# LIVESTOCK CRP VIETNAM 2019-2021

# SITE SELECTION PROCESS

**S. Douxchamps, N. Teufel, T. Nguyen, H. Nguyen and J. Poole**

## 1. COUNTRY SELECTION

(extracts from the Business Case submitted for priority country selection)

Highlights:

- High capacity: third largest ILRI regional office and priority country for CGIAR collaboration
- Well placed to examine "future issues" such as consumer demand and livestock externalities
- To be credible as a global program, CRP Livestock needs presence in Asia

[The Livestock CRP can] focus on **difficult regions with high poverty and ethnic minorities**, showing how research can deliver impact in challenging area, but can also conduct active research in **medium scale intensified livestock areas** to address priority issues on market, feeds and forage, animal diseases, food safety, AMR and the environment. While poverty rates have reduced rapidly over the past decade at national level, there remain sizable pockets of poverty at regional level, particularly in **North-West, Central Highlands and Mekong Delta** regions. In these areas, livestock, particularly indigenous pigs and cattle, **play an important livelihoods function** and could raise household income if market access, productivity, and animal disease constraints are overcome. This suggests a need for a targeted, regional approach for livestock-oriented research in Vietnam.

[Decision was taken to enlarge the pig value chain focus to a full system perspective. Indeed,] beef cattle is an emerging sector in Vietnam and **almost exclusively found in mountainous areas where ethnic minority people live and land is available for forage development**.

[With a longer-term perspective,] Vietnam represents an important platform for engaging the Greater Mekong Subregion, including the much less developed countries of Cambodia, Laos and Myanmar, which is becoming increasingly integrated by regional trade in livestock products. The targeted investment of Livestock CRP, **complemented by A4NH**, with currently running and pipelined bilateral projects, and many staff based in Vietnam will create a critical mass for ILRI and CIAT to develop and implement research in Vietnam and Southeast Asia.

## 2. PROVINCE SELECTION

Among the three regions mentioned in the business case, Northwest Vietnam was a logical choice given the high number of ethnic minority people, high relative poverty, high livestock numbers, importance of livestock

for livelihoods (Figure 1) and pressing environmental, market and production problems, as well as the proximity to Hanoi for logistic and field operations supervision.

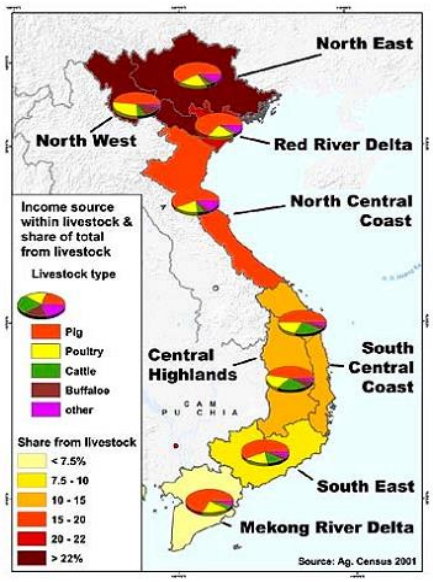


Figure 1. Livestock as income source in total and per animal species. Source: ILRI

Son La province has been selected based on a number of criteria:

- previous work: data available, partners. Availability of previous data allows a fast start and omitting a long initial analysis phase.

- current work: partners active in the area, potential for synergies. Availability of ongoing project to link to for partner networks, MoU and providing “services”/support to for a fast and efficient start and achieving results in a short time

- Government priority

- mountainous area

- ethnic minorities

- importance of livestock

- poverty

- accessibility and proximity to Hanoi: it allows more efficient interactions with local partners and field coordination

- interest of donors

- potential for scaling outside

- smallholder diverse farming systems: System variety allows for the implementation of a diverse array of products and research.

Son La province seems to meet all of these criteria:

- Distance is 3 hours’ drive from Hanoi to Moc Chau, infrastructure is good
- Data are available from Humidtropics, A4NH and other projects. Humidtropics work had a system focus and provides a lot of analysis but no concrete products to adopt or build on. It is useful for site selection

and needs assessment, with a plethora of available data. A4NH's focus is on food safety, animal health and antimicrobial resistance, as well as market linkages

- Currently at least one ACIAR project and A4NH are working in the provinces
- The province has more connected, commercial, and more remote, ethnic minority dominated and traditional farming systems, including cattle, pig, poultry and buffaloes
- Kinh people (ethnic majority) comprise only about 15% of the population
- The North West in general is a government priority for rural development

More information on the province is also available in T.Tiemann's stocktaking study[1].

## 3. DISTRICT SELECTION 1 – April 2019

### 3.1. From A4NH selection process

In its selection process, A4NH has identified four districts of Son La province with highest priority for in-depth food system research: Moc Chau, Yen Chau, Mai Son and Phu Yen (Figure 2). Among these four districts, Moc Chau has been chosen as rural district for their rural-urban gradient. The criteria for this are available in the A4NH site selection document[2]. As one of the ideas when deciding to work in the North West was also to take advantage of the work of others to spare long baseline and site selection activities in view of the short project duration, Moc Chau has also been selected tentatively for the Livestock CRP, considering the high importance of livestock for livelihoods in the district. The choice of Moc Chau district allows to gain a food system perspective at low cost, and the Livestock CRP can benefit from A4NH experience and network of local partners in the district.

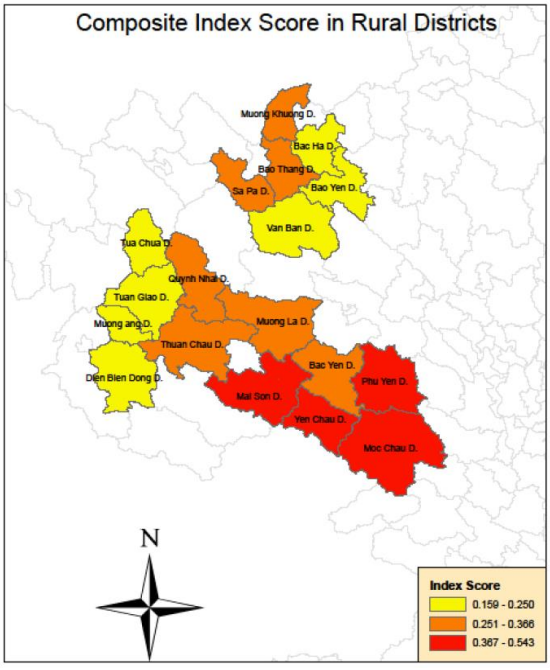


Figure 2: Districts with highest priority (red) for in-depth food system research in the A4NH CRP

[1] https://cgspace.cgiar.org/handle/10568/107149

[2]https://www.researchgate.net/publication/326095516_Defining_the_benchmark_research_sites_rural_to_urban_transect_in_Vietnam_Flagship_1_-_Food_systems_for_Healthier_Diets

Still, it was cautioned to go with Moc Chau as the district might be relatively well developed and not representative for the Northwest of Vietnam. Particularly, linking to the prevailing commercial dairy schemes in Moc Chau, as they are very well developed and the ability to meaningfully contribute is questionable. Therefore, it was decided to have two sites, a more advanced location in Moc Chau and a more remote location elsewhere in the province. This would allow to capture two different 'environments' so more variability, recommendations coming out will cover more domains and/or target different domains (species, value-chain stage etc.).

### 3.2. From Humidtropics

The domain mapping from HT also allowed districts comparison. Table 1 shows the percentage of households of Son La province falling into one of eight overlay combinations, characterized by three domains: **environmental degradation, market constraints, and poverty**. The combinations in blue (LHH, HLL and HHL) were the one most represented in Dien Bien and Son La provinces. Mai Son, Moc Chau, and Song Ma districts have at least 2 out of 3 combinations represented. More information on this analysis is available in T.Tiemann report. As Song Ma is less accessible, Mai Son was preferred to complement Moc Chau.

Table 1. Percentage of households of Son La province falling into one of eight overlay combinations, characterized by three domains: environmental degradation, market constraints, and poverty.

| **District** | **Overlay combinations** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Low-Low-Low<br>LLL | Low-Low-High<br>LLH | Low-High-Low<br>LHL | Low-High-High<br>LHH | High-Low-Low<br>HLL | High-Low-High<br>HLH | High-High-High<br>HHH | High-High-Low<br>HHL | **a) Environmtl. degradation**<br>**b) market constraints**<br>**c) poverty** |
| Mai Son | 22% | 0% | 0% | 4% | 56% | 0% | 0% | 19% | 3/3 represented |
| Moc Chau | 38% | 0% | 10% | 0% | 41% | 0% | 0% | 10% | 2/3 represented |
| Muong La | 40% | 10% | 25% | 0% | 20% | 0% | 0% | 5% | |
| Phu Yen | 21% | 0% | 21% | 0% | 47% | 0% | 0% | 11% | |
| Quynh Nhai | 50% | 11% | 17% | 0% | 6% | 6% | 6% | 6% | |
| Son La | 20% | 0% | 20% | 0% | 60% | 0% | 0% | 0% | |
| Song Ma | 0% | 4% | 0% | 4% | 25% | 4% | 0% | 63% | 3/3 represented |
| Sop Cop | 4% | 0% | 29% | 0% | 8% | 0% | 4% | 54% | |
| Thuan Chau | 4% | 29% | 0% | 21% | 0% | 21% | 25% | 0% | 1/3 represented |
| Yen Chau | 7% | 0% | 0% | 0% | 71% | 0% | 7% | 14% | |
| Bac Yen | 22% | 0% | 11% | 0% | 61% | 0% | 0% | 6% | |

### 3.3. From district data

The final selection of the second district was decided according to a number of criteria (Table 2).

Table 2. Criteria for district data

| **Area** | **Environmental degradation?** | **High levels of Poverty**<br><br>**(by Area, People)** | **Demand for products** | **Market constraints** | **Accessibility / easy of working (logistics)** | **Local partner connections & working relationship** | **Opportunity to combine multiple topics (genetics, health, feeding, environment,** | **Results from other CRP / projects complimenting Lvst CRP research?** | **Concerns** |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | markets)? By species?? | | |
|---|---|---|---|---|---|---|---|---|---|
| Son La – Moc Chau | Yes – 51% | No – 0%, 7% | Yes? | No – 20% | Good | Yes | Yes? | A4NH & others? | Can we separate LvST CRP 'effect' from A4NH? Pretty developed area |
| Son La – Mai Son | Yes – 75% | No – 4%, 18.5% | Yes? | No – 23% | Good | Yes | Yes – esp. AH, | ACIAR / German Upland, HT – no interventions!<br>A4NH? | livestock relevance, more rural, ok access, good local partnership, basic baseline information and room for more operational research.<br>Not really much different from Moc Chau?? |
| Son La – Thuan Chau | Yes – 46% | Yes – 96%, 40% | No? | Yes – 46% | | | | ACIAR | |
| Son La – Van Ho | Same as Moc Chau? | Yes - ?, 40% | No? | Same as Moc Chau? | Good | Yes | Yes? | ? | |

Based on the three sets of information above, Moc Chau and Mai Son were selected for the Livestock CRP activities at this stage.

**4. DISTRICT SELECTION 2 – June 2019**

Following a visit in Moc Chau and Mai Son districts in May 2019, the Livestock CRP delegation observed that livestock might not be as important in the two districts, and that we might need to revisit the choice of the two districts, eventually to limit to one if the heterogeneity in farm types that are of interest for the CRP interventions are all present in one district.

It was therefore decided to repeat the district selection process, with selection criteria identified as follow:

- Level of livestock importance to livelihoods (for incentive creation) [high=more favourable site]
- Level of partnership opportunities – existing and new, both implementing and research partners [high=more favourable site]
- Political good-will / buy-in from the government [high=more favourable site]
- Community willingness to participate [high=more favourable site]
- Level of poverty [high=more favourable site]
- % population that are ethnic minorities [high=more favourable site]
- Heterogeneity of systems / farm-types [high=more favourable site] …. Discussion on whether we pre-define and include as a criteria, or whether we identify districts and then from that identify the farm-types
- Year-round accessibility is a must have criteria

Data for each criteria was gathered from secondary data and key informants, scored and weighted. Three criteria were considered as essential: livestock importance to livelihoods, community willingness to participate/easiness to get permits, heterogeneity of farming systems (as per Figure 3). These criteria were assigned a weight of 1. Political good-will was assigned a weight of 0.5, and poverty rate and year-round accessibility a 0.25. The latter two, as well as ethnic minority presence and level of partnership opportunities were considered as better addressed at the level of commune selection. Details of the scoring can be found in annexes.

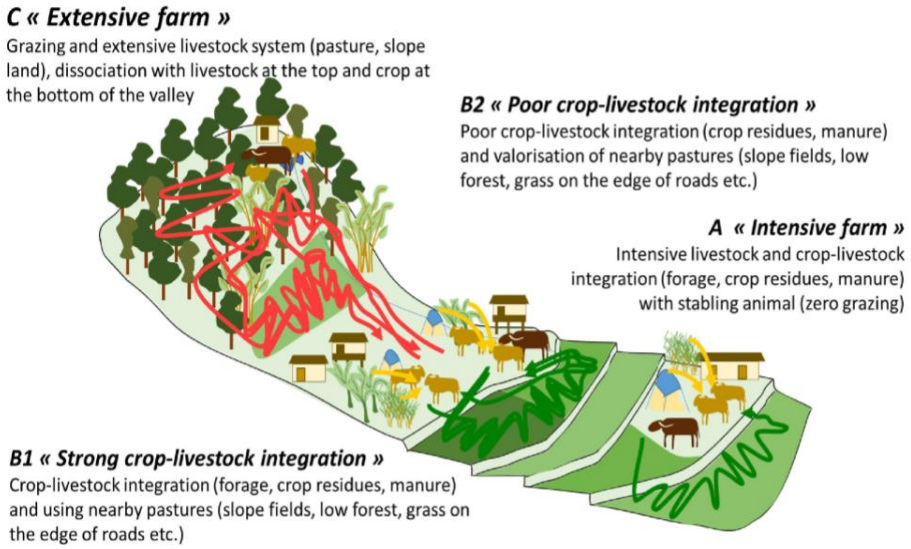


Figure 3. Typology of crop-livestock farms in Son La province (source: NIAS/CIRAD)

The resulting scores for each district and focusing on pig, buffalo and cattle (method 1) or all animal species (method 2) are presented in Table 3. Details are given in Annexes. Accordingly, the district chosen was Mai Son. This single district, as opposed to two or three districts, was selected based on the information that all farming systems could be found here.

Table 3. Scores for district selection

| District | Method 1 | Method 2 |
|---|---|---|
| Bac Yen | 1.4 | 2.0 |
| Mai Son | 2.8 | 2.7 |
| Moc Chau | 2.4 | 2.7 |
| Muong La | 1.5 | 1.5 |
| Phu Yen | 1.6 | 1.5 |
| Quynh Nhai | 1.7 | 2.0 |
| Song Ma | 1.6 | 1.8 |
| Sop Cop | 1.2 | 1.5 |
| Thuan Chau | 2.2 | 2.0 |
| Van Ho | 2.1 | 2.0 |
| Yen Chau | 2.6 | 2.4 |

## 5. COMMUNE SELECTION FOR INTERVENTIONS

The criteria for the commune selection for the project intervention were:

- poverty rate (keeping in mind that the target beneficiaries are farmers that have the basic assets to take up on basic innovative technologies)
- presence of ethnic minorities and different wealth groups
- level of partnership opportunities
- presence of all three farming systems from Figure 3 (in single commune or across 2 – 3 communes).

We had learnt by this stage of site selection that the typology of the crop-livestock farming system (Figure 3) predominantly focused on cattle feeding systems and that villages could not solely be classified into a single type (i.e. variability between households). Therefore, for commune selection we utilized only the aspect of altitude.

Table 4 was filled based on available data and key informants who provided options for commune combinations which would satisfy the criteria (see Selection option? Column -Alt 1, 2 or 3). Note that accessibility is not included as all commune centers can be accessed and most communes have challenges accessing the more remote villages, we could also not obtain data on landless percentages, percentage of cultivated land irrigated or grazing area. The partnership opportunities criteria was assessed qualitatively through discussions with the key informants. The communes of **Chieng Luong** and **Chieng Chuong** were chosen for meeting best the set of criteria agreed upon.

Table 4. Commune selection information

| Commune Name | Altitude (low, middle, high) | Road access (y/n) | No. villages | No. of house-holds | Minority % | Poor % | Culti-vated land area | Total area Ha | % cult-ivated | Buffalo total (head) | Cattle total (head) | Pigs total (head) | Goats/ Sheep total (head) | Poultry total ('000 head) | Selection option? | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chiềng Chăn | Mid / High | Y | | 1450 | Thái, Mông, Kinh | 11.1 | 2,301 | 6,385 | 36 | 1,250 | 1,350 | 2,100 | 1,450 | 30 | poss. Additional Alt1 option | Dev Priority: buffalo, cattle, pig, chicken & goat; More mid-altitude? |
| Chiềng Chung | High | Y | 15 | 1316 | Thái, Mông và Mường | 11.5 | 885 | 2,131 | 42 | 380 | 1,050 | 4,500 | 1,150 | 20 | Project - selected & Alt2 / 3 option | Natural pastures for cattle; 1000 - 1200m asl |
| Chiềng Ban | Low | Y | | 1718 | Thái, Kinh | 5.02 | 1,631 | | | 150 | 920 | 2,500 | 450 | 40 | | |
| Chiềng Mai | Mid / High | Y | 26 | 1249 | Thái, Kinh | 31.5 | 642 | 2,131 | 30 | 200 | 550 | 2,100 | 850 | 40 | Additional for Alt 2 or 3 | Limited land for cropping; more mid-altitude? |
| Chiềng đông | Low | Y | | 669 | Thái, Mông, Kinh | | 600 | | | 130 | 250 | 1,500 | 700 | 25 | | |
| Chiềng Kheo | Mid / High | Y | 9 | 638 | Thái, Mông, Kinh | 46.6 | 516 | 2,753 | 19 | 200 | 650 | 2,500 | 850 | 30 | Additional for Alt 2 or 3 | Limited land for cropping; more mid-altitude? |
| Chiềng Ve | Low | Y | | 635 | Thái, Mông. | | 704 | | | 380 | 430 | 800 | 350 | 15 | | |

| Commune Name | Altitude (low, middle, high) | Road access (y/n) | No. villages | No. of house-holds | Minority % | Poor % | Culti-vated land area | Total area Ha | % cult-ivated | Buffalo total (head) | Cattle total (head) | Pigs total (head) | Goats/ Sheep total (head) | Poultry total ('000 head) | Selection option? | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mường Chanh | High | Y | | 1000 | Thái, Tày, Mông, Xinh Mun, Kinh, Mường | | 777 | | | 300 | 700 | 2,000 | 450 | 20 | | |
| Chiềng Nơi | High | Y | | 1213 | Thái, Mông và Khơ Mú | ~ 70% | 2,414 | | | 300 | 1,400 | 1,350 | 1,600 | 15 | | |
| Phiêng Cằm | High | Y | | 1506 | Thái, Mông, Khơ Mú. | | 2,235 | | | 650 | 1,850 | 1,800 | 1,650 | 15 | | |
| Nà Ớt | High | Y | 17 | 807 | Khơ mú, Mông, Xinh Mun, Thái, Kinh | 63.7 | 1,719 | 10,660 | 16 | 130 | 350 | 1,800 | 1,350 | 15 | Alt2 option | |
| Phiêng Pằn | High | Y | | 1645 | Thái, Xinh Mun, Kinh. | 55 | 3,487 | 11,639 | 30 | 1,220 | 1,900 | 1,800 | 1,900 | 15 | Alt3 option | Dev priority: cattle, local pigs & chicken |
| Chiềng Mung | Low | Y | | 2792 | Thái, Kinh Mường, Tày, Mông. | | 1,433 | | | 280 | 850 | 3,500 | 1,650 | 85 | | |
| Mường Bon | Low | Y | | 1558 | Thái, Kinh, Mông | 5.6 | 1,866 | | | 540 | 1,400 | 3,500 | 1,400 | 85 | | |
| TT. Hát Lót | Low | Y | | 5004 | Kinh, Thái, Mường, Dao, Tày, Xinh Mun. | | 530 | | | 30 | 300 | 3,700 | 200 | 85 | | |
| Xã Hát Lót | Low | Y | | 2518 | Thái, Kinh, Khơ Mú, Mường, Mông | 3.6 | 3,980 | | | 700 | 1,750 | 12,500 | 4,600 | 95 | | |
| Cò Nòi | Low | Y | | 4760 | Kinh, Thái, Mông, Tày, Mường | 4.8 | 5,037 | | | 2,100 | 2,300 | 12,000 | 3,100 | 145 | | |
| Chiềng Lương | Low / Mid | Y | 24 | 2020 | Thái, Kinh, Mông, Khơ Mú | 23.6 | 3,691 | 11,283 | 33 | 1,950 | 1,500 | 7,500 | 2,750 | 80 | Project - selected & Alt2 / 3 option | Dev Priority: buffalo, pig & poultry; Crop-Livestock Mixed systems |
| Tà Hộc | High | Y | 10 | 881 | Thái, Mông, Kinh, Mường, Khơ Mú | 45.3 | 1,771 | 8,269 | 21 | 600 | 2,100 | 1,850 | 1,650 | 30 | Alt1 option | Dev Priority: cattle, and pig; bit difficult to move between villages in rainy season; local admin issues; 1000 – 1200m asl |
| Mường Bằng | Low / Mid | Y | 26 | 1673 | Thái là chủ yếu | 11.8 | 2,170 | 6,860 | 32 | 1,150 | 1,400 | 7,500 | 2,200 | 90 | Alt1 option | Dev Priority: buffalo, cattle, pig and poultry; Crop-Livestock Mixed systems |
| Chiềng Sung | Low | Y | | 1419 | Thái, Kinh, Mông | 7.34 | 2,616 | | | 700 | 950 | 8,500 | 2,000 | 75 | | |
| Nà Bó | Low | Y | | 1799 | Thái, Kinh, Mông, Khơ Mú | | 1,557 | | | 910 | 1,200 | 6,500 | 1,800 | 70 | | |

## ANNEXES

Details of district selection scoring process :

| | | | | | | | 0 = < 25% quartile | 1 = 25% - < 50% | 2 = 50% - < 75% | 3 = >= 75% | | | 0 = very low, 1 = low | 2 = medium, 3 = high |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Criteria 1: Livestock importance to livelihoods (No. of animals per capita; scores based on quartiles; combined per capita calculated by approx. TLU) | | | | | | | | | | | | Criteria 4: Community willingness to participate (How easy to get permission for international experts to visit/work) | |
| District | Pigs | Buffalo | Cattle | Poultry | Goats | Combined per capita (TLU wgt'd) | Pig Score | Buffalo Score | Cattle Score | Poultry Score | Goat Score | Combined Score (TLU) | Criteria 4: Category | Criteria 4: Score (0 - 3) |
| Bac Yen | 0.39 | 0.15 | 0.41 | 3.54 | 0.42 | 0.45 | 0 | 2 | 3 | 0 | 3 | 3 | Low | 1 |
| Mai Son | 0.62 | 0.08 | 0.15 | 7.42 | 0.19 | 0.36 | 3 | 0 | 0 | 3 | 2 | 0 | High | 3 |
| Moc Chau | 0.37 | 0.11 | 0.36 | 5.38 | 0.08 | 0.39 | 0 | 1 | 3 | 2 | 0 | 2 | High | 3 |
| Muong La | 0.52 | 0.14 | 0.20 | 4.23 | 0.24 | 0.37 | 2 | 2 | 0 | 1 | 2 | 1 | Medium | 2 |
| Phu Yen | 0.45 | 0.13 | 0.19 | 5.39 | 0.15 | 0.35 | 1 | 1 | 0 | 2 | 1 | 0 | Medium | 2 |
| Quynh Nhai | 0.55 | 0.20 | 0.33 | 4.16 | 0.33 | 0.47 | 2 | 3 | 2 | 0 | 3 | 3 | Low | 1 |
| Song Ma | 0.64 | 0.10 | 0.27 | 7.01 | 0.26 | 0.44 | 3 | 0 | 2 | 3 | 3 | 2 | Very low | 0 |
| Sop Cop | 0.44 | 0.28 | 0.20 | 4.64 | 0.06 | 0.40 | 0 | 3 | 1 | 2 | 0 | 2 | Very low | 0 |
| Thuan Chau | 0.53 | 0.07 | 0.22 | 3.68 | 0.24 | 0.34 | 2 | 0 | 1 | 0 | 2 | 0 | low | 1 |
| Van Ho | 0.59 | 0.18 | 0.42 | 6.12 | 0.13 | 0.52 | 3 | 3 | 3 | 3 | 0 | 3 | Very low | 0 |
| Yen Chau | 0.44 | 0.17 | 0.23 | 4.37 | 0.18 | 0.38 | 1 | 2 | 2 | 1 | 1 | 1 | High | 3 |

| | 0 = 1 only, 1 = 2 types | 2 = 3 types, 3 = 4 types (few = 0.5) | Priority species = buffalo, beef cattle, dairy cattle, pigs (=4) | | | Will be (re)considered for commune selection later | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Criteria 7: Heterogeneity of systems / farm type (No. of available farming systems: A, B1, B2, C --> refer to the picture) | | Criteria 3: Political good-will / buy-in from the government (No. of prioritized species indicated in local policy) | | | Criteria 5: Poverty rate 2018 | | Criteria 6: Ethnic minority (Y/N) | Criteria 8: Year-round accessibility (Y/N) | | Criteria 2: Level of partnership opportunities (NIAS/VNUA/A4NH) | |
| District | Criteria 7: Farm Types | Criteria 7: Score (0 - 3) | Criteria 3: No. species (all) | Criteria 3: Score (priority species only; max = 4) | Criteria 3: Species | Criteria 5: % | Criteria 5 - Score | Criteria 6 | Criteria 8: (Y/N) | Criteria 8: Score | Criteria 2: (Y/N) | Criteria 2: Score |
| Bac Yen | C, B2 | 1 | 2 | 1 | Beef cattle | 27.7 | 1 | Y | N | 0 | N | 0 |
| Mai Son | A, B1, B2, C | 3 | 4 | 2 | Buffalo & pig | 18.5 | 0 | Y | Y | 1 | Y | 1 |
| Moc Chau | B1, A | 1 | 4 | 3 | Buffalo, Dairy & Beef cattle | 7.0 | 0 | Y | Y | 1 | Y | 1 |
| Muong La | C | 0 | 3 | 2 | Buffalo & pig | 35.6 | 2 | Y | N | 0 | Y | 1 |
| Phu Yen | C, B2 | 1 | 4 | 2 | Beef cattle & pig | 20.0 | 1 | Y | N | 0 | Y | 1 |
| Quynh Nhai | C, B2 | 1 | 3 | 2 | Buffalo & beef cattle | 18.0 | 0 | Y | N | 0 | Y | 1 |
| Song Ma | C, B2, few B1 | 1.5 | 5 | 3 | Buffalo, beef cattle & pig | 35.6 | 2 | Y | N | 0 | Y | 1 |
| Sop Cop | C, B2, | 1 | 2 | 1 | Buffalo | 36.2 | 3 | Y | N | 0 | N | 0 |
| Thuan Chau | C, B2, few B1, few A | 2 | 5 | 3 | Buffalo, beef cattle & pig | 40.0 | 3 | Y | Y | 1 | Y | 1 |
| Van Ho | B1, A | 1 | 2 | 2 | Dairy & beef cattle | 40.3 | 3 | Y | Y | 1 | N | 0 |
| Yen Chau | C, B2, few A | 1.5 | 1 | 1 | Buffalo | 35.6 | 2 | Y | Y | 1 | Y | 1 |

Additional information on Son La districts

| | |
|---|---|
| Quynh Nhai | *Remote area, socio-economic-ecological conditions are not diversified<br>* 8 communes, of which 1 along National Road No. 6, 8 communes along Da River, 2 communes near border. Note that conditions to access resources (education, investment, information, etc.) of communes are based on their locations (Best for those near Road No. 6 -->Da River--> Worst for those near border)<br>*Livestock: Buffalos, beef cattle, pigs<br>*Natural forest, natural grazing areas<br>--> Difficult for livestock development |
| Thuan Chau | *Socio-economic-ecological conditions are diversified<br>* 29 communes, of which 16 along National Road No. 6, 4 communes along Da River, 9 communes near border.<br>*Livestock: Buffalo, beef cattle, pig, poultry, goat<br>*Mainly rock mountain, natural forest, natural grazing areas<br>*Paddy rice area has low productivity --> can think of switching paddy area to growing forages<br>--> Have potential for livestock development but need more interventions to develop feed sources because current animal raising is mainly based on natural grass sources |
| Muong La | *Remote area, socio-economic-ecological conditions are not diversified<br>*16 communes, of which 10 communes along Da River, 6 communes near border<br>* Livestock: buffalo, beef cattle, pig<br>--> difficult for livestock development |
| Bac Yen | *Remote area, socio-economic-ecological conditions are not diversified<br>*16 communes, of which no commune near Road No. 6, 8 communes along Da River, 8 communes near border<br>* Natural grazing areas<br>* Livestock: mainly cattle<br>--> Not potential for cattle development at larger scale |
| Phu Yen | *Remote area, socio-economic-ecological conditions are not diversified<br>*31 communes, of which 18 communes along Da River, 9 communes near border<br>*Livestock: Buffalo, cattle, poultry<br>*Natural forest, natural grazing areas<br>--> Have potential for beef cattle development, however need more interventions to increase feed sources because animal raising is currently mainly depends on natural grass sources. |
| Moc Chau | *Main production area of dairy cattle, fruit trees and vegetables<br>*15 communes, of which 8 communes near Road No. 6, 4 communes along Da River, 3 communes near border<br>*Livestock: buffalo, dairy cattle, pig, poultry, beef cattle (not many)<br>--> Planted forage areas are prioritized for dairy cattle. Cultivated areas are prioritized for fruit trees and vegetables. Have little potential for beef cattle development |

| | |
|---|---|
| Yen Chau | *Socio-economic-ecological conditions are not diversified<br>*15 communes, of which 10 communes near Road No. 6 and 5 communes near border<br>*Livestock: Buffalo, beef cattle, pig<br>--> Little potential for livestock development |
| Mai Son | *Socio-economic-ecological conditions are diversified<br>*16 communes, of which 15 communes near Road No. 6, 3 communes near Da River, and 4 communes near border<br>* Livestock: Buffalo, beef cattle, pig, poultry, goat<br>* Feed sources: planted forages, natural grazing areas, maize, cassava, sugar canes, natural forest |
| Song Ma | *Remote area, socio-economic-ecological conditions are not diversified<br>*19 communes, all are near border<br>*Livestock: Buffalo, beef cattle, poultry, pig, goat<br>*Natural forest, natural grazing areas<br>--> Have potential for livestock development, but this is a district near border so it is quite difficult to access (in terms of road condition and political issues) |
| Sop Cop | *Remote area, socio-economic-ecological conditions are not diversified<br>*8 communes, all are near border<br>*Livestock: mainly buffalo<br>*Natural forest, natural grazing areas<br>--> No potential for livestock development. Also, this is a district near border so it is quite difficult to access (in terms of road condition and political issues) |
| Van Ho | *Socio-economic-ecological conditions are relatively diversified<br>*14 communes, of which 5 communes near Road No. 6, 6 communes along Da River, 3 communes near border<br>*Livestock: Buffalo, dairy cattle, beef cattle, pig<br>*Planted forage (mainly for dairy cattle), no natural grazing<br>* Hot pot of illegal heroin trading |