Assessment of the main Livestock-Environmental issues in Son La, Vietnam

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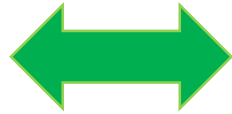
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THE CONTEXT - importance of livestock for people and planet

For PEOPLE ⟷ **And the PLANET**

- Employment, income

- Economy

- Food and nutrition

- Cultural value

- Resilience and risk management

- Biggest land user

- Natural resources:

  - Manure, carbon in the soil, energy…

  - GHGe, water use/pollution, degradation,…

OECD narratives mostly negative
Not much evidence from Low-Middle Income Countries

Sustainability is a big issue and needs to be managed

LIVESTOCK AND ENVIRONMENT ASSESSMENTS

1. Farmers' perceptions

2. Climate change risks / forages' adaptability to climatic changes

3. Land cover change – with a focus on deforestation

1. Perceptions of environmental issues

METHODS

- Extra questions in the FEAST FGDs
- Informal discussions with the technical staff

MOST CITED ENVIRONMENTAL CONCERNS

- Erosion
- Soil Fertility
  - need for high fertiliser dose, esp. on rice and maize
- Inadequate manure management
  - Related to soil fertility and water pollution
  - Manure only used for fruit trees
- Deforestation
- Air and water pollution (esp. Related to pig and coffee production)
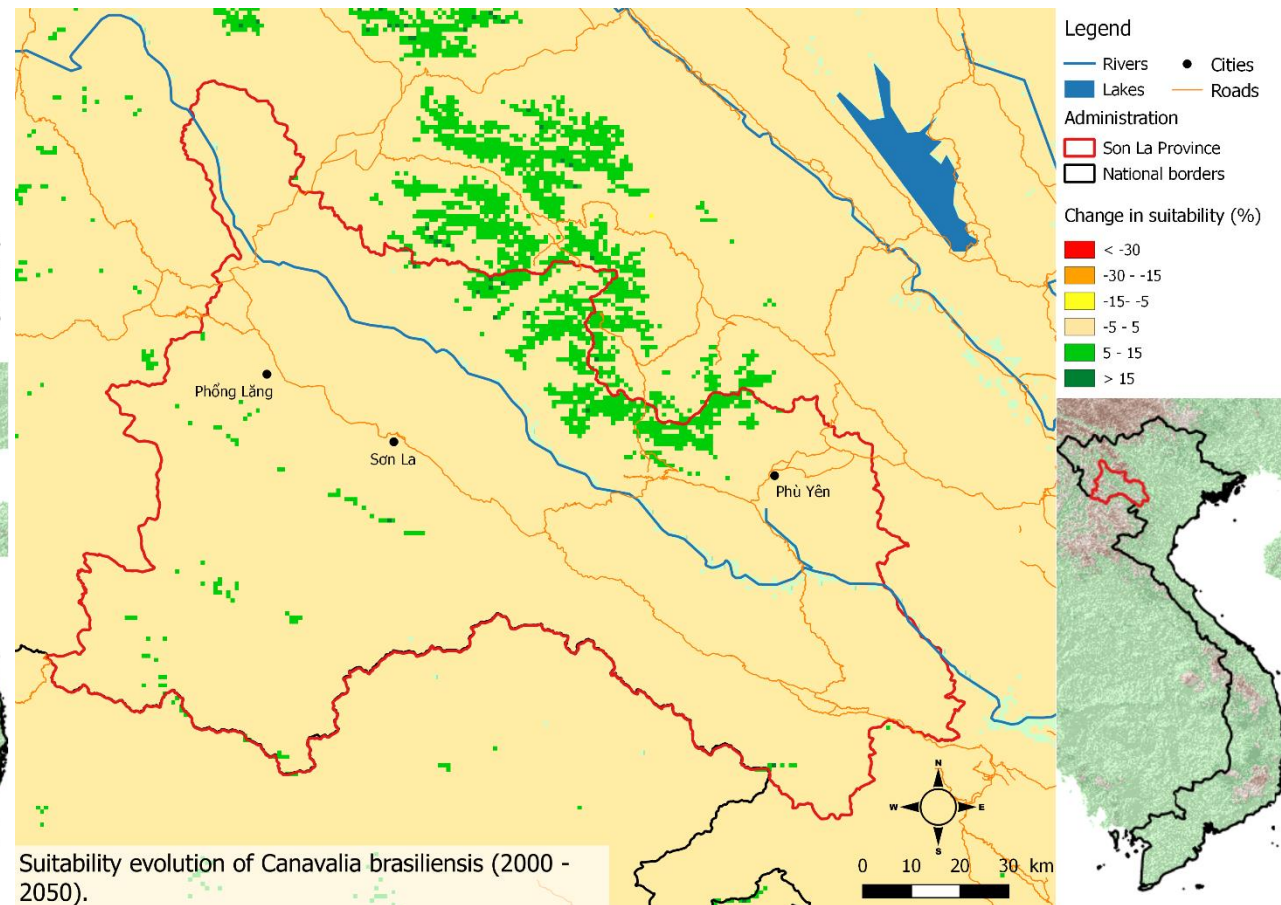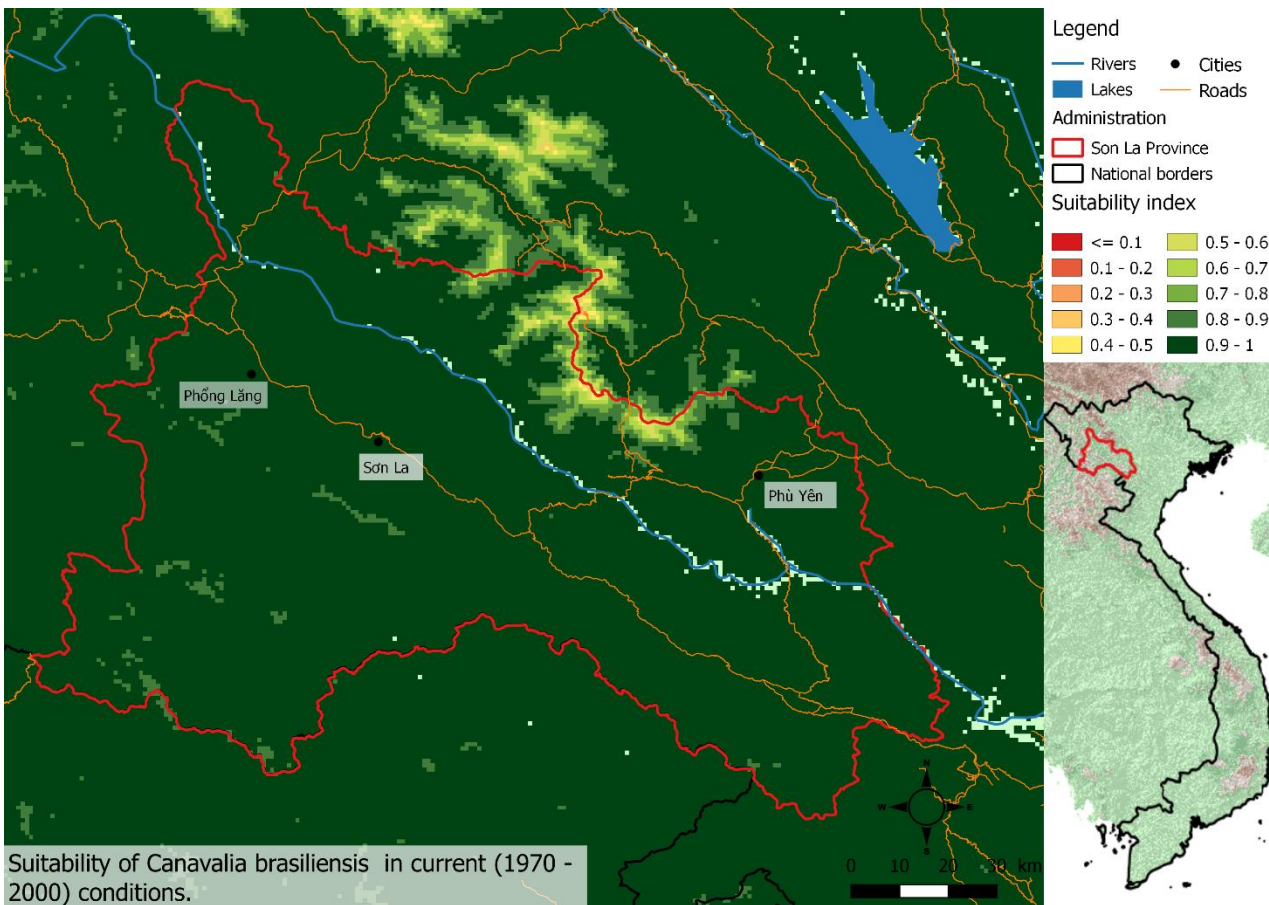 - Sources: pesticides and manure/fertiliser

2. Forages' adaptability to climatic changes

- Suitability mapping with the Targeting Tool ¬

	Tmin	Tmax	Pmin (mm/y)	Pmax (mm/y)	Ph min	pH max	Elevation min	Elevation max
Andropogon gayanus	16	32	400	3000	4	7,5	0	2000
Arachis Pintoi	22	28	900	3000	4,5	7,2	0	1100
Brachiaria brizantha	25	35	1000	3500	4	8	0	2000
Brachiaria decumbens	19	35	1000	3000	5	6	0	1750
Brachiaria humidicola	20	45	1000	4000	3,5	7,5	0	1000
Brachiaria Mulato II	15	24,6	700	2615	4,6	8	0	1800
Canavalia brasiliensis	18	34	500	2000	4,3	8	0	1000
Centrosema pubescens	13	35	750	4100	4	7	0	1600
Cratylia Argentea	16	36	1000	4000	3,7	7	180	1200
Desmodium cinereum	18	32	1000	3000	5,5	7	0	1000
Gliricidia sepium	15	30	600	3500	4,5	6,2	0	1600
Lablab purpureus	3	38	600	3000	4,5	8	0	2500
Leucaena leucocephala	20	30	650	3000	5,5	8,5	0	2100
Musaceae	13	38	2000	3500	4,5	7,5	0	2400
Panicum máximum	12,2	27,8	1000	1700	3,5	8,4	0	2000
Paspalum atratum	20	27	1100	3000	4,5	7,5	0	600
Pennisetum purpureum	15	45	200	4000	4,5	8,2	0	2000
Stylosanthes guanensis	15	27	0	2000	4	8,3	0	2000
Vigna unguiculata	15	40	300	4000	4	8,8	0	2000
Zea mays	10	47	400	1800	4,5	8,5	0	4000

- current (2000) and projected climate data (2050 – RCP8.5)

Example

Suitability of Canavalia brasiliensis in current (1970 - 2000) conditions.

Suitability evolution of Canavalia brasiliensis (2000 - 2050).

Land cover and land cover change in Son La

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CIAT
International Center for Tropical Agriculture
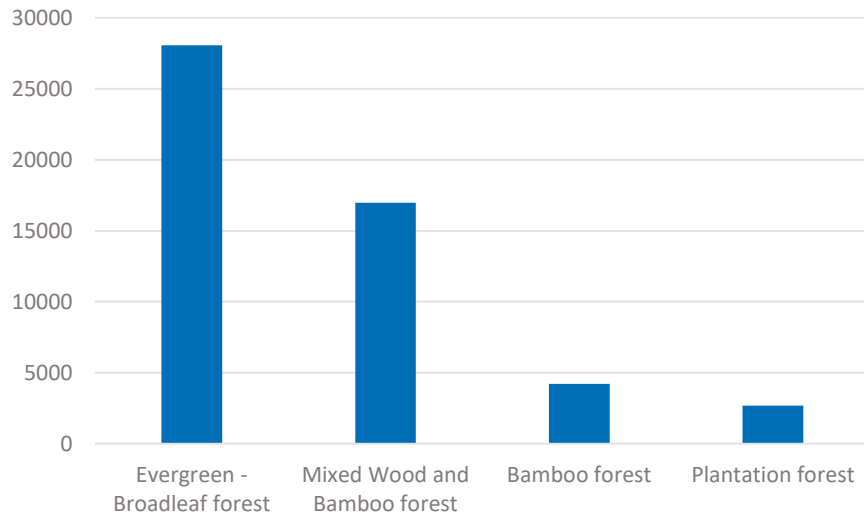Since 1967 *Science to cultivate change*

CGIAR

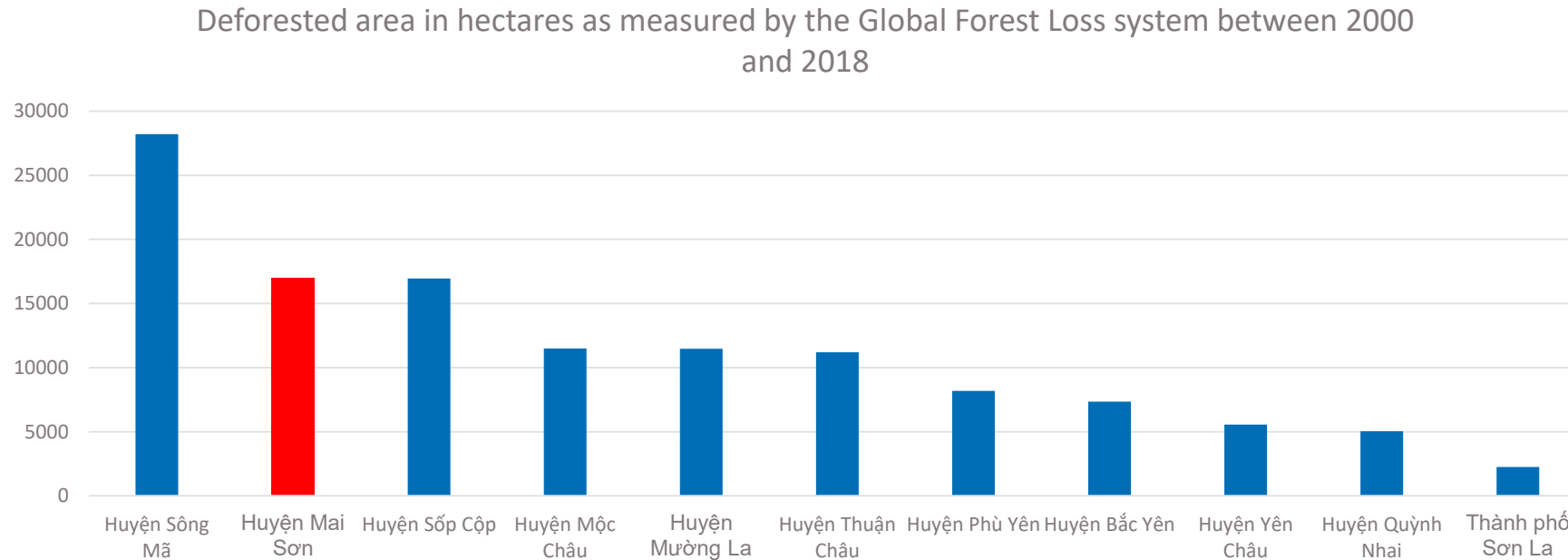# 3. Land cover change

Forest areas in Mai Son

Mai Son forest cover is of about 52,000 ha:
- broadleaf forests (54%)
- mixed wood and bamboo forests (32%)
- bamboo forests (8%)
- plantation forests (6%).

Forest types in hectars in Mai Son district

FOREST COVER AND PASTURE IN MAI SON, SON LA, VIET NAM
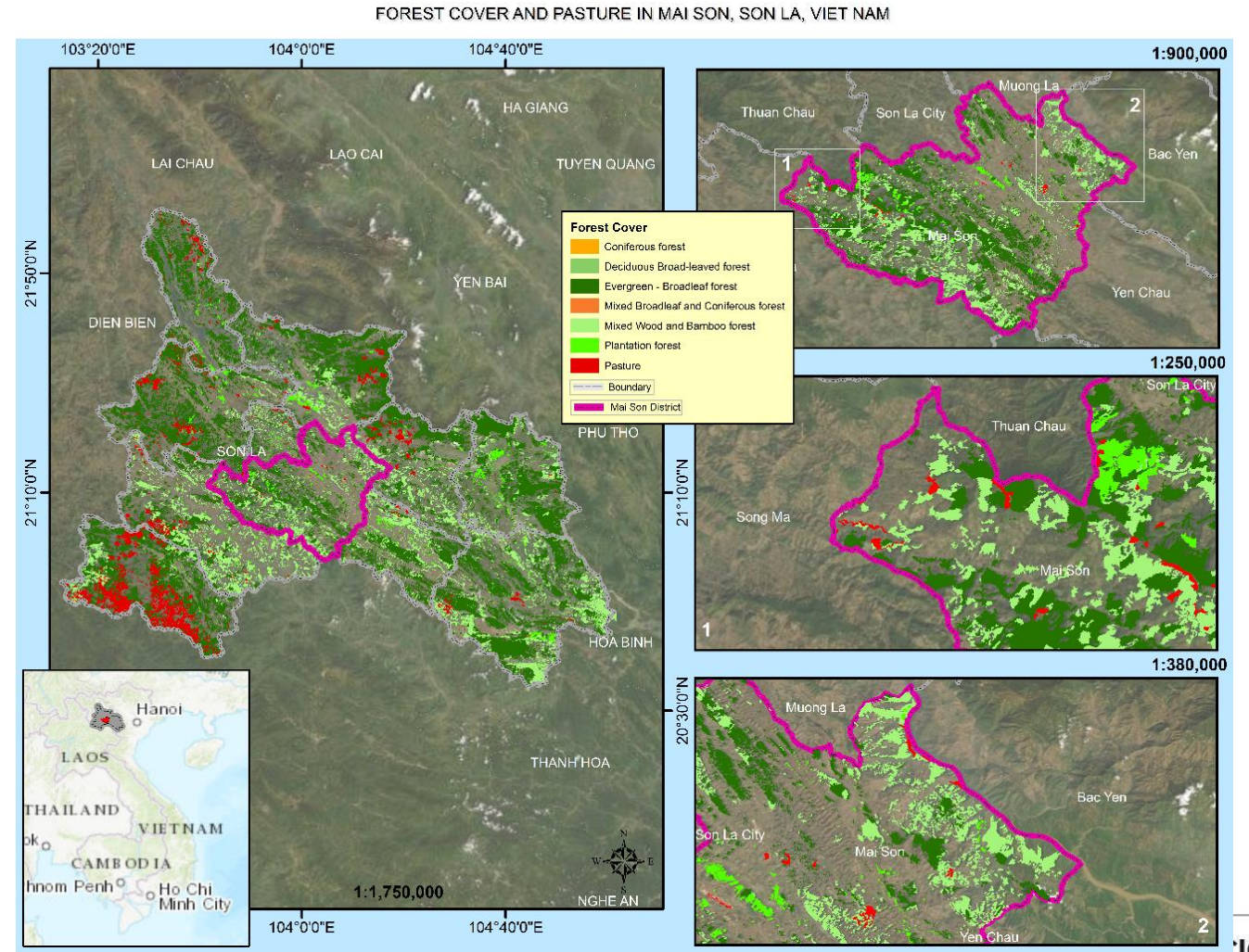
Deforestation rates in Son La province and Mai Son district

Deforested area in hectares as measured by the Global Forest Loss system between 2000 and 2018


Mai Son district has lost about 17,000 ha of forest between the year 2000 and 2018 which represent 14% of all the deforested area observed in the province of Son La. This is the second largest deforestation rate in the Son La province.

Source: Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53.

Deforestation patterns
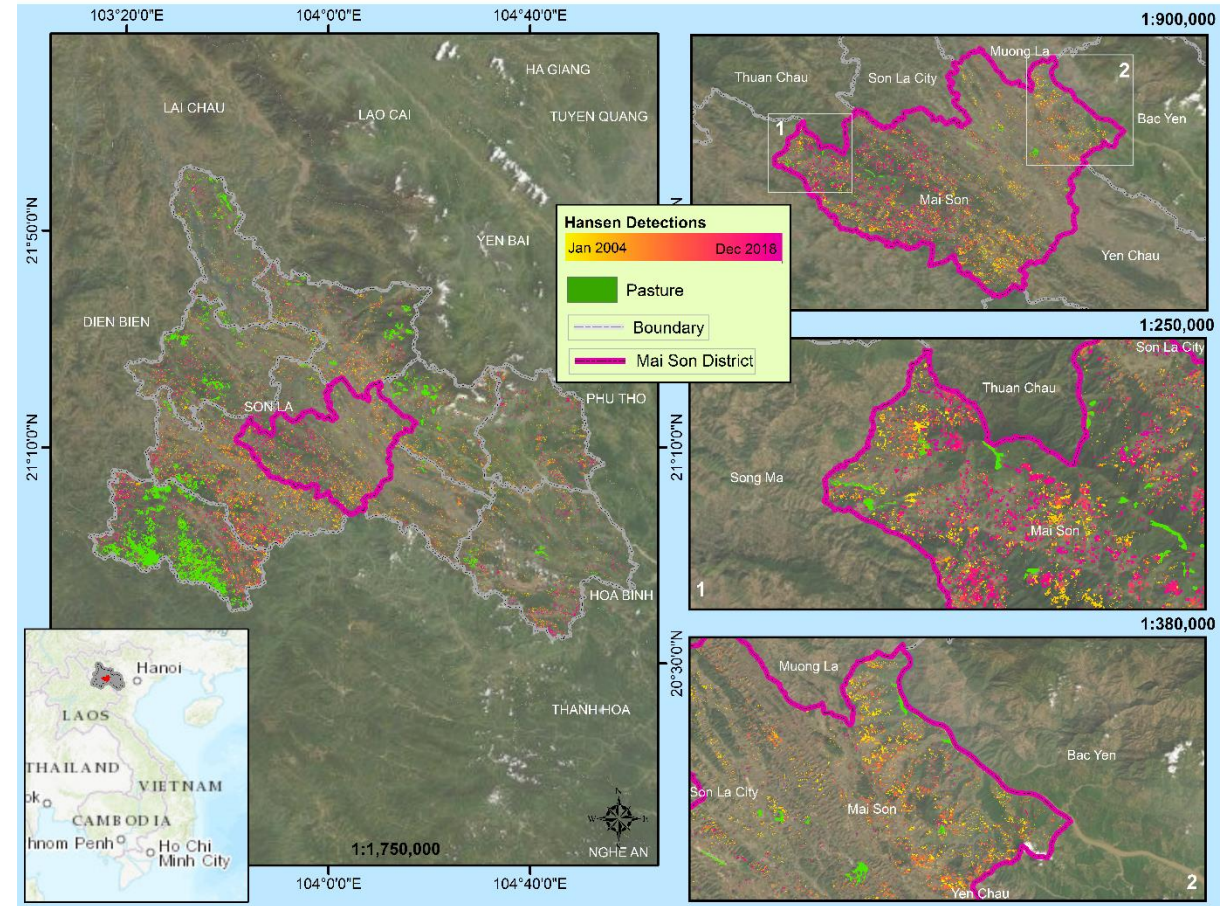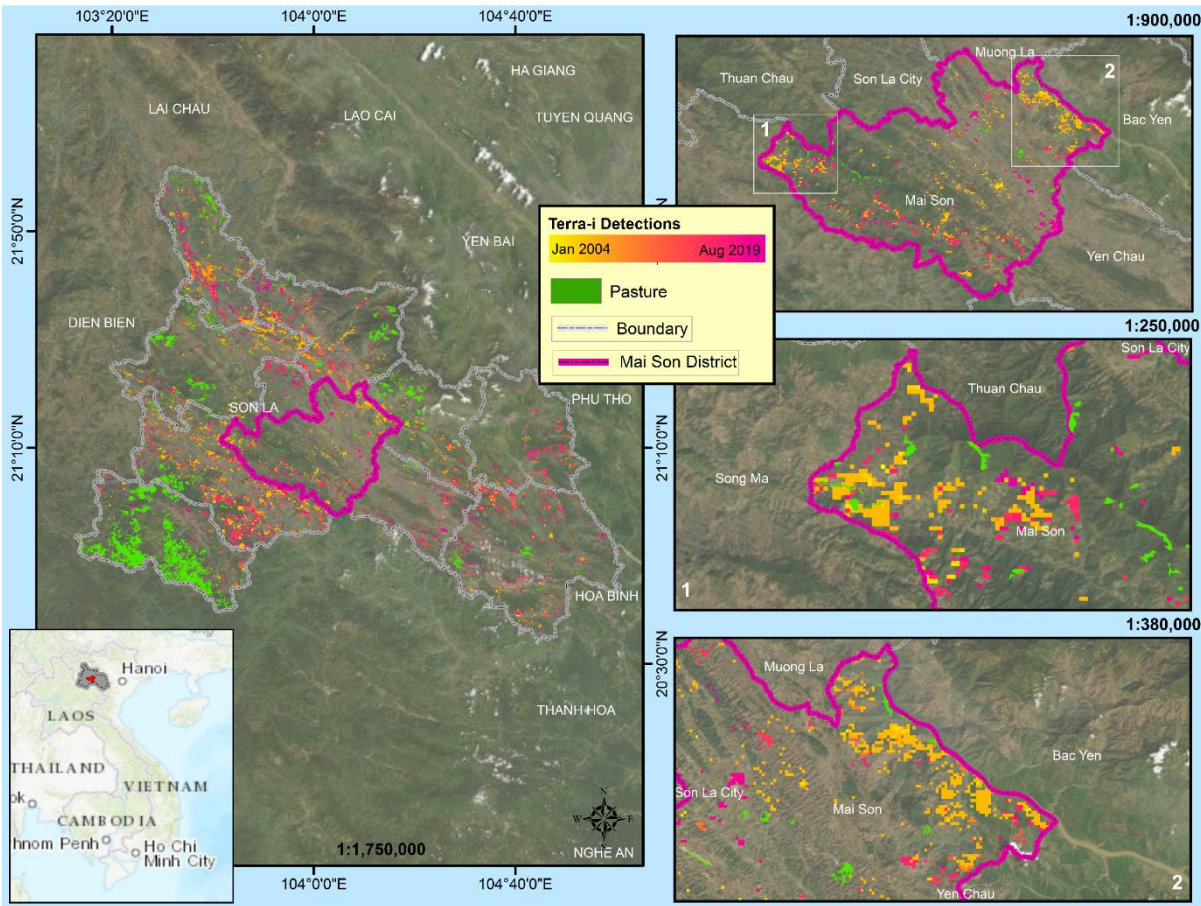
Both Terra-i and global forest change deforestation monitoring systems identifies the northern border of the district as an historical hotspot of deforestation (around the year 2010) and the south-west border of the district as being an on-going deforestation hotspot with deforestation events detected still being detected in 2019.

Deforestation trends in Mai Sơn
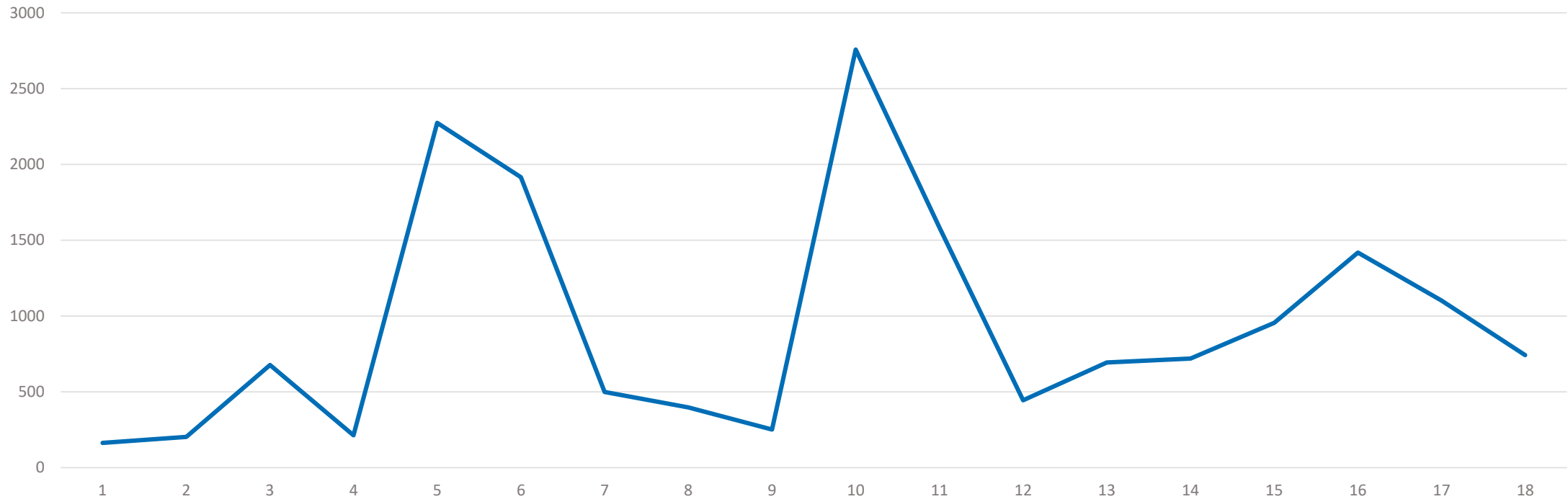
The global forest change systems identifies that the year with the highest deforestation rate was 2010, with an historical high of about 2800 ha of forest lost. Since 2010, the deforestation rates have sharply decreased, reaching 450 ha in 2012 and finally slightly increased up to 750 ha of forest lost in 2018.

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Drivers

- No robust analysis carried out!
- Other observations in the area that might be related:
  - Expansion of rubber plantations (70 Ha in 2007 to 19,118 ha in 2012)
  - Slash and burn

MARD. 2013. Report 1374/BC-BNN-TT dated 24 April, 2013 on the current situation of 12. rubber plantation development in provinces of the North Western Region.

Pasture area in Mai Son

Pasture area in hectare per district in Son La
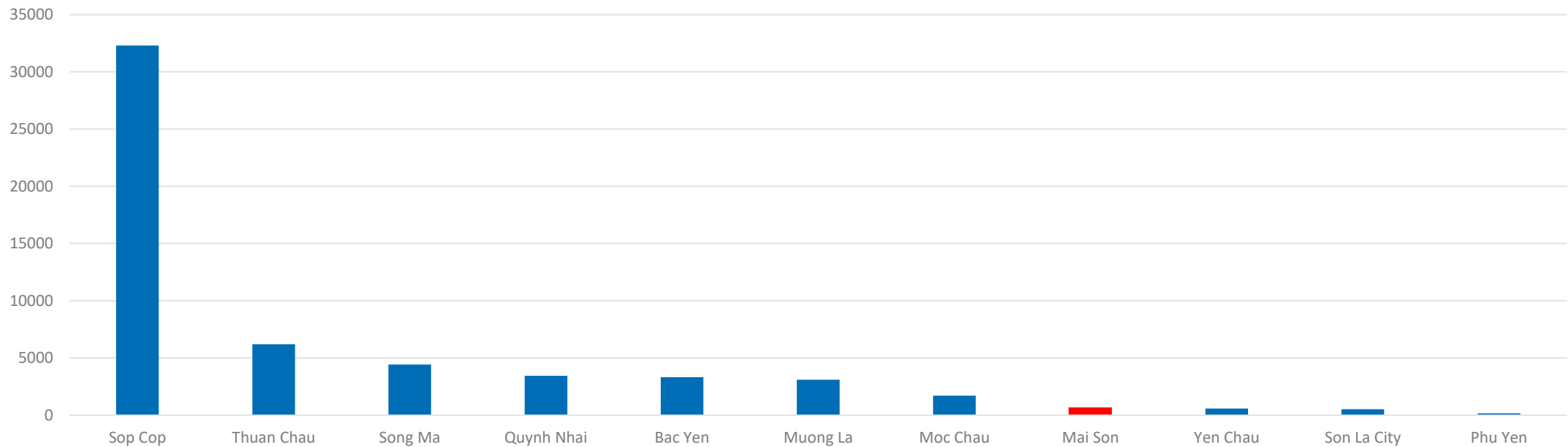
Mai Son district counts with 680 Ha of pasture land. This is the 4th smallest area amongst the districts in Son La.

IDEAS FOR AN ENVIRONMENTAL COMPONENT

- Multi-functional forages, e.g.
  - Legumes
  - Cover crops
  - Shade-tolerant forages under fruit trees

  →Increased productivity, soil fertility,
  →Reduced land pressure, soil erosion

- Optimised nutrient cycling!

- CLEANED:
  - True ex-ante (based on "rough" FEAST data)
  - Ex-post environmental impact quantification (as part of MELIA)

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