

FOOD PRODUCTION AND DEFORESTATION IN THE NORTHERN UPLANDS : A CARTOGRAPHIC APPROACH

Vo Thanh Son,

Centre for Natural Resources and Environmental Studies,
Vietnam National University, 19 Le Thanh Tong, Hanoi, Vietnam.
Email: vtson@fpt.vn

ABSTRACT

There are many researches more or less concerning the deforestation but in fact is lacking the study comprehensive enough to understand the interactions between the its causes in particular socio-economic and historical condition of the country, especially in the mountainous areas. This study attempts, therefore, to use the cartographic approach to focus on the interaction between the deforestation and the needs of subsistence of local people, namely the food production, in the Na Hang district, Tuyen Quang province of the region of Northern Uplands of Vietnam. The spatial scale of analysis is the national, regional and communal. The temporal scale is about 100 years for Vietnam, about 40 years for the district and the commune. The multiscaling analysis in this research is useful to understand deeply the effect of socio-economic forces on the complex process as the deforestation. This approach is proved to be effective to clarify the spatial distribution of the forest, agricultural land and food production in space and time. Furthermore, all statistical data such as demographic data, ethnic groups, agricultural lands, sown areas of food cultures, other socio-economic data and forest statistics have been represented on the basis of administrative limits of commune to order to find out the relations between these phenomena. By this way, the whole picture of study area has been reconstructed in its historical evolution in the integration with the principle policies related to the land use and development issues.

1. INTRODUCTION AND METHODOLOGY

The region of Northern Uplands, like many other regions in Vietnam, has, for long time, suffered from high rate of deforestation. There are several researches concerning the causes of deforestation (World Bank, 1995; De Koninck, 1997; MoF, 1991; Pham Binh Quyen, 1997) but in fact it lacks the comprehensive study that demonstrates the complex interactions of the socio-economic causes as the understanding of process of deforestation, driven by the population growth, migration and poverty, is normally related to the spatial analysis. Furthermore, in fact, data are usually not systematic and consistent, sometimes contradictory, and different in reliability and comparability that make the study really difficult to compare.

The cartographical approach, beside other approaches, has been extensively applied, in this study in order to reconstruct the whole picture in the mountainous areas concerning mostly the deforestation and the need of subsistence, namely food production in particular socio-economic condition. The secondary data as well as primary data obtained from different methodologies, such as documentary and existing data analysis including maps, air photos, and Rural Rapid Appraisal, have been integrated into maps spatially based on the commune's limits.

The overview of all issues concerning forest evolution, agricultural production, especially food production, in the historical and socio-economic condition at national scale for about 100 years has given the general picture of the issues. For the case of Na Hang district, precisely, a series of maps concerning demographic distribution of the population and ethnic groups, agricultural land, sown areas, food production as well as forest evolution are represented at the administrative limits of commune and for a long period of time (for about last 40 years) in order to understand the complex interaction between these phenomena. The existing data, e.g. statistical data and information, by this way, can be represented spatially in basis of commune's limit that reconstruct the whole socio-economic situation of the study area and also demonstrate the evolution of the phenomena concerned. The cartographic approach, beside others, therefore, is proved to be efficient to interpret the interactions and understand deeply this phenomenon.

2. SOCIO-ECONOMIC CONDITION

Demographically, many ethnical groups have lived in the region of Northern Uplands from long time to exploit and cultivate this land and have, in fact, influenced and changed the pattern of land use/land cover. For the case study of Na Hang district, Tuyen Quang province, four ethnic groups - Tay, Dao, H'Mong and Kinh – make up about 99% of population. The population is increasing rapidly, with the density from 15 persons/km² in 1960 to 43 persons/km² in 1999, but this growth is not equal to different ethnic groups. For the past 40 years, the Kinh and H'mong in the district increased significantly in number. The Kinh came here mostly by varied programs of migration to build new economic zones and set up new forest enterprise from 60s and 70s decades (Vo Thanh Son, 2001). H'mong, on the other hand, slowly increased in number and spreads to other communes to the east and south-east, as this phenomena happened in the whole region of Northern Uplands, in order to find more appropriate living condition to practice shifting cultivation (Nguyen Anh Ngoc, 1989; Khong Dien, 1995) (Figure 1). Tay people, as the major habitants of the area, have been distributed relatively predominant in all communes of the district.

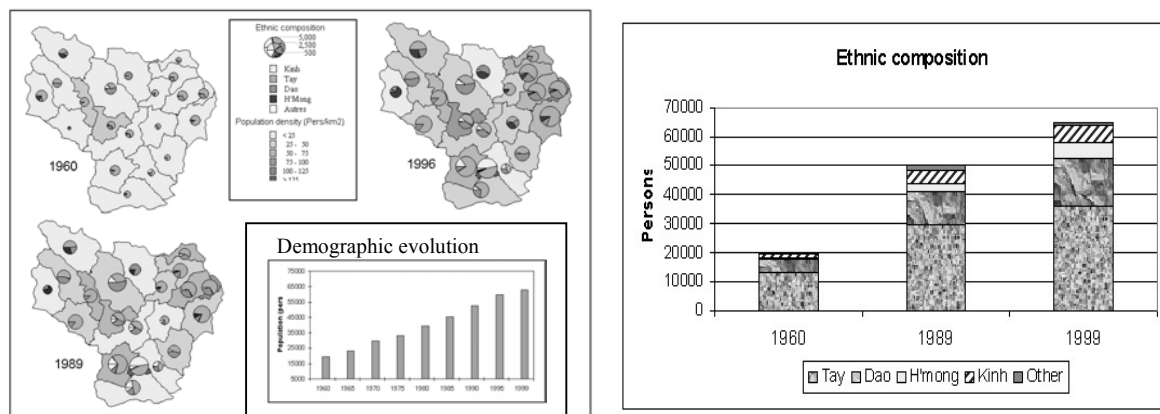


Figure 1. Na Hang. Demography and ethnic groups.

The economy is largely the agriculture and therefore the local people are heavily depended upon the agricultural land. Due to topographic condition, the land is limited, and it is mostly distributed along the rivers. The Tay and Kinh usually practice paddies at the valleys. Furthermore, the Tay has stayed here for a long time, and they have already occupied

the most fertile lands. In case they do not have enough lands at the valleys, they also practice slash-and-burn cultivation to satisfy their needs in food. The Dao and M'ong, traditionally lived in slopes of the mountains and ranging from 500 to 800 meters of altitude (Khong Dien, 1996), usually practice shifting cultivation. For the appropriate condition where the hydrological regime and topographical condition permit, H'mong has also practiced paddies on terraces in the mountains. They are concentrated mostly in several northern communes of the district where the agricultural land, especially paddies land is limited (Figure 2). As usually, they have to clear the forestland for cultivation land. The situation of shifting cultivation is common there, in the north, both in 1991 and 1993 although at latter time, the sedentarisation program has gained some success to reduce the slash-and-burn activities. In reality, the shifting cultivation was rather commune in the northern part of district for 1982 and 1992 (Figure 2). Furthermore, as population grows, demands for agricultural land increase, and pressure on the forest to clear the land for food production becomes more and more serious.

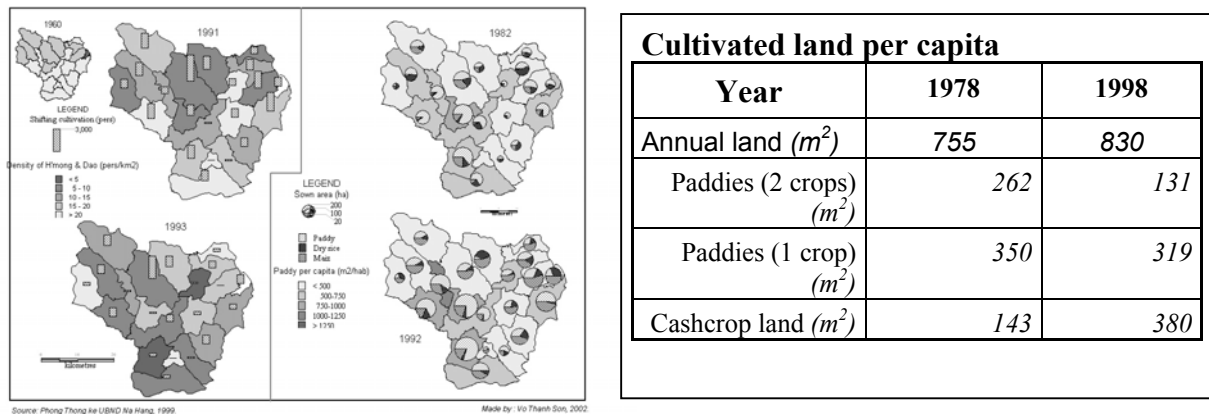


Figure 2. Na Hang. Sedentarisation program, cultivated land and sown areas of food cultures.

The major rural development policies have also influenced on the course of this land use. One of the most important policies and programs, applied for long period, since early 60s, in rural area in general and in this district in particular, are the campaign of collectivisation. This campaign has attracted most rural households, about 96% households in district in 1968, to participate to its form of economic development – agricultural cooperatives. The errors, mistakes and mismanagement of this organisation have, therefore, heavily influenced the livelihood of the local population (Vo Thanh Son, 2001). The agricultural cooperatives members were not therefore interested in collective economy and they have a tendency to do shifting cultivation illegally in sloping land although this practice is prohibited by the local authorities. These activities have also deepened the pressure on the forestland and resources in the district.

3. FOOD PRODUCTION AND FOREST EVOLUTION: INTERACTIONS

The food production for long period of time is highly unstable, and remains always at low level, especially at period of agricultural collectivisation (Figure 3). As the production per capita was remaining low and the poverty situation between local people was high. This situation happened mostly due to inefficiency of several rural policies (agricultural

collectivisation, sedentarisation program, for example), characteristic not only for the Na Hang district (Vo Thanh Son, 2001), but also for many other regions in Vietnam (Nguyen Sinh Cuc, 1995:20-22; Pham Nhu Cuong, 1991). Furthermore, the cooperative members were not usually interested in collective production and they had to clear the land to practice the slash-and-burn cultivation in sloping land in order to produce more food for family consumption while this practice was generally prohibited by the local authorities for the sake of forest protection. This situation has also pushed the local people more dependent on the forest resources for cultivated land, fuelwood and other forest products for domestic consumption.

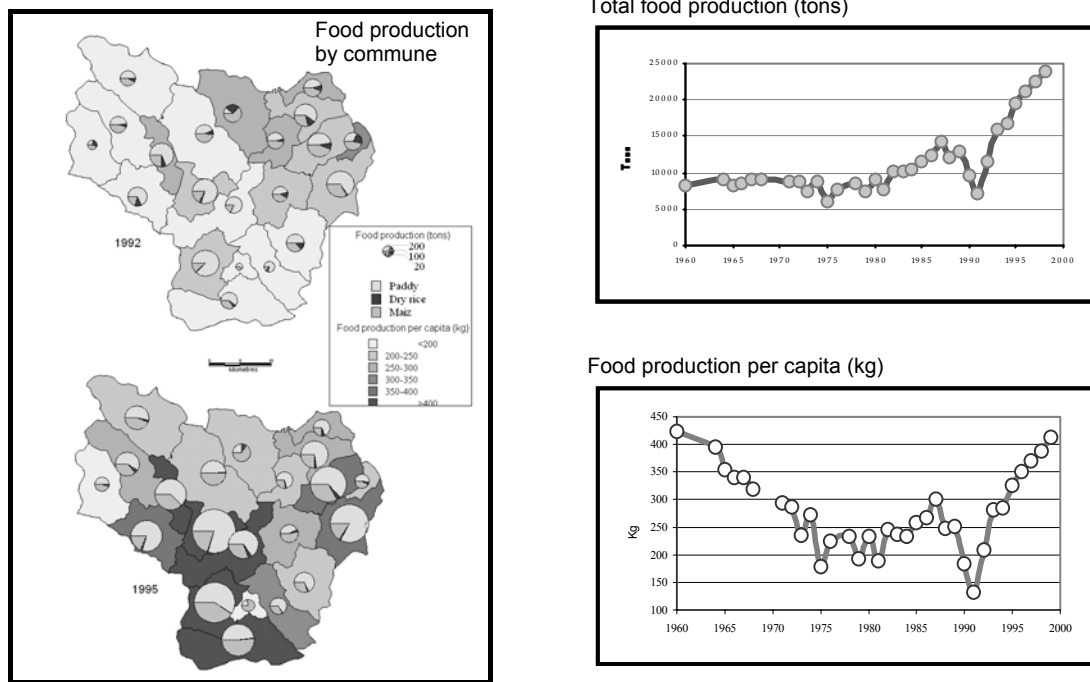


Figure 3. Na Hang. Food production and food production per capita.

For the last 50 years, the forest cover has been decreasing rapidly although there is not systematic data showing this evolution in details, but available statistics could also present clearly this tendency (Figure 4). There are many causes of deforestation in Na Hang district but one of the principal causes is the forest logging realised by the state forest enterprises in order to meet the great national demand on wood and other forest products during the war time before 1975 and for the period of reconstruction of the country after the war (Vo Thanh Son, 2001). The rapid drop in wood production in mid-1980s was not due to limitation of logging as the policy leading to stop logging was adopted only from 1993, but because the forest has been heavily degraded (Hoang Vi Pao, 1990) (Figure 4).

The great demand of cultivated land and other forest products of increasing local population has become a large pressure on forest cover, especially for those degraded forest after heavily selective logging, mostly composing of forest regeneration and degraded mixed forest. As a result, large areas became barelands without forest cover and land was subject to soil erosion.

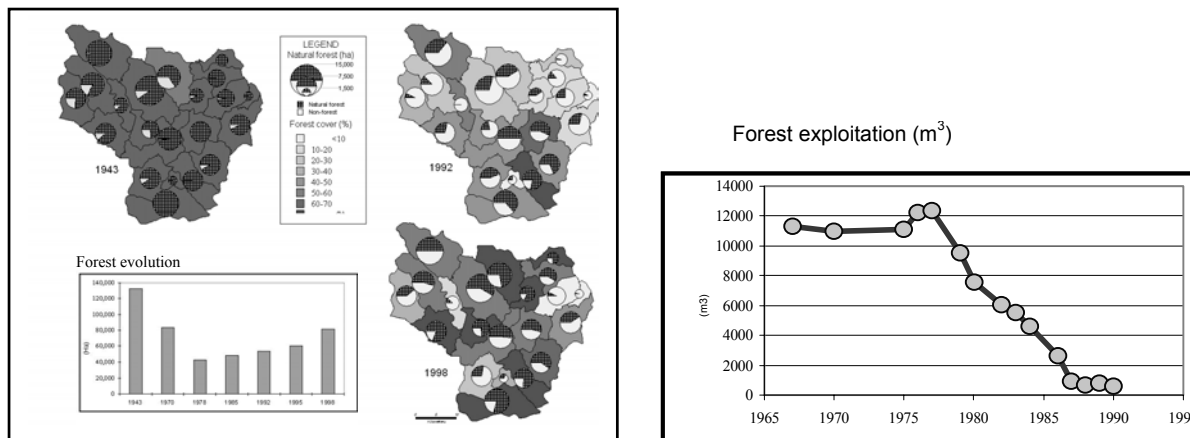


Figure 4. Na Hang. Forest evolution and forest exploitation.

For the last 8 years, from 1993, thanks to increase considerably the food production and food production per capita (Figure 3) as the local people adopted new crop varieties and improved irrigation, the Na Hang district has in general satisfied the local demand on food. The satisfaction of food for local people is the basic for the local authorities to implement the strict policies on the forest protection and this policy has therefore contributed to improve the forest cover in Na Hang.

4. CONCLUSION

Understanding process of deforestation as well as interactions between utilisation of forest resources and food production is not easy, especially in the circumstances of lack of systematic, reliable and comparable data set for a significantly long period of time. The application of cartographic approach, beside others, is proved to be appropriate to overcome the limitations of existing data and information. The series of maps, showing the evolution of socio-economic factors, including demography, ethnic groups, land use, food production and forest cover for particular period of time at communal level has improved significantly the ability to reconstruct the spatial and temporal picture of the region, to increase the clearness of secondary data and provide more information for quantitative and qualitative analysis, especially expert analysis.

The principal cause of deforestation in Na Hang district is the overexploitation of forest resources realised by state forest enterprises in order to meet the national great demand on wood and other forest products during and after the war. The low and unstable food production, weak efficiency of several important rural development policies (agricultural collectivisation, sentarisation...), the heavy rural poverty within the households, all together, have increased the pressure on forest land and resources, aggravating the deforestation in the region.

Comprehensive policies of socio-economic reform, DOI MOI, especially policies related to agriculture and land use, applied properly for the locality, have therefore improved significantly the food production and increased the living condition of the local people. The satisfaction of demand on food for the whole district has been an important basis for local authorities to implement multiples strict policies to protect the forest. The rapid improvement

of forest cover recently in the district has proved the success of these policies in the field of environmental protection.

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