

Info Note

Actionability of Climate Services in Southeast Asia

Findings from ACIS baseline surveys in Vietnam, Lao PDR and Cambodia

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Key messages

- Availability of actionable agro-climate information for Southeast Asian farmers is erratic.
- Access to climate services varies by country, infrastructure, literacy levels, gender, and farm types; ethnic minority women were particularly marginalised in terms of access.
- Communication gaps result from the unfamiliarity of meteorologists in generating needs-based climate services, the inability of extensionists to translate forecasts, and the diversity of users' expectations and needs.
- Actionability can be improved by involving different user groups in the design of climate services.

This brief takes stock on the actionability of current climate services, based on a baseline questionnaire survey and focus group discussions (FGD) conducted in the three countries between December 2015 and April 2016.

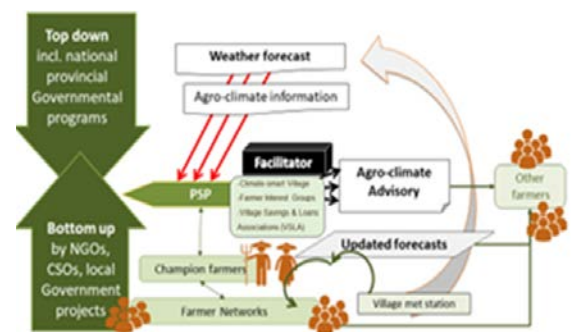


Figure 1. Overall structure of ACIS project. The key activity is the Participatory Scenario Planning (PSP) process, which can take place in various types of farmer groups.

Overview

Climate services are described as climate information that assists decision making in response to users' needs, such as seasonal forecasts for agriculture production¹. This process includes four steps: generation, translation, communication, and application of climate services.

The project 'Agro-Climate Information Services for women and ethnic minority (ACIS) farmers in Southeast Asia' is being implemented by ICRAF and CARE International in cooperation with local partners in Vietnam, Lao PDR, and Cambodia. The project began in 2015 and will run to 2018. By providing actionable climate services, ACIS will enable farmers and agricultural planners to better anticipate and respond to risks and opportunities from weather. The project investigates differing needs between gender and ethnic grounds (Duong et al., 2017, Kristjanson et al. 2017). The overall structure of the project is provided in Figure 1.

In total, the baseline survey covered 1,333 respondents, representing 21 ethnic groups (four in Vietnam, 13 in Lao PDR, and four in Cambodia). The survey covered: 40 villages in two communes in Dien Bien and 20 villages in three communes in Ha Tinh provinces, Vietnam (n=595 households, of which 53% of respondents were women) (CARE and ICRAF 2016); 15 villages in Phongsaly province, Lao PDR (n=322, of which 49% of respondents were women) (Coulier, 2016); and 15 villages in Ratanak Kiri province, Cambodia (n=416 households, of which 60% of respondents were women) (Coulier and Wilderspin, 2016).

The group discussions represented different farming systems and included 17 FGDs in three communes in Vietnam (8 women-only groups and 9 men-only) with 6-20 participants per FGD; 18 FGDs in 9 villages in Lao PDR

¹WMO http://www.wmo.int/gfcs/what_are_climate_weather_services

(gender separated) with 6-10 participants per FGD; and 9 FGDs in 9 villages in Cambodia (3 women-only groups and 6 mixed gender). One FGD per province conducted an institutional mapping of climate services actors (10-18 participants per group). It is beyond the scope of this brief to fully capture the great diversity in the studied communities. In this paper, we only highlight some key gender, ethnic, and poverty characteristics. Due to improvements in the methodology throughout the survey, some indicators vary and not all are directly comparable.

This brief summarises five aspects of an actionable climate service: (i) what climate services are available?; (ii) if available, can farmers access it?; (iii) if accessible, is it available on time?; (iv) can farmers understand it?, and (v) if farmers can understand it, is the climate service useful? Where relevant, what are farmers' preferences for actionable climate services?

Participatory Scenario Planning (PSP) workshop

A group of farmers representing different villages, agroclimate zones, and/or agriculture practices, meet and go through the seasonal forecast, probabilities of different outcomes, and discuss localised recommendations. A local resource person (e.g., farmer, extensionist, village leader) facilitates the meeting, encourages the application (?) of local knowledge, and finalises the agroadvisory product(s), which can be communicated by the facilitator, village leader, and/or the PSP-group.

The PSPs are done before, during, and after the crop season. The meeting can call in resource persons from the plant protection department and provincial meteorological bureau as necessary. Meanwhile, farmers document through logbooks. At the meetings, they reflect and can provide feedback on forecast skills and suitability of agriculture advice directly to extensionists and/or meteorologists. Alternatively, the facilitator communicates the feedback.

Findings

• Availability

Climate services were available in all three countries. None of the countries had institutionalized the link between forecast and agricultural advice.

In Vietnam, seasonal forecasts were generated by the National Centre for Hydro-Meteorology Forecasting and by the province Department of Natural Resources and Environment (DONRE), and communicated nationally and regionally via radio and television, and via loudspeakers

at the local level. Agricultural recommendations were produced at both the provincial and district levels by the Department of Agriculture and Rural Development (DARD). Seasonal calendars were developed at the district level largely for rice and a limited number of other crops, and included planting time and variety, but without consideration of weather forecast. This information was then distributed before the season to districts and communes. In both Dien Bien and Ha Tinh provinces, crop calendars were available on a pre-seasonal basis for the major crops, notably rice.

In Lao PDR, weather information or forecasts were generated by the Department of Meteorology and Hydrology under the Ministry of Natural Resources and Environment, and communicated via television or other community members. At the start of the project, there were only informal agroadvisories communicated via extensionists, civil society organisations, village leaders, or NGOs. The information concerned cardamom, upland rice, and livestock (pig and chicken). Advisories may cover what and when to plant, when to harvest, and which crops or trees to combine with which crops. To link weather and agriculture information, the project initiated collaboration with the National Agriculture and Forestry Research Institute (NAFRI) for piloting a Dynamic Crop Calendar, and with the Provincial and District Agriculture and Forest Office (PAFO, DAFO) for disseminating seasonal bulletins.

In Cambodia, the Ministry of Water Resources and Meteorology (MOWRAM) generated general forecasts and early warnings of storms. The Province Department of Water Resources and Meteorology (PDWRM) provided medium and long-term forecasts to Ratanak Kiri, however, no seasonal weather forecasts were generated locally in the province. The Ministry of Information was responsible for generating and distributing agro-climatic information over the television and radio, while the Provincial Department of Agriculture (PDA) provided localised agricultural advice, such as the seasonal calendar, which was communicated by extensionists for rice, cassava, livestock, soybean, and cashew.

• Accessibility

In Vietnam, more farmers had access to weather forecasts than agroadvisories, while the opposite was true for Lao PDR and Cambodia. Some actual and preferred information channels differed for women and men, and poor and non-poor farmers. Generally, more men than women received climate services from extensionists. Farmer-to-farmer and intrahousehold sharing was more important where climate services were less available.

Table 1. Accessed and preferred channels for weather forecasts and agricultural advice, marking significant groups in the column to the right (n=1330)

Province	Information	Actual access (%)	Sign. group	Preferred (%)	Sign. group	
Dien Bien Vietnam	Weather	TV	97		88	*
		Loud speaker	6		39	
		Extension	22	W, NP		
	Ag Advice	Village leader	83	*	65	**
		Extensionist	70		44	NP
Loudspeaker		10		46		
TV		-		90		
Ha Tinh Vietnam	Weather	TV	96		93	
		Loudspeaker	64		75	P
		Extensionist	54			
	Ag Advice	Farmers' Assoc.	87	W	81	P
		Village leader	85		85	
Extensionist		66	M	58		
Phongsaly Lao PDR	Weather	Women's Union	55	W	55	
		TV	31	*	42	
	Ag Advice	NGO	59	M; *	~30	M; *
		Village leader	52	** , ***	~45	*
		Extensionist	52	M		
Ratanak Kiri Cambodia	Weather	Loud speaker	-		~37	W; ***
		Radio	49	M; *	58	*
		TV	16	M	20	
		Extensionist	16		30	
	Ag Advice	Trad. forecasting	32	M	-	
Village leader		15	M; **	40		
Extensionist		53	*			
NGOs		34	M; *			
Village leader		25		29		
Ag Advice	Radio	-		42	*	
	Paper bulletin (Khmer)	-		38		
	Paper bulletin (other lang.)	-		20		

- = not mentioned, non-significant; Significant groups: W=women; M=men; P=poor; NP=non-poor
In Vietnam: * - ethnic minority; ** - Kinh; In Lao PDR: * - Ngot Ou, ** - Sampan, *** - Mai. In Cambodia: * - Krueng, ** - Tampuan

Table 1 shows the main sources of weather and agro-advisory information, and the preferred ones. In Dien Bien, nearly all of the surveyed farmers accessed weather information through television, of whom one-quarter watched it daily and 56% less than weekly. Overall, only one-fifth of the respondents received weather information from the extension services. Among these, the ratio was higher for non-poor farmers (30% versus 13% of poor farmers) and for women (27% versus 17% of the men). Furthermore, respondents received farming advice from the village leader (83%), extensionists (70%), and community organisations (%). Most advice concerned rice and pigs, while few received advice for maize, buffalo and chicken. Fewer of the poorer households in Dien Bien obtained farming information from farmer groups, cooperatives or other community organisations, while village leaders were important information sources for ethnic minority communities.

In Ha Tinh, nearly all respondents accessed weather forecasts through television, of which 79% watched daily, followed by loud speakers and extensionists. The agricultural advice was accessed mainly via civil society organisations, village leader, and extensionists. There were minor gender differences, however the Farmers' Association and Women's Union reached more women, while more men accessed information from extensionists.

Here, farming advice was available mainly for rice, peanuts, and livestock. Ha Tinh farmers' preference for weather information resembled that of actual access, via one-way communication channels on television and loudspeakers (Table 1). For agricultural advice, many preferred both one- and two-way channels, especially television and loudspeaker, which had not been mentioned as an actual source, as well as village leader, extensionists, and civil society organisations. Poor farmers preferred the Farmers' Association and loudspeaker.

In Phongsaly, less than one-third of respondents accessed climate information via television, while 40% received it via other farmers or household members. Nearly all respondents (93%) accessed agriculture advice, usually from an NGO and household members, village leader, or the extension services. While there were no significant gender differences in terms of receiving climate information, in the majority of households, men often received agricultural information before women (57% of respondents). Also, government extensionists (most of whom are men) reached more men than women (60% versus 43%). Where farmers received agricultural advice via farmer groups, the information reached women and men equally. In Phongsaly, the preferred communication channel for weather information was

television (42%), while only 31% actually received it this way. There were notable gender differences in the preferred channels through which agricultural advice was disseminated (Fig. 2).

In Ratanak Kiri, only half of respondents accessed weather forecasts, mainly via radio and/or other household members. While only 16% received weather information from the extension services, 53% received agriculture advice from extension. Other sources were rare -- less than 10% accessed climate services via loud speakers, mobile phones, or other community organisations. Similar to Lao PDR, a larger share of men than women: (1) had access to weather information provided by extensionists (24% men and 10% women), the village leader, radio and television, and (2) received agricultural advice from NGO workers (41% vs. 30%, respectively). The survey could not identify any gender differences for preferred channels or formats for receiving climate services. However, more men than women had access to weather information via extension workers, the village leader, radio and television. In addition, one-third of respondents used traditional ways of weather forecasting, with some communities practicing them more than others.

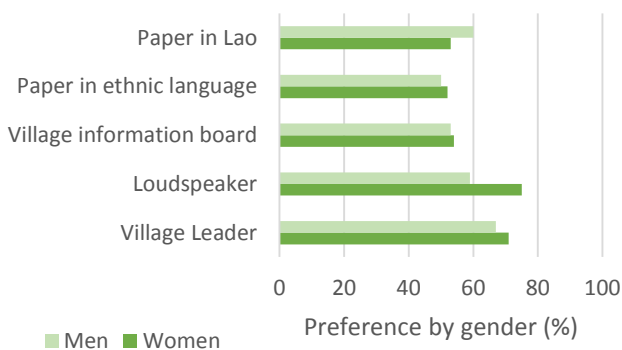


Figure 2. Gendered differences among Lao farmer preferred communication channels for agricultural advice (selected by 50% of 322 farmers; n=158 women, 164 men)

Farmer-to-farmer sharing of agricultural advice was quite common in all three countries; information was shared between spouses among 35% (Ratanak Kiri) to 52% (Phongsaly) of respondents, and was a common information source for women; and between other household members and neighbours. Households had no or very little experience in weather monitoring in either of the countries. Only Dien Bien had a relatively higher accessibility of weather information for women than men. This may reflect the incorporation of PSP-workshops in village savings and loans associations for women. At the time of the survey, PSPs had not yet been introduced in Lao PDR and Cambodia, while in Ha Tinh the groups had both women and men.

• Timeliness

One in two farmers in Lao PDR and Cambodia said forecasts were not on time. Farmers needed two main types of climate services; i) seasonal forecasts for planning, especially pre-season and ii) frequent updates for day-to-day management, especially of cash crops.

In Vietnam, farmers in both sites generally considered agricultural advice to be timely enough to take action, while both in Phongsaly and Ratanak Kiri, only 46% said the same thing. Furthermore, one-third of farmers in Cambodia said it was never timely. Poor infrastructure often caused delays, i.e., interrupted electricity (permanent or temporary blackouts) affecting coverage for television and Internet access.

In terms of the preferred timing of receiving agricultural advice, there were some differences between the countries (Fig. 3).

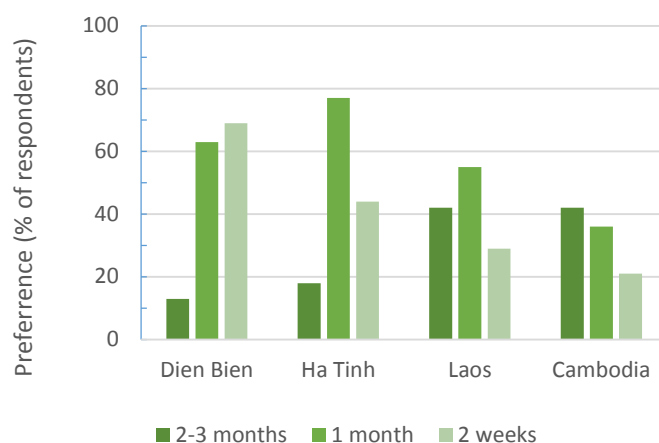


Figure 3. Farmer's preferred lead time for receiving agricultural advice (n=1333)

In Vietnam, farmers considered weather forecasts most valuable before planting (85% in Dien Bien and 92% in Ha Tinh said one month prior to planting) and during the season (71% in Dien Bien and 51% in Ha Tinh). In Dien Bien, all ethnic minority groups had a clear preference for climate services two weeks to one month before the season started. Furthermore, poor and near-poor households favoured seasonal forecasts before and during the crop season, while non-poor farmers preferred more frequent forecasts. Moreover, Ha Tinh farmers said that regular updates were important due to the rapidly changing weather patterns.

Similarly, the Laotian and Cambodian farmers favoured pre-season weather information (71% in Lao PDR and 65% in Cambodia). In Lao PDR, 42% preferred '2-3 months before', 55% 'one month before', and 28% 'two weeks before' the crop season. Respondents from communities with upland rice preferred a comparatively longer lead time. Fewer farmers than 'before the season'

(41%), said forecasts 'during the crop season' were important. The demand for forecasts was higher in villages with higher risk for cash crop failures, e.g., tea and maize. Reflecting the poor timeliness, Cambodian farmers also wanted more frequent weather forecasts. However, there were no significant gendered or ethnicity differences in gender for, or the timing of, pre-season forecast.

• Understandability

Across all sites most farmers understood the weather information to some degree. The language used to communicate climate services marginalized the ethnic minority women. There was a lack of feedback mechanisms to integrate farmers' needs and knowledge into climate services.

In Vietnam, weather information was considered by almost all farmers as 'easy to understand', albeit with some contradictory or unconvincing evidence. For example, while the agricultural advice was perceived as 'not too technical' by 33% of farmers in Ha Tinh, the majority (67%) had 'no opinion'.

In Phongsaly, half of the respondents (51%) said that weather information was 'always' or 'usually' easy to understand and half (49%) said 'usually not' and 'never'. Focus group discussions highlighted that most women did not know Lao, Thai, or Chinese languages well enough to understand the climate information, and that men, who knew the languages better, did not necessarily share the information with women.

In Ratanak Kiri, the received weather information was 'easy to understand' and 60% of farmers found the agro-advisories technically 'easy to understand'. For 43% of respondents, the farming advice was available in their native language, while for 28% it never was.

Many respondents agreed (93% in Dien Bien, 78% in Ha Tinh, and 58% in Ratanak Kiri) that there is a lot of knowledge to be gained from farmers that can be used in government planning.

• Usefulness

Gaps between the climate services that farmers received and what they found useful, could be narrowed by:

- i) improving timing or more frequent dissemination, especially before the season,*
- ii) removing technical language, and being available in minority ethnic languages,*
- iii) refining the resolution of information, i.e., more specific and practical, covering a smaller geographical area, or including more crops and,*
- iv) removing the gendered gaps in access and design.*

Although many farmers in Vietnam said climate services were timely and understandable, in the FGDs farmers perceived weather forecasts to often be unreliable, incorrect, or lacking farming applicability. In Vietnam and Lao PDR, the content of the weather information was considered too broad in scale for farmers' needs and lacking details for management decisions. This perhaps explains why farmers said the information was easy to understand, but not useful.

Specifically, in Dien Bien, farmers wanted agro-advice for fruit trees and fish, as well as early warning for hazards and pest and disease outbreaks. Similarly in Ha Tinh, while farmers appreciated the existing advice, they wanted it to be better tailored to their priority crops and livestock.

In Phongsaly, for half of the farmers (52%), climate services were 'mostly useful', and for the rest 'usually never useful'. Focus groups confirmed that the weather information was not perceived applicable to their area and was not timely enough to prevent damage from disasters.

In Ratanak Kiri, 78% of respondents found the climate information useful. Of the three countries, Cambodia had the most marked shortage of provincial met-office staff and trained local staff. This may explain the comparatively large share of farmers using traditional forecasting techniques (32%, more men than women) - wherein half said traditional methods helped with deciding what and when to plant, and how to protect crops from disasters or bad weather. Many perceived the techniques as 'reliable' (33%) or 'sometimes reliable' (30%).

Actionable climate services - Conclusions and recommendations

This study identified several obstacles in current climate services that require attention to improve actionability in project implementation:

Improving current weather forecasts to better meet farmers' needs

Given the different contexts and available climate services, modalities for generating "downscaled" forecasts and/or agro-advisories can include: (a) same forecast as before but with more detailed advice for a particular geographical or agroecological area, by incorporating local knowledge; (b) adjust timing and frequency of the forecasts to match the time (timeliness) when actual decisions for crop seasons are made (actionable), and (c) adjust indicators in forecasts (content) so that they match agronomic needs. Records of local adaptation strategies can be listed and used as a collection for specific weather conditions (see Appendix in Coulier and Wilderspin, 2016).

Reduce translation gaps

Gaps were identified at all stages of climate services. Translating technical (agro-)meteorological terminology into farmer-relevant language requires opportunities for two-way communication. Farmers know what they want the information for, but they do not necessarily know what meteorological variables this translates into, and therefore are unsure what they should ask for, or how or who to ask for such information. Extensionists are rarely trained in accessing, interpreting, or using meteorological forecasts for agro-advisories. The institutional self-assessment highlighted a lack of communication with end users of forecasts. For example, in Vietnam, most of the interviewed government officers agreed that the communication between the departments could be improved.

Regular forums for meteorologists, agricultural planners, and extensionists, and farmers for developing participatory designs of climate services and to feedback on and exchange forecasts and advisories, can help build understanding to improve and develop suitable forecasts and advisories, given the data available (Duong et al., 2017, Roy et al., 2017).

Weather information brokers (two-way communication) such as the facilitators of the PSPs, could be trained to introduce and explain one-way communication tools, such as online forecasts, advisory posters, and apps. Their role should also be in nurturing local knowledge and supporting farmer-to-farmer knowledge exchange.

Diversify communication channels and applications targeted to user needs

The channels that farmers prefer to receive information through, and those that are available to them, differ across all sites. The importance of listening to different needs when designing climate services is highlighted throughout the survey and the implementation of the project. In some of the areas, it is too early to assume that all farmers have access to Internet, phone, and even secure electricity.

Specific ways were identified to address gender and ethnicity gaps in the project. These include ensuring that extensionists, local facilitators and trainers of both gender are employed, and if unavailable, train local resource persons who can speak the farmers' languages (Tran et al. 2017, Duong et al. 2017). For some, there are gendered differences in the preferred communication channels and designs (Fig. 2; Duong et al. 2017). Hence, it is important to "design with gender [and marginalised groups] in mind" (Kristjanson et al. 2017). In Cambodia, the project installed loudspeakers in 2017 to disseminate climate services in local languages to more people – a channel that was rather equally preferred by women and

men, and popular among the poor households and ethnic minority communities.

This baseline survey shows the diverse contexts for climate services in the three neighbouring countries. The Global Framework for Climate Services (GFCS) is expected to assist countries in coordinating climate services and managing climate-related risks. This stock-taking exercise verifies the need for such concerted efforts.

Further Reading

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This brief summarises findings among the initiatives to address climate-related risks under the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). The study was conducted as a part of the project Agro-Climatic Information Services for Women and Ethnic Minority farmers in South-East Asia (ACIS), implemented by World Agroforestry Centre (ICRAF) and CARE International in Vietnam, Cambodia and Lao PDR. It is hoped that the research will contribute to co-investments in improved agro-climate information systems.

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The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) is a strategic partnership of CGIAR and Future Earth, led by the International Center for Tropical Agriculture (CIAT). CCAFS brings together some of the world's best researchers in agricultural science, development research, climate science and Earth System science, to identify and address the most important interactions, synergies and tradeoffs between climate change, agriculture and food security.

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