the state, while the Azim Premji Foundation funds the remaining amount.
Adopt/Scale		State officials have said that video-based extension will expand in tandem with overall extension efforts. However, there are unresolved discussions on whether this should occur using PICO projectors, or other alternative screening technologies (see Section 4.5).
Ownership		While significant parts of the program are implemented by the government, DG still plays a key role in the technical aspects of video-based extension, such as video production, training and quality assurance.

Note: Green = High, Yellow = Medium, Red = Low

Applying DG’s institutionalization framework to video-based extension operations in AP reveals that several key principles for successful institutionalization have been met. However, open questions on future plans for scaling and long-term transfer of roles in AP need to be addressed. These are discussed in detail in Section 4.5.

In addition to examining institutionalization along key principles identified by DG, we also looked at the existence and usage of institutionalization infrastructure in AP. To do this, we used an adapted version of the International Food Policy Research Institute’s Readiness Capacity/Primary Outcomes (RC/PO) framework, previously deployed in an institutionalization study for DG’s operations in Ethiopia (Zerfu, et.al, 2019).⁴ In this framework, Readiness Capacity refers to the preparatory including human and physical infrastructure, concerned with integration and institutionalization, while PO assesses performance focusing specifically on recognized or observable changes that have taken place to indicate progress toward institutionalization. We added three indicators to this framework to better capture the status of institutionalization in AP.

⁴ <https://digitalgreen.app.box.com/s/ebiyda5oyt4rtcw0jqrctcic19clbzb8>

Table 2. Readiness Capacity and Primary Outcomes

<i>Indicator</i>	<i>Status</i>	<i>Discussion</i>
Readiness capacity		
Data management system exists		All video-based extension data is captured through the government’s existing data collection system. The government is entirely responsible for collecting video-based extension data. Digital Green uses the same data to monitor video-based extension (VBE), suggesting that the responsibility for collecting data lies entirely with the government.
Budget allocated for VBE		The government has allocated a budget for VBE. This budget covers video resource person honorariums, video production and dissemination equipment, trainings and DG’s involvement in the project. ⁵
Institutional owner for video-based extension*		Video-based extension in AP is currently the responsibility of Rythu Sadhikara Samstha (RySS), a not-for-profit company fully-owned by the Government of Andhra Pradesh. Currently the ownership and design of this role is under discussion between DG and RySS
Minimum set of globally agreed data is produced*		Several key indicators from DG’s original Collect Online Collect Offline (CoCo) MIS system (such as the number of videos screened and produced) have been integrated into the state’s MIS system. A key outcome indicator currently not being captured by the state government is the number of attendees per video session.
Primary outcomes		
VBE incorporated in annual extension plan		All the government stakeholders interviewed said video-based extension is a key element of the state’s agriculture extension program toolkit. Targets for VBE activity (primarily number of disseminations and number of farmers adopting organic practices) are set at the state and district level and factored into state’s and districts’ annual extension plans. Progress towards these targets is regularly tracked and reviewed in monthly and quarterly state and district review meetings.

⁵ Note: DG’s involvement in the project is funded by the Azim Premji Foundation. Note that this fund is channelled through the state government.

<p>Frontline performance includes VBE</p> <p>worker evaluation</p>		<p>Community Resource Persons (CRPs) - frontline agriculture department workers - are given targets on how many videos to screen, and how many farmers they convince to adopt Community Based Natural Farming (CBNF) practices. CRPs are also expected to implement CBNF practices in their own farms. CRPs are evaluated, in part, on the basis of their implementation of the video-based approach with regards to other farmers, as well as themselves. Performance along these parameters determines whether CRPs are promoted or retained within the government. Additionally, Video Resource Person honorariums are determined through a regular video quality grading meeting jointly conducted by DG and the government.</p>
<p>Government is capable of assessing equipment needs*</p>		<p>While the state government is responsible for procurement of PICO projectors and speakers, it depends on specifications provided by DG. Both DG and government respondents said DG plays a critical role in ensuring the right kind of equipment was procured by the government. DG provides technical specifications for the equipment, and inspects this equipment for faults upon delivery. State government as well as DG respondents said that DG played a critical role in resolving equipment issues that arose at the district level.</p>
<p>Adoption data available</p>		<p>Adoption data is collected in the state MIS. However, due to data integration issues this data is not available on DG’s internal monitoring system (COCO), and could not be accessed for analysis in this study.</p>

* Indicator added by IDinsight

Note: Green = High, Yellow = Medium, Red = Low

While significant institutionalization infrastructure exists and is used in Andhra Pradesh, key gaps need to be filled. A long-term institutional owner for video-based extension needs to be identified, and key program indicators need to be added and routinely monitored in the state’s review meetings. These are discussed in section 4.5.

4.1.2. DRIVERS OF INSTITUTIONALIZATION

Throughout the interviews, we discussed several different theories about what drives institutionalization with respondents. Following are the most commonly heard drivers:

Time. The most commonly identified driver of institutionalization was time. State and district functionaries reported saying it takes time to convince people that a program works, for a

government to become familiar with new systems and ways of working, and time for “government officials to internalise that video-based extension is a key part of their role”. As one DG state official put it, “Initially the government wanted all the work to be done by DG to ensure highest quality. However, over time they realized that this is not sustainable, and that government resources are needed to scale.”

Interest and motivation of key staff. State and sub-district functionaries identified the interest of the District Program Manager (DPM) as critical for institutionalization. DPMs are responsible for monitoring and following up on the implementation of VBE, as well as coordinating trainings and authorizing video production. State officials said that when DPMs took extra initiative, implementation of VBE was successful. As per respondents, factors that could influence the interest and motivation of DPMs include familiarity with video technology, a manageable workload, the desire to make a difference, and recognition and timely financial approvals from supervisors.

Belief in efficacy of video-based extension. The government state team reported saying that they believed in the efficacy of video-based extension prior to connecting with DG. Several state officials repeated the refrain “Seeing is believing” when asked why they believed in video-based extension, and highlighted that they had seen the benefits of video-based extension during their prior experience working in the agriculture sector (i.e. through extension TV shows). They said this belief made them keen to take up DG’s offer of co-managing video-based extension in Andhra Pradesh.

Government funding of VBE. State-level functionaries said that paying for video-based extension incentivised the government to find ways to make video-based extension more effective. As a DG state official said, “when the government is investing in training and equipment, they expect the training and equipment to be useful and used.”

Intentional transition of responsibilities from DG to government. DG leadership and district officials noted that in areas where DG directly substituted for government middle management, institutionalization tended to be weaker. They flagged that in these areas, governments were more likely to believe that DG’s operational support was going to be perpetual, and not build out capacity to conduct this work independently. In areas where DG was able to pre-negotiate government capacity allocation to video-based extension, respondents felt that institutionalization was more likely.

Internal champions. In Andhra Pradesh, video-based extension institutionalization has been accelerated through a core team of senior state leaders. Both DG and state leadership highlighted the key role these leaders have played in ensuring that bottlenecks in the early stages of VBE implementation were resolved. They noted that regular follow-ups from this team incentivized more junior actors to devote resources to VBE, and increased institutional interest in the program.

4.1.3. INCENTIVES AND DISINCENTIVES FOR INSTITUTIONALIZATION

For video-based extension’s institutionalization to mature and deepen in Andhra Pradesh, actors in video-based extension enjoy incentives to engage with institutionalization. Below, we describe incentives and disincentives faced in video-based extension by actors in video-based extension in the state. These incentives are **ongoing** factors that promote or disincentives actors that are responsible for the institutionalization and implementation of video-based extension.

Ladder of incentives and disincentives

Actor	Incentives	Disincentives
State-level leaders	Believe model is effective	Cost (See section 4.2.)
	Cost-effective (relative to fully in-person extension)	
District-level managers	Believe model is effective	Perceived lack of interest from district supervisors
	Included in performance review	Multiple priorities
Master trainers	Social status of Master Trainer position	Reported lack of training and travel allowance
	Career progression	
Video resource person	Opportunity to learn new skills	Delayed and perceived low remuneration
		Personal expense for rework if video quality standards not met
Community resource person	Believe in model is effective	Reported lack of training and travel allowance
	Social status of community resource position	
Farmers	Higher yields	Difficulty in securing inputs

	Perceived safer/cleaner land	Perceived long gestation period in seeing results
	Cost-savings	Difficulty in realising market price

4.2. HOW DOES INSTITUTIONALIZATION VARY ACROSS DISTRICTS?

Variation in institutionalization by district was captured using an adapted version of IFPRI's RC/PO framework. The results of applying this framework to institutionalization in Andhra Pradesh can be seen in Table 3. The colours are informed by qualitative interviews: green is defined as high agreement with the indicator, yellow is defined as medium agreement, and red is defined as low agreement. This is determined by both the number respondents that comment on the indicator, as well as the intensity of their response. For example, no CRPs in Krishna reported facing issues with equipment availability, and almost none faced any issues with equipment maintenance. In contrast, some CRPs in Kadapa, Kurnool and Visakhapatnam reported facing equipment shortages, as well as challenges in getting equipment repaired quickly.

Table 3. RC/PO framework at district-level

<i>Indicator</i>	<i>Districts</i>			
	Kadapa	Krishna	Visakha- patnam	Kurnool
Readiness capacity				
VBE included in district review meetings agenda	Green	Green	Yellow	Green
VRPs trained and active in district	Green	Green	Red	Green
PICOs available and functioning	Yellow	Green	Yellow	Yellow
CRPs trained and active in district	Green	Green	Green	Green
Primary outcomes				
District review meetings held regularly	Green	Green	Yellow	Green
District govt plays a role in video production, editing and publishing	Yellow	Green	Red	Yellow
Videos produced, edited and published in last 1.5 years	Green	Green	Red	Green
Videos disseminated as per cropping calendar	Green	Green	Green	Green
Data entry regular and ongoing	Yellow	Yellow	Yellow	Yellow
Feedback independently communicated upwards regularly*	Green	Green	Yellow	Yellow
Master Trainers trained and active in district*	Green	Green	Yellow	Yellow

** Indicator added by IDinsight*

Applying this framework to video-based extension in Andhra Pradesh reveals that districts identified as ‘more institutionalized’ in the sample selection exercise do indeed have greater government involvement VBE. In particular, Krishna and Kadapa share more feedback from farmers with district offices, and have Master Trainers that are capable of independently leading dissemination trainings. Below, we describe the results of each of these indicators in greater detail.

VBE included in district review meeting agenda. All the districts in the study included video-based extension in their monthly review meeting agendas.

VRPs trained and active in district. Three of the four districts had active VRPs, while Visakhapatnam had none. Respondents in all districts said review meetings that the frequency of district review meetings had reduced over time, though this problem was more acute in Visakhapatnam. The lack of VRPs and relatively more delayed review meetings in Visakhapatnam is likely due to significant churn in the DPM position in that district (6 DPMs in 4 years). DG staff reported this leading to operational delays on the ground in the district.

CRPs trained and active in district. All districts had trained and active CRPs conducting video disseminations.

District review meetings held regularly. Frontline workers and district officials in Krishna, Kadapa and Kurnool said that district review meetings and discussions on video-based discussion were regularly held prior to the COVID-19 pandemic. Frontline workers and DG team members in Visakhapatnam reported that while district review meetings were held in Visakhapatnam, VBE was not substantively discussed without DG’s involvement.

District govt plays a role in video production, editing and publishing. Frontline workers in Krishna reported receiving regular support from the district office on video production: both during the shoot and editing. In contrast, frontline workers in Kadapa and Kurnool felt that they were not receiving enough support in securing a location and video editing from their district offices.

Videos produced, edited and published in last 1.5 years. Videos have been produced in all districts in the last 1.5 years, though at a significantly slower rate in Visakhapatnam. Farmers from all four districts said that video screenings followed the cropping calendar, and were relevant to them. No videos have been produced in Visakhapatnam in the last 1.5 years.

Data entry regular and ongoing. Interviews with frontline workers revealed that there are several parallel data systems that exist in the Agriculture Department. In addition to the state MIS app, CRPs are expected to maintain an 86-column register which is sent to the block and district for collation. Additionally, CRPs also maintain a daily activity log (*chitta* book), and

document proof of their activities by submitting photos on relevant WhatsApp groups with their supervisors. DG and government officials reported that not all indicators are collected regularly: the regularity of collection is determined by what programs the district office is focusing on in a given month (video-based extension, farmer field schools, crop cuttings, etc.).

Feedback independently communicated upwards regularly. CRPs in Krishna and Kadapa reported regularly sharing farmer feedback on videos with their district offices. CRPs in Kurnool and Visakhapatnam reported doing so relatively less.

Master Trainers trained and active in district. Master Trainers on video-based extension in Krishna and Kadapa reported feeling confident about conducting training sessions independently more than those in Kurnool and Visakhapatnam. Master Trainers in Krishna and Kadapa reported conducting more independent trainings than those in Kurnool and Visakhapatnam.

Overall, we found that institutionalization was strongest in Krishna, and that Visakhapatnam needed significant support in adoption of the video-based extension. Visakhapatnam has recently had its vacant DPM position filled, offering an opportunity to more deeply institutionalize VBE in the district.

Administrative data

We originally planned to supplement qualitative research on variation in institutionalization across districts with administrative data from COCO on video disseminations and adoptions. However, DG informed us that due to technical issues, the integration between government MIS and COCO is not complete. Also, we could not use data directly downloaded from the government MIS as this would have required a prohibitively long approval process. Therefore, we have limited our discussion of administrative data only to video production across districts.

Table 4. Video production by district

The following table describes the total number of videos produced by the District Program Management Unit of RySS-DoAC as of December 22, 2020. Each video produced is assigned a grade by a review committee comprising multiple DPMs and some DG team members. An A grade is the highest quality, B is medium quality, and C is lowest quality. VRPs are paid higher honorariums for videos with higher grades.

District	Total	% A grade	% B grade	% unrated
Kadapa	109	94%	6%	0%
Krishna	55	91%	9%	0%

Kurnool	84	67%	27%	6%
Visakhapatnam	18	100%	0%	0%

The table shows that video production in Kadapa and Krishna has been better than in Kurnool and Visakhapatnam. Video production in Visakhapatnam is low likely due to the absence of a consistently filled District Program Manager in the district.

4.2.1. DRIVERS OF DISTRICT VARIATION

Respondents identified several possible reasons for the variation in institutionalization across districts:

1. **Interest of District Program Managers (DPM).** DG staff noted that the (DPM) of Krishna and Kadapa were more committed to implementing video-based extension as much as possible. Meanwhile, they suggested that the DPM in Kurnool was more focused on other government programs, while the relative lack of institutionalization in Visakhapatnam could be explained by the consistent rotation of DPM. Field staff noted that a lack of DPM interest would affect the speed at which equipment issues were resolved. DG and state government respondents felt the difference in video production across districts could largely be attributed to the proactiveness of DPMs in supporting VRPs in producing videos.
2. **Geography.** Some DPMs noted that areas with upland farmers were harder to reach, which meant devoting department resources to them was difficult. They suggested that these populations may be less familiar with technology, and so purely in-person extension was a more effective method of communication. Government and DG officials also said that remote farmers had less access to inputs, making adopting organic farming practices less feasible in these areas. This was confirmed in farmer interviews, where over 90% of farmers in Visakhapatnam (a district identified by respondents as having a large proportion of most difficult-to-access farmers) said they faced difficulty in accessing organic farming inputs.
3. **Cropping patterns.** State and district officials suggested that areas with fewer crops, or crops that were not relevant to screened video practices were likely to have less institutionalization, as video-based extension would be less useful for them. They noted that in areas where video production met requirements of local conditions, greater institutionalization was likely to take place. For example, CRPs cited the example of screening Pre-Monsoon Dry Sowing videos increasing turnout in more arid regions, such as Kurnool, as this practice was more relevant to farmers in the area. This change in the content of video made them more relevant for farmers and hence

a reason that response of dissemination was better.

4. **Land ownership patterns.** One state official said that areas with high tenancy are less likely to have farmers that are interested in learning new practices, as they might be unsure if the land owner would permit it.

4.3. IS VIDEO-BASED EXTENSION PERCEIVED TO BE COST-EFFECTIVE AT SCALE?

There is widespread conviction among state and district officials that video-based extension is cost-effective at scale. As one DPM explained, “[Traditional extension] can motivate only one person at a time, but by showing films we can comfortably give information about organic methods to 10-20 farmers at a time.” State and district officials said that while video-based extension required the purchase of additional equipment, this cost was more than offset by the ability to reach a greater number of farmers while preserving extension quality.

Despite agreeing that video-based extension is cost-effective at scale *in general*, state officials expressed some reservations about whether the current, PICO projector-based and DG-coordinated model is sustainable for the future.

State leadership pointed out that each PICO projector costs 25,000-30,000 rupees. As the program is scaled to hundreds of more villages, respondents said that the state government may not be ready to bear the additional burden, and would begin to question whether PICO projectors are worth the expenditure. In addition to this, maintaining PICOs is a challenge. “Repair of PICOs can be a big project. All PICOs have to be taken to district headquarters for maintenance, and there is a big cost of doing this. 20-25% of PICOs are not working at a given point in time...making PICO maintenance a big cost.”

Additionally, there was near-universal agreement among government and DG respondents that DG plays a crucial role in co-managing video-based extension, particularly elements linked to training and video production. DG’s services are currently funded in part by the Azim Premji Foundation. State level respondents noted while they felt a specialised third party organization would be needed to conduct video-based extension effectively, they may face questions from senior government officials on whether these capabilities should be brought in-house. As a state official said, “If DG keeps being used [as a co-manager], the state government will ask why do you keep relying on outside people, why have you not used a government team. DG offers us 7-8 people’s time. The government will ask us why have you not hired these or similar people.”

4.4. HOW DOES REPORTED FARMER ADOPTION VARY ACROSS DISTRICTS?

This section discusses self-reported farmer adoption data, as well as reasons for and challenges to adopting CBNF practices.

4.4.1. SELF-REPORTED FARMER ADOPTIONS

We did not have access to administrative data on adoption for this study. Adoption data ceased to be collected after the integration of DG's CoCo system into the Department of Agriculture's MIS (2018). We therefore attempted to proxy for adoption by using self-reported adoption from farmers and perceived adoption from government officials, as well as other parameters that could be correlated with adoption (such as the perceived relevance and usefulness of the videos). While these may not be quantitatively rigorous measures of adoption, they provide some insights into how farmers feel about the usefulness and relevance of video-based extension.

We would flag that collecting farmer's opinions on whether they are adopting practices is not an accurate measure of district level adoptions, due to social desirability bias as well as potential recall challenges. Additionally, given the small sample size, and the remote nature of the survey, we would qualify the reported adoption figures. The purpose of interviewing farmers was to gather their overall views on video-based extension, rather than generating estimates of how many had adopted practices.

Most (20/21) of the farmers we spoke to said they had adopted CBNF practices shown in video-based extension. This was evenly spread across the sample districts. When asked about their perceptions of videos, nearly all farmers across districts felt videos were relevant and easily understood. They reported feeling that videos had become more useful over time, with many farmers commenting that the recommended practices had become more specific and easier to follow. They also said that CRPs facilitation ability had improved after regularly screening videos.

The main reasons for adoption were that these practices were cost-effective, and improved their health because of chemical free produce. A few farmers also said that they liked following the practices because they felt they were more reflective of practices followed by the community traditionally, and that they felt that they were leaving behind better land for future generations.

Though farmers confirmed adoption, over half (11/21) farmers interviewed also shared some challenges in adopting practices. Of these, nearly all farmers reported facing an unavailability of relevant inputs, such as cow dung or vessels used for mixing decoctions. About half (10/21) of these farmers listed an initial uncertainty about whether organic methods would be efficacious. It is likely that the number or intensity of adoption would increase if these barriers were removed.

4.5. WHAT SHOULD INSTITUTIONALIZATION LOOK LIKE IN THE FUTURE?

Given that institutionalization works based on a partnership between government and DG, we now assess what level of government ownership of video-based extension is sustainable in the long-term. Through our interviews, we found there are two different interpretations of what successful, sustainable institutionalization in AP could look like.

1. The first is a model in which DG, or an alternative third-party organization, continues to provide support on certain activities in video production and training.
2. The second, as has been described by DG and government leadership, is a model where the government is entirely responsible for all aspects of video-based extension.

Based on this study, we believe that the appropriate model depends on the level of video production capacity and experience in the government. If the government is willing and able to designate a qualified team responsible for video production, then the second model should be pursued. In this case, DG should work on upskilling a core group of government officials that will be able to support video production independently in the long run.

Alternatively, if no such team can be constituted, DG should work with the government in identifying cost-effective, high quality third-party vendors that can provide long-term video production support. Some government officials noted that the existing state and district governments teams have multiple priorities, making it difficult to ensure that video-based extension is implemented at a high quality and videos are regularly produced. Hence to support in the role the government needs to set up a sub-unit to take on related responsibilities specially like video production.

Below, we describe the main challenges to institutionalization in Andhra Pradesh in detail, as well as potential solutions.

4.5.1. CHALLENGES AND OPPORTUNITIES TO COMPLETE INSTITUTIONALIZATION IN ANDHRA PRADESH

Challenge	Potential Solutions
<p>Government has difficulty supporting video production. While some district governments are able to provide input and guidance on video production to VRPs, DG still plays a key role in ensuring video production is implemented smoothly and to the highest quality.</p>	<p>Identify a focused team/committee/project management unit or a range of qualified and cost-effective external vendors to provide long-term specialised video production support. Our interviews revealed that the Agriculture Department itself is sceptical of taking on this role: a senior state official told us that production of videos is a diversion of energy and manpower for the [Agriculture] department.” DG officials said they were exploring the feasibility of training officials from the state’s communications department to become responsible for the video production aspects of video-based extension.</p>

	<p>If feasible, these officials could form the team responsible for supporting video-production long-term. If this is not feasible, and if DG prefers transitioning its role to exploring alternative innovations for farmers instead of routine VBE implementation, it should identify a range of potential partners that could provide similar quality support in video production.</p>
<p>Government has concerns about PICO projectors' cost sustainability at scale. State-level officials are unsure if the government would be willing to bear the cost for PICO projectors for the entire state.</p>	<p>Articulate the benefits of PICO projectors through a cost-benefit analysis. Respondents across designations and districts said that PICO projector-based screenings are uniquely inclusive, allowing uneducated farmers to learn about new farming practices at a larger scale than purely in-person extension. A cost-effectiveness study quantifying the breadth and depth of PICO projector-based video extension, supplemented with testimony from farmers on the unique benefits of this model could be conducted and presented to the state's leadership. Respondents suggested possible alternative technologies such as television screens at Rythu Bharosa Kendra centres across the state (one for a few villages), or cell phone screen magnifiers. However, neither one of these is a complete substitute for PICO projectors: the former reduces accessibility to video extension as farmers have to travel to these centres, while the latter would reduce the resolution of videos, thereby decreasing the quality of disseminations.</p>
<p>Parallel and cumbersome data collection efforts. All CRPs are required to fill in physical registers and daily activity logs in addition to an MIS app. Several CRPs reported data collection distracting from field-level activities.</p>	<p>Rationalise process for data collection. CRPs are expected to collect data for several programs in multiple formats. While DG's scope of control is limited, DG should use its standing in the government to push for a simplification of reporting formats. In particular, DG should examine whether similar indicators are captured multiple times across</p>

	<p>the different reporting formats, such as mobile data collection apps and physical registers. For example, one CRP reported collecting information on adoptions on the department’s MIS app, in a daily activity log, in a physical register and in his district’s CRP WhatsApp group. A comprehensive indicator mapping exercise will help highlight which indicators are being doubly collected.</p>
<p>Lack of up-to-date, quality adoption data. Adoption data since 2018 is not regularly available. This makes it difficult to monitor the success of VBE efforts. State officials said that over a prolonged period of time, the lack of quality adoption data can also raise doubts about whether investing in VBE is impactful. The lack of quality data makes it difficult for state leaders to verify the impact of video-based extension on behaviour.</p>	<p>Collect adoption data through a regular, externally conducted sample survey. Adoption-related indicators are included in the state’s MIS systems. However, given the logistical challenges of regularly collecting this data, the quality of this data is unclear. DG should work with the government to identify a cost-effective data collection agency that can regularly and cheaply conduct sample surveys to measure how widely screened practices are adopted.</p>
<p>Government has difficulty independently managing VRPs. VRP motivation and retention is low due to delayed honorarium payments. VRPs feel that the existing limit on the number of videos they can produce in a month puts a ceiling on the wages they can earn. Over half of the VRPs trained by DG have dropped out. Additionally, DG functionaries reported saying that the government does not have the skills to independently hire and train VRPs.</p>	<p>Identify ways of streamlining VRP payment systems. Train the individuals or agency responsible for video production on how to identify promising VRPs. Without VRPs, the government will not be able to produce new and updated videos, reducing the appeal of video-extension sessions over time.</p>
<p>Government has difficulty independently managing equipment issues. While some districts have designated functionaries responsible for resolving equipment issues, DG and government officials agree that DG still plays a key role in resolving equipment problems.</p>	<p>Continue delegating equipment management responsibilities to designated government officials. DG district staff reported actively trying to involve designated district technology managers to help resolve equipment challenges. This has occurred with varying degrees of success across districts. As per DG staff, the key factor in determining</p>

	<p>how deeply district staff get involved in equipment matters seems to be time. DG should continue to encourage district government officials to view equipment management as a key part of their role.</p>
<p>Government has difficulty independently training Master Trainers. Nearly all Master Trainers felt the government would be unable to train them with the same quality of instruction as DG.</p>	<p>Identify and train a core group of Master Trainers on how to train future master trainers. All CRPs and Master Trainers emphasized the unique value of DG’s focus on soft skills (rapport-building, inclusivity, presentation). These skills should continue to be transferred to high capability Master Trainers through regular refresher trainings.</p>
<p>Master Trainers are learning how to conduct trainings independently, but further practice is needed. While Master Trainers in Kadapa and Krishna felt confident in their ability to conduct dissemination trainings independently, those in Kurnool and Visakhapatnam felt they still needed DG support.</p>	<p>Continue conducting joint training sessions with Master Trainers. Master Trainers t said that they were not confident about their ability to conduct trainings independently said they would feel more comfortable with more supervised practice.</p>

4.5.2. ALTERNATIVE TECHNOLOGIES AND PRACTICES FOR FUTURE VBE MODELS

Throughout the study, all respondents were asked what technologies for video dissemination should be used in the future. We highlight the most common responses below.

Mobile

Farmers and CRPs highlighted the need for allowing videos to be shared over mobile. They felt that this would allow farmers to view the videos at a convenient time, and to refresh their memory if they weren’t sure about how to implement the practice. They felt that these videos could be shared through channels like WhatsApp or DG’s Virtual Training Institute, or public apps like YouTube. Of respondents suggesting sharing videos through mobile, most flagged that videos should be locally available on the CRP or farmers phone as internet speed was a challenge in many areas across the state. However, respondents across designations and districts noted that sharing videos over mobile would primarily be useful for literate farmers that had smartphones. They stressed that including the most disadvantaged farmers in the extension network required in-person mediation.

Television

District-level officials were particularly keen on disseminating videos through TV. They felt that these videos could be shown on popular agriculture extension shows such as Annadata.

They also highlighted that videos could be shown on the TVs in RBK stores across the state. District staff felt that TV was a comparable alternative to PICO projectors, as it would allow several farmers to congregate and discuss what was shown in the videos, allowing for peer learning. While TVs could be used as a supplementary method of extension, they are not widespread enough to include more disadvantaged farmers.

Interactive Voice Response

Several respondents noted the usefulness of IVR calls in reminding farmers of the main points covered in videos. IVR was not discussed as frequently by respondents as apps, but was noted as a potentially useful way to include farmers that did not have smartphones or access to a TV.

4.5.3. GUIDELINES ON EVALUATING NEW STATES FOR VIDEO-BASED EXTENSION

In this section, we list some guidelines on setting up video-based extension in new states or partnerships. We assume that DG's engagements will follow an early stage where DG is more heavily involved, followed by a transition stage where the government takes on more responsibility, and a final, steady-state stage.

Early engagement

1. **Identify and foster a group of senior internal champions.** Some level of initial buy-in is crucial to ensure that video-based extension is promoted internally, and not viewed as an external initiative. Given the risk of transfers of officials to new posts, a core group of 4-5 initial champions is needed to ensure some level of continuity.

During transition to institutionalization

2. **Negotiate co-investment in video-based extension.** Once the government stakeholders have been convinced about the effectiveness of the model, DG should emphasize the importance of having the government ownership in the model (as it has done in AP). In the AP study, DG staff noted that this kind of investment led to a demand for results, which in turn led to a demand for regular monitoring. Regular monitoring in turn incentivised officials to implement the program more assiduously.
3. **Negotiate the inclusion of VBE in performance review rubrics.** Adding video-based extension to officials' performance review rubrics greatly incentivizes them to take video-based extension as a serious part of their role.
4. **Identify a core team of equipment managers at district level.** As video-based extension scales, the number of equipment problems will increase. To ensure that governments are prepared to manage these issues, DG should identify a cadre of district level officials that will be responsible for managing equipment problems as soon as implementation begins.

Long-term partnership

5. **Identify a long-term video production partner.** Depending on the state's capacity and willingness, this partner could be the government itself. If these conditions exist, DG should identify a cadre of officials (existing or new) who can be trained to support video production independently. This cadre can then lead video production efforts (which are likely to be reduced after an initial critical mass of videos is created) in the long-term. If these conditions don't exist, DG should therefore plan to work with the government long term to provide continued support even in scale up form. Alternatively, if DG would prefer to reallocate its resources to identifying and creating new high-impact technologies for farmers, DG should identify a long-term, cost-effective partner that will work with the government to produce videos. While the need for new videos could reduce over time, retaining the flexibility to have videos that respond to changing environmental or economic considerations is critical in ensuring that videos remain relevant.

5. Comparison with Ethiopia Institutionalization Study

As per DG's request we also compared the results of this study with the results from [IFPRI's institutionalization study in Ethiopia](#) in 2019. For this comparison, we assume that an Ethiopian *woreda* and an Indian district, as well as an Ethiopian *kebele* and an Indian block, are comparable administrative units.

5.1. SIMILARITIES

There are some similarities between institutionalization of video-based extension in Andhra Pradesh and in Ethiopia:

1. In both geographies, significant government support structures have been allocated to video-based extension. In Ethiopia, regional, zonal, *woreda*, and *kebele* Digital Extension Management Committees supervised planned, coordinated and implemented video-based extension. Digital green regional and field teams provided support at both levels. Similarly, in Andhra Pradesh, state and district level program management units were established to monitor and implement VBE.
2. In both geographies, Master Trainers were trained and active across districts/*woredas*. Performance in both areas suggested that further Master Trainer training is required to ensure that training standards are met and frontline worker trainings can be trained at high quality independently.

3. In both areas, plans for scaling up video-based extension significantly exist, and senior and junior government officials believe in the efficacy of the model.
4. Government officials in both Ethiopia and Andhra Pradesh felt video-based extension is cost-effective, and that it enabled the extension system to reach a larger number of farmers in a shorter period of time.

5.2. DIFFERENCES

Several key factors differentiate institutionalization in AP and in Ethiopia. These are listed below:

1. Most areas/*woredas* in Ethiopia do not have an explicit budget allocation for video-based extension. In contrast, whereas all districts in the AP study reported receiving funds for VBE.
2. In Ethiopia, Digital Green is still managing CoCo data entry for video-based extension data, as there is no government MIS system. In Andhra Pradesh, all data for video-based extension is collected in the government's MIS, and data entry is entirely conducted by the government.
3. Review meetings were more regular in Ethiopia than in Andhra Pradesh, reportedly being conducted as frequently as every two weeks at lower administrative levels. This may be because of the existence of *kebele*-level Digital Extension Management Committees in Ethiopia (as opposed only at district-level District Program Management Units in Andhra Pradesh), which enabled extension system actors to convene and discuss the implementation of VBE more frequently.
4. The Ethiopian government was reported to cover all transportation and per diem costs for extension agents. In contrast, extension agents in Andhra Pradesh said they were covering these costs themselves.

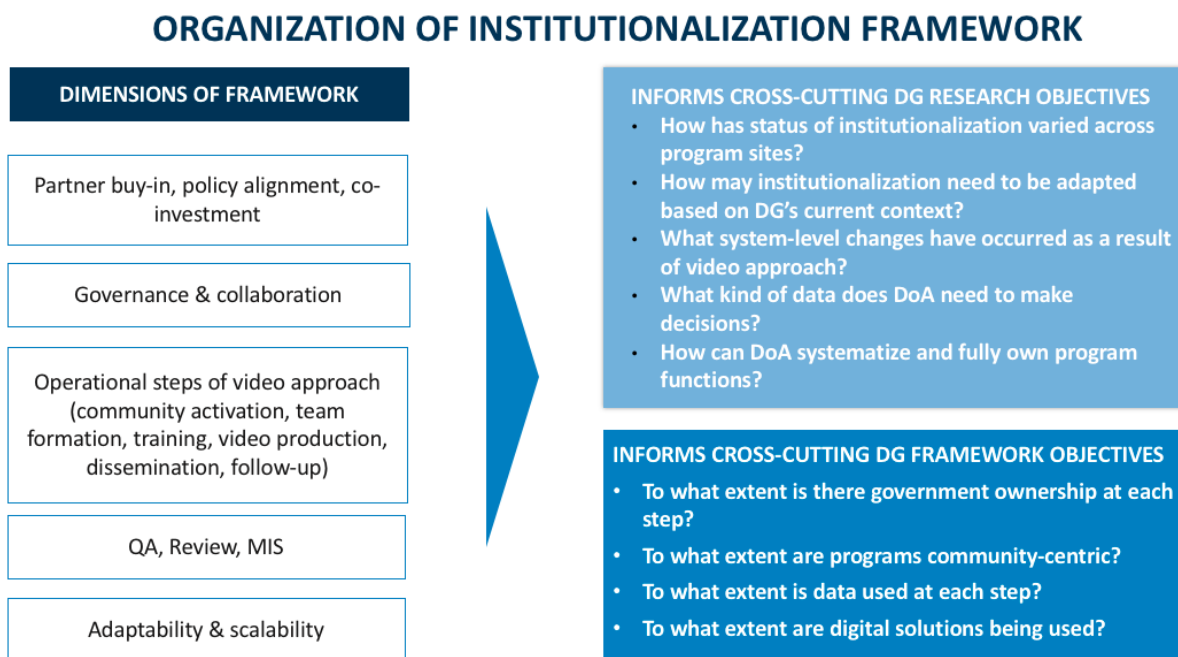
6. Conclusion

Several key elements of video-based extension have been successfully institutionalized in Andhra Pradesh, enabling greater scale, and giving more farmers the option to adopt alternative methods of farming. Despite these successes, further work is needed to ensure that the government can sustainably manage video-based extension independently. By identifying long-term solutions for video production, equipment management, and training, DG and the government will be able to make certain that high quality video-based extension remains a key component of the Agriculture Department's extension toolkit.

Appendix A - Instrument Design

We drafted a qualitative institutionalization framework to structure the study and the presentation of results. We developed this based on consultations with the Digital Green MEL team and an in-depth review of existing materials in order to understand how institutionalization is defined and measured.

The framework for the study aimed to address Digital Green’s research objectives as well as ascertain the level of institutionalization according to the program principles as captured in the DG institutionalization framework. We structured the framework by outlining different dimensions of the video-approach process and then included sample questions to address the research objectives (see diagram below).



Based on this framework the methodology for measuring and structuring the qualitative study was developed. The measurement framework included dimension of video dissemination process, outcomes of each dimension, linked research objective for each outcome and stakeholders for each dimension. Based on this framework we [developed interview guides for different respondents identified for the study](#).