

Info Note

Farmer demand for climate services Survey results from Ha Tinh province, Vietnam

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Key messages

- Farmers use weather forecasts to plan farming activities: from planting and management to harvesting.
- Key 'perceived' benefits of climate services were being able to reduce or avoid climate-related damage, yield and/or economic losses.
- Three in five farmers were willing to pay for seasonal climate services. Those willing to pay were younger, had higher farm incomes, and were not members of organisations
- A higher proportion of men than women were willing to pay, but there were no gender differences within average bid levels farmers were willing to pay.
- Attendance in training courses on climate change increased the probability of using the seasonal forecast for agricultural planning, and willingness to pay for climate services among both men and women.
- Social learning and consolidating local knowledge through participatory climate services increases its value.

Climate services involves the production, translation, transfer, and use of climate knowledge and information to limit the damage caused by climate-related disasters^{1,2}. Seasonal and sub-seasonal forecasts coupled with advice can help farmers with seasonal farm planning, day-to-day management decisions, and reducing disaster risks (Hassan and Nhemachena, 2008; Munang et al., 2010; Sivakumar, 2011; Baudoin et al., 2014; Jalón et al., 2015). Improved climate services could also raise awareness about climate change and better guide longer-term adaptation (Marshall et al., 2011; Rogers and Tsirkunov, 2013), such as the selection of perennial species and farm infrastructure plans.

This brief summarises (1) key decisions that farmers use climate services for in their agricultural production, (2) the characteristics of farmers who are using such information, and (3) the willingness to pay for climate services among female and male farmers. In this project, climate information consists of a seasonal forecast with an agro-advisory that is updated three times per season.

¹ <http://www.climate-services.org/about-us/what-are-climate-services/>

Study design

The study was part of a PhD thesis (Trinh, 2017) conducted within the project "Agro-Climate Information Services for women and ethnic minority farmers in South-East Asia" (ACIS). A questionnaire survey was conducted in the autumn of 2016, including a total of 400 farmers (96 men and 304 women) in the ACIS project site in My Loi Climate-Smart Village (n=104) and for comparison seven other villages (n=296) in Ky Son commune, Ky Anh district, Ha Tinh province. At the time of the survey, ACIS had been piloted in My Loi for less than a year and the formulation of participatory agro-advisories was still being tested (Duong et al., 2017), while the other villages were targeted for scaling in 2017. Hence, understanding the willingness to pay for climate services of farmers with some and limited exposure to such information, was considered useful for developing and financing appropriate agro-advisory formats.

In addition to statistical methods, such as a two-sample Z-test for the difference between proportions, a multivariate probit model (results are not shown), and a contingent valuation method were applied. Willingness to pay was estimated as five bid-levels ranging from VND20,000 (.87 USD) to VND60,000 (2.62 USD) per month. After the

survey, findings from the statistical analysis were clarified through key informant discussions. Although few of the respondents, were clear about the distinctions in terminology, unless specified, here we refer to ‘weather’ as a few days ahead, such as forecasts shown on television, and ‘climate’ to indicate a lead-time beyond one week, e.g., seasonal forecast.

Use and benefits from climate services

Nearly all interviewed farmers followed the weather forecast (97% in My Loi and 94% in the other villages), with the main source being the national weather forecast broadcast on TV. Slightly fewer reported that they used the information to adjust their agricultural production activities (86% in My Loi village and 84% in the other villages). Compared to other villages, a larger share of farmers in My Loi mentioned provincial sources of climate information. This was because seasonal forecasts used for agro-advisories were generated by, and often presented by, provincial meteorological staff during the Participatory Scenario Planning (PSP) forums in the village.

Farmers used the climate information to better adjust dates for planting (92%), applying agriculture inputs (45%), and harvesting (41%). Among the stated benefits were being able to plan (40%) and reduce damages (nearly 70%) in agricultural production. Further benefits included reduced agricultural production cost (66%), increased crop yields, and reduced costs for adapting to climatic events, i.e., reduced loss and damage.

Table 1. Factors determining three types of adjustments made due to climate information (significance level p -value <0.010, $n=400$)

Variable	Adjustment		
	a	b	c
Training attendance (events)	+	+	+
Education (years)	+	+	+
Farming experience (years)	+	+	.
Farm size (ha)	.	.	+
Credit access	.	+	.
Member of organization	.	-	.

+/- denote statistically significant positive/negative correlation between variable and type of adjustment: a= change in planting date, b = adjusting inputs, and c = change in harvest date. Non-significant variables: gender, value of previous loss damage, access to agriculture labour

Subsequent group discussions revealed the importance of the timing of information as well as of access to credits. Decisions during the crop season may be subject to last-minute changes depending on sudden adjustments in seasonal forecasts, pest-alerts, etc. As this is a lean period for many, farmers requested access to credit *during* -- as opposed to at the beginning of -- the crop season.

Farmers who use climate services

With longer education and attendance of training on climate change, the likelihood that a farmer adjusted management decisions based on climate information increased significantly (Table 1).³ With larger farm size farmers were more likely to use forecasts for adjusting planting dates and harvest dates (adjustment a and c in Table 1). The use of climate information for making decisions on inputs (adjustment b) was significantly associated with longer farming experience, having access to credit, and not being member of an organisation.

Willingness to pay for climate services

Three in five farmers were willing to pay for a seasonal forecast and agro-advisory (58%). Figure 1 shows that (i) overall, more men than women (67 versus 44%) were willing to pay, and (ii) regardless of gender, more farmers in My Loi were willing to pay for this service. The binary logit model indicated five variables having significantly positive effects on willingness to pay: lower bid, younger, male, higher farm income, and non-members of organisations.

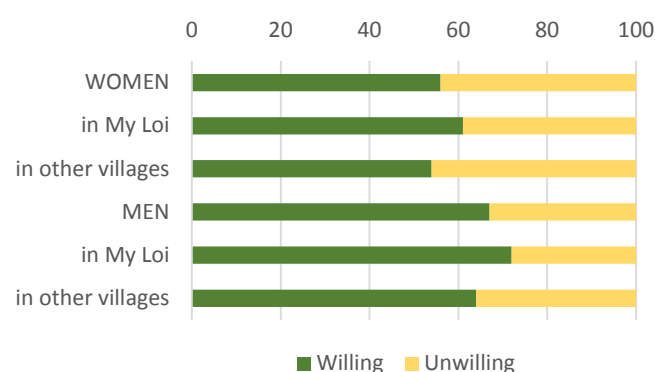


Figure 1. Willingness to pay for seasonal forecast and agro-advisory by gender, and project site (My Loi) and other villages (% of respective group).

Figure 2 illustrates the bid levels for women and men. The average bid levels were similar for men and women; VND37,000 (1.61 USD) and VND35,000 (1.53 USD) per month, respectively. Since a significantly larger share of women were unwilling to pay, the gap in average bid levels widened to VND34,000 (1.48 USD) for men and VND19,000 (0.83 USD) for women when all respondents were included.

Key informant discussions revealed some possible explanations. First, women were generally responsible for many household expenditures and prioritise expenses differently than men even though decisions were often taken together, women were generally responsible for

³ The ACIS project offered training to farmers in the commune (2015-17).

many of the household expenditures and prioritised expenses differently to men. Second, more men than women generated off-farm incomes, hence with less expenditure and higher earnings, spending VND50,000 (2.18USD) per month was not enough to dissuade them from paying for the services. Furthermore, although women and men used climate services similarly, the perceived value of the climate services may be affected by women having had less time to read and capture the bulletins (Duong et al. 2017).



Figure 2. Willingness to pay for climate services among men (n=96) and women (n=304) farmers (upper graph), and bid levels among the men (n=64) and women (n=169) who were willing to pay in VND per month (lower graph).

For those willing to pay for a seasonal forecast, two main arguments were significantly more common in My Loi compared to other villages: to reduce damage on agriculture production (94 versus 78%) and to have appropriate adaptation strategies (73 versus 54%). The most common argument for those unwilling to pay, was being unable to afford it (70% of those unwilling to pay). Only 20% of those unwilling to pay, said they could not see the value of forecasts, however among these, the share was significantly larger in My Loi compared to other villages (32% versus 17%). Since the project provided the agroadvisory free of charge, respondents may not have seen a reason to pay for it. Moreover, contrasting those

willing to pay for climate services with those who were not, highlighted two more significant factors: larger farm size and having attended training. Possibly because of the training organised by the project, significantly more farmers in My Loi compared to other villages (20 versus 4%) perceived that climate information with agroadvisories could reduce their costs for adapting agriculture to climate variability.

Discussion and Conclusions

Three conclusions can be drawn from this study, with a final question posed for further discussion.

- Climate services were perceived by farmers to reduce risks by enabling better planning and adapting

Climate information was perceived to assist farm decisions and thus was seen as most important for planning, e.g., timing, seed selection, and avoiding replanting. For example, in the uplands of Ky Anh district, farmers plant the summer crop immediately after harvesting peanuts. This was to take advantage of the remaining soil moisture and reduce the risk of drought impacts, as delayed planting of the spring crop would also affect the subsequent crop, e.g., reducing yields or narrowing the selection of potential crops to plant (Le et al., 2014). Furthermore, preliminary results from the project suggest that timely climate services during the crop season contributed to reductions of pesticides, and hence helped to improve resource use efficiency.⁴

- More men were willing to pay

Unsurprisingly, willingness to pay for climate services was higher among those with relatively more financial means, i.e., higher income or larger farm size, typically represented by younger men. More importantly, although fewer women than men were willing to pay for climate services, gender differences were minor in bid levels among those who were willing to pay for it. This suggests that after some initial bottlenecks, the amounts that women and men were willing to pay was similar. Closing such gaps could involve paying attention to the access to climate information.

First, gendered preferences for agroadvisory designs were observed in Ky Son commune and associated with differing understandings of, and time for, grasping the information (Duong et al., 2017). Specifically, women had less time available than men to read the agroadvisory or would let their children read it to them while doing chores. We stress that this commune is predominantly populated by the Kinh ethnic group, and gender differences often emerge more clearly among other ethnic groups in terms of access to, and the use and understanding of, climate services (Coulier et al., 2015).

⁴ <https://ccafs.cgiar.org/fr/node/55449#.WsMP3lhuaUk>

Second, contrary to what we expected, previous damages or access to credit did not significantly contribute to the probability of paying for climate services. However, for some farmers, shortage of cash limited their ability to take timely action. This survey indicated that both the timing of the agroadvisory and access to credit – especially during the crop season -- could better enable appropriate actions to be taken by those who buy a standard amount of inputs each year and those who buy when needed. Being implemented in the context of farmers' savings and loans associations, the ACIS project will provide research insights on the role of combining climate information within micro-credit schemes.

■ It is never too late for training

We note that while projects such as ACIS can do nothing about certain factors that influence use of climate services or willingness to pay, such as farm size and past education, this survey highlighted that a training course on 'climate change' contributed significantly to farmers' use of climate services. This shows the importance of employing various educational tools on climate change in farming communities. First, the PSP forums enabled regular two-way communication with provincial meteorologists. Social learning outcomes have been documented (Tran et al., 2017), e.g. reflecting on the forecast, advice and actions, and consolidated local knowledge and experiences. Second, the ACIS project introduced publicly available weather monitoring equipment in local communities and trained young adults to use new information sources, such as applications and searching and sharing information online using mobile phones. The differences between project and non-project sites (Figure 1) suggests that awareness-raising activities and training events can result in an increased demand for, or use of, climate services.

■ Can participatory climate services add value to climate services?

In the case of ACIS, agroadvisories are developed through a participatory forum that utilises local and technical knowledge from meteorologists and extensionists. The output is an agroadvisory in the form of a poster, with daily messages transmitted via village loudspeakers. To reach more recipients, common channels such as SMS, apps, or online forums typically assumes willingness to pay for individual subscriptions, rather than to a representative for a group of users. In this study, some farmers thought it was the role of the government to provide climate information for free, which conflicts with laws^{5,6} that state fees and charges for

various climate services, including forecasts for agriculture. However, with forecasts increasingly available for free online, the advice would need to add value to render willingness to pay. Given that ACIS' agroadvisories were distributed free of charge, some farmers may question why they would start having to pay for it. Recognising these forums as a platform for generating a database of local accumulated knowledge could help farmers groups negotiate better climate service deals and improve climate services.

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⁵ Law 97/2015/QH13 - <http://hethongphapluatvietnam.com/law-no-97-2015-qh13-dated-november-25-2015-fees-and-charges.html>

⁶ Hydrometeorology Law 90/2015/QH - <http://hethongphapluatvietnam.net/law-no-90-2015-qh13-dated-november-23-2015-hydrometeorology.html>

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