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Trajectories of Vulnerability of Rural Territories in the Ecuadorian Andes: a Comparative Analysis

Nasser Rebaï and Julio A. Alvarado Vélez

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Introduction

- 1 For several years, the notion of “vulnerability” has been used extensively in the field of social sciences, while the recurrence of natural disasters, in a context of global change, or the memory of the food crisis of 2008, compel societies to organize against all types of hazards that would affect them and their territories. While “vulnerability” can be defined as the degree of sensitivity of a group of individuals to a naturally occurring event or political change, it should not be understood as a synonym for “poverty” (Becerra, 2012). Indeed, the vulnerability of a population corresponds to its inability to anticipate a hazard of any kind. Therefore, recent literature has emphasized the methodological need to consider, on the one hand, the perceptions that members of a group have of their environment and, on the other hand, the social and cultural characteristics of populations, to better understand, precisely, the origins of their vulnerability (Décamps, 2007; Hewitt and Mehta, 2012). Furthermore, for other authors, this holistic approach is also fundamental and must go hand in hand with a dynamic reading of the vulnerability of the territories because it “results from an evolution, both of society and of the natural context¹” (Magnan *et al.*, 2012: 83). Hence, it is relevant to use the concept of “trajectory of vulnerability²” (*ibid.*), defined in this article as the sequence over time of factors of alteration of the organization of societies and their relations with the environment. Here, we want to use it in the context of the Ecuadorian Andes and thus give a follow-up to the reflections that we have been developing for several years on this region by focusing on the geohistory of its rural

territories (Rebaï, 2009 and 2012) to better understand the origin of the current strategies of family farmers and, subsequently, to be able to assess their interests and limitations.

Vulnerability of the rural territories of the Ecuadorian Andes: a geohistorical vision

- 2 Like other mountain societies, the Andean peasantries have been subjected in their history to numerous environmental constraints (frost, soil erosion, water stress) to which, however, they have adapted by specific landscaping (Morlon, 1992; Valdéz, 2006). Moreover, a large mobility of individuals allowed them to take advantage of the potential of several ecological levels and thus to achieve their subsistence (Murra, 1975, Oberem, 1981). Their social organization, built on mutual aid (Mayer, 2002; Ferraro, 2004; Lyle 2017), was also decisive for going beyond the constraints of the mountain environment by promoting reciprocal exchanges of work or the cultivation of collective spaces that had positive effects on agricultural production (Alberti and Mayer, 1974; Lyle and Smith 2014; Walsh-Dilley, 2017). However, from the sixteenth century onward, the control of the indigenous populations by the colonial authority led to the displacement of rural labor for work in mines and *haciendas*. This model of socio-spatial domination caused the impoverishment of the environment (Chonchol, 1995) and forced the indigenous peasants to survive on the most ungrateful lands of the cordillera until agrarian reforms were carried out in the second half of the 20th century, although with limited effects. So, if the rural Andean areas are still characterized by high levels of land inequality (Bretón, 2006) and the food insecurity of the rural population remains high (Scurrah *et al.*, 2012; Oviedo Treiber, 2014; Rebaï, 2015; Gross *et al.*, 2016), it is therefore fair to consider that the colonial system has partly conditioned the current vulnerability of Andean family farming.
- 3 However, it should not be forgotten that more recent structural changes have also upset the dynamics of rural Andean territories, particularly in Ecuador. After the “oil euphoria³” of the 1970s (Acosta, 2001: 137), which allowed the improvement of national infrastructures (Deler, 1991), the high debt of the Ecuadorian state imposed economic austerity during the 1980s and 1990s (Gastambide, 2010). Consequently, under the influence of international financial institutions, Ecuador liberalized its economy, which led to the reduction of public agricultural services (Lefebvre, 2008) and the arrival on the national market of cereal production subsidized from Northern countries (Peltre-Wurtz, 1988 and 2004). The Mining Law of 1991 and the Agrarian Development Law of 1994, designed to attract foreign capital to “modernize” the primary sector of the national economy, allowed private investors to acquire important land and water resources to exploit the subsoil and develop crops for export. Thus, mining projects multiplied (Latorre *et al.*, 2015) while flower and broccoli productions developed (Martinez, 2015). Moreover, to accelerate the “modernization” of the national primary sector, the government promoted productive systems geared towards the specialization of peasant farms and the massive use of chemical pesticides (Sherwood and Paredes, 2014). In recent years, these “modernizing” orientations have continued while the “Citizen Revolution” led by President Rafael Correa (2007-2017) had given rise in Ecuador to the hope of a new model of society around the concept of “*Buen Vivir*⁴”. This is how the former leader of the *Alianza País* movement, who had benefited

from the support of indigenous groups and peasants to take power (Giunta, 2014), encouraged, after several years at the helm of the country, the development of mining projects to finance his social policies, by formally declaring that Ecuador will get out of its dependence on extractivism by profiting, precisely, from the financial resources of extractivism.

- 4 In this context, what were the trajectories of vulnerability of the rural territories of the Ecuadorian Andes? How have farming systems and land use evolved in recent decades? Finally, what is the current economic and food situation of the peasant populations?

Methodology: interviews and surveys of various actors to reconstruct the trajectories of vulnerability of several rural territories of the Ecuadorian Andes

- 5 To answer these questions, our text draws on the results of research conducted in three areas of the Ecuadorian Sierra. Thus, we focus on the parish (village) Victoria del Portete (2700-3600 m.a.s.l.), located 24 kilometers south of Cuenca (400 000 inhabitants) in the province of Azuay. In addition, we also focus on the eastern part of the canton of Salcedo (3500 m.a.s.l.), located 15 kilometers south of Latacunga (70 000 inhabitants), in the province of Cotacachi and, finally, on San Luis parish (2500-3000 m.a.s.l.), located in the province of Chimborazo, 7 kilometers south of the city of Riobamba (150 000 inhabitants) (Fig. 1).

Figure 1. Location map of study areas

Source: Instituto Geográfico Militar (Ecuador). Elaborated by: N. Rebaï.

Explanation on the choice of study areas and the approach used during the fieldwork

- 6 In the Victoria del Portete parish, several elements caught our attention. For several years, the locality has experienced a significant emigration of its peasant population, a clear sign of the economic precariousness of family farms common to many regions of the Andes (Cortes 2000, Guilbert 2005, Rebaï 2012). Therefore, it was important to evaluate the extent to which this emigration implied a new form of vulnerability of production units by depriving them of part of their labor force. Furthermore, this parish caught our attention because the Loma Larga mining project, a symbol of the extractivist thrust of recent years in Ecuador, was in process of being started (Fig. 2), even if the extraction activity had not begun yet when we conducted our fieldwork in 2016. Thus, it seemed necessary to evaluate to what extent this project could also be a factor of vulnerability for the local population.
- 7 To accomplish this, we conducted 12 interviews with farmer's leaders, political representatives and local elders to find out how agriculture in Victoria del Portete had evolved in recent decades and how they envisioned, in the medium term, the effects of the Loma Larga project. Then, to integrate in our analysis the institutional vision of rural development in the Azuay province, we conducted 4 interviews with technicians from the Ministry of Agriculture and the Environmental Protection Office of Cuenca's Municipal Public Enterprise (ETAPA) and one of the representatives from the Department of Environmental Quality of the Azuay prefecture. Then, we conducted 12 surveys with local farmers, to discuss the characteristics of their farms (area, number of plots, crop choices, available labor, etc.), with one of them was a well-known local leader in the Cuenca region because of his opposition to mining development and owned a farm of 100 hectares. We discussed the characteristics of their farms (area, number of plots, crop choices, available labor, etc.). Finally, we conducted a complementary semi-structured interview focused on their vision of the mining project and the future of local agriculture, which allowed us to better understand the social situation in Victoria del Portete.

Figure 2. “*Bienvenidos al proyecto minero Loma Larga*”⁵: entrance sign to the future mining site in Victoria del Portete

Source: N. Rebaï

- 8 We also looked at the vulnerability of family farmers to crop pests. While FAO frequently recalls that pest control is a priority to reduce food insecurity for rural people in the Southern countries, recent studies conducted in several parts of the Andes, such as Peru and Ecuador, have also indicated that chemical pesticides had limited effectiveness (Kroschel *et al.*, 2012; Sherwood *et al.*, 2015). In addition, a research in the Ecuadorian Sierra has shown that pest control was linked to the social dynamics of peasant communities and that Integrated Pest Management (IPM) strategies – understood as “the coordinated integration of multiple complementary methods to suppress pests in a safe, cost-effective, and environmentally friendly manner” (Parsa *et al.* 2014: 3889) – could achieve levels of agricultural production to partially meet the food needs of populations while reducing the use of chemical inputs (Rebaudo et Dangles, 2011 et 2015). Thus, as part of the MAN-PEST project⁶, we sought to find out why farmers in the Ecuadorian Andes remained vulnerable to pests by maintaining the use of chemical pesticides instead of implementing coordinated and less polluting actions.
- 9 In 2015 we conducted a first research in the eastern part of the canton of Salcedo, which is one of the most important potato production areas in the Ecuadorian Sierra (Fig. 3) and where, for several decades, the use of chemical pesticides has become widespread. Then, in 2016, we focused on the rural periphery of the city of Riobamba, which in the last thirty years has been more obviously undergoing the “modernizing” process of the primary sector in the Ecuadorian Andes. While until the 1970s the countryside around Riobamba formed one of the main granaries of the Ecuadorian Sierra (Gondard, 1976), since the end of the 1980s, the renovation by the authorities of the irrigation system Chambo-Guano with the support of FAO and the European Union, favored the development of vegetable crops for the national urban market⁷. Thus,

Riobamba's countryside was transformed into a horticultural basin of nearly 6,000 hectares where, nowadays, thousands of tomato greenhouses and vegetable plots structure the agrarian landscape. One of those areas is San Luis (Fig. 4), the locality where we conducted our fieldwork.

Figure 3. Vision of the agrarian landscape in the eastern part of the canton of Salcedo in 2015

Source: N. Rebaï

Figure 4. Vision of the agrarian landscape in San Luis in 2016

Source: N. Rebaï

- 10 Between the eastern part of the canton of Salcedo and San Luis, we conducted 13 interviews with farmers' leaders, political representatives, as well as officials of the Ministry of Agriculture, to discuss the practices and pest management strategies in these two areas. Then, with the support of the local authorities, we conducted surveys of 12 farmers – 6 in the eastern part of the canton of Salcedo and 6 in San Luis – with whom we discussed the characteristics of their farms and their strategies for controlling crop pests. Finally, we also used open questions focused on the relations of farmers in Salcedo and San Luis with other actors (their neighbors, public institutions, the sellers of inputs).

Two levels of analysis to better understand the vulnerability of the studied territories

- 11 Thus, the interviews and the surveys we conducted with the different actors enabled us to capture their different perceptions of the recent changes in their territories to reconstruct their vulnerability trajectories. Obviously, because of the small size of the farm samples on which our study is based, the data presented in this article cannot claim to be used to build a general database of our three study areas. However, it is important to emphasize that the results of the fieldworks in Victoria del Portete, Salcedo and San Luis complement an already large amount of data produced in recent years on the characteristics of peasant farms in the Ecuadorian Sierra (Rebaï 2012 and 2015), and as a result, they contribute to provide a better knowledge on the current situation of the rural territories of this region.

Between rural emigration and mining development: vulnerability factors in the Azuay province

- 12 Until recently, most peasant families in Azuay were dedicated to maize production, the basis of their diet (Huttel *et al.*, 1999; Rebaï, 2012). The last National Agrarian Census (INEC, 2002) states that at the provincial level 71% of the farms cultivated this cereal at the beginning of the century, generally in association with beans, out of a total of nearly 40 thousand hectares which represented 75.5% of the surfaces dedicated to non-permanent crops. However, as we found in Victoria del Portete, maize cultivation appears to be less important. Different factors can explain it.

Peasant emigration, a symbol and an aggravating factor of peasant vulnerability

- 13 If, fifty years ago, several *haciendas* structured the agrarian space in Victoria del Portete, after the agrarian reform of 1964, the peasants of the locality began to migrate regularly. Indeed, they started to go to the coastal region where export agriculture was continually developing since the 19th century, (Deler, 1981), to work as day laborers in large capitalist banana or cocoa plantations. If the small size of their farms and the fact that they were kept at the margins of national economic circuits (North, 1985) could not allow them to survive with their families, their mobility to the most dynamic economic zones of the country became their main means of survival as for many other

peasants in the Andean provinces at that time (Chiriboga 1984; Martinez 1985; Rebai 2009 and 2016). Then, from the 1980s and 1990s, in the context of the liberalization of the national economy, international emigration of Victoria del Portete peasants began. While international emigration of the Azuayan peasants had gradually been structured since the 1950s and the crisis of the *Panama hat* (Rebai, 2012)⁸, the peasants in Victoria del Portete widened the spatial framework of their mobility and started to exile themselves to the United States. At the same time, local pluriactivity continued to grow. Thus, at the level of our analysis sample which, in 2016, consisted of 68 individuals, 34% of them were in the United States or permanently settled in another Ecuadorian region, sometimes for more than twenty years, while 9% of the people had a permanent job in the Cuenca region which prevented them from participating on the farm exploitation activities. In addition, 26% of our analysis sample was made up of school children, elderly or disabled people who were weakly involved in agricultural tasks. Thus, only 31% of the study population, mainly women, devoted themselves to the various tasks of farming on a full-time basis (Fig. 5).

Figure 5. Distribution of the members of the 12 families studied in Victoria del Portete according to their occupation and their location in 2016

Source: fieldwork surveys.

- 14 Logically, this demographic situation has had consequences for local farming practices. Farm families in Victoria del Portete have gradually reduced the areas of long-cycle crops such as maize, but also tubers, which are labor-intensive, characterized by low yields and subject to significant losses in bad weather conditions. In addition, due to lack of labor, these same families have gradually abandoned self-help systems such as *cambio mano*⁹ to pay for their participation in agricultural tasks outside their farms. According to the interviewees, the wages of a laborer reached USD 12 in 2016 while it was only USD 5 or 6 in the early 2000s. In these conditions, the increase in production costs has also contributed to the recent decrease of the cultivated areas in the locality.
- 15 On the other hand, the peasant families of Victoria del Portete, like those of neighboring parishes also marked by a strong emigration (Rebai, 2015), developed an

important activity of dairy farming in a national context favorable to the commercial integration of the small breeders since the beginning of the 2000s (Barragán Ochoa, 2017). Thus, most of them have extended the grazed surfaces within their exploitations for several years, by proceeding cut trees in their farms, up to the *páramos*¹⁰. As a result, vegetation cover in the area has also decreased in recent years. At the level of the 12 farms in our analysis sample, which accounted for 138,5 hectares in 2016, 49,8% of the total area was occupied by pasture and some alfalfa, compared with 46,3% for wooded areas and only 3,9% for crops (Fig. 6).

Figure 6. Characteristics of land use at the 12 farms studied in Victoria del Portete in 2016

Source: fieldwork surveys.

- ¹⁶ Regarding the 11 small farms in our panel, totaling 38,5 hectares, the differences in land use patterns were even more pronounced. Thus, 88,3% of their total area was devoted to pasture and alfalfa while 11,7% of their total area was still under cultivation. Wooded areas were almost non-existent (Fig. 7).

Figure 7. Characteristics of land use at the 11 smallest farms surveyed in Victoria del Portete in 2016

Source: fieldwork surveys.

- 17 At the time of our fieldwork, the agricultural landscape of the Victoria del Portete Parish was dominated by the green of the pastures and punctuated, here and there, with golden or brown spots of small patches of maize and tubers that remained next to the peasant houses (Fig. 8). In the end, it indicated that a loss of agrobiodiversity had occurred in recent years due to a migratory dynamic that upset local farming practices.

Figure 8. Vision of the agrarian landscape in Victoria del Portete in 2016

Source: N. Rebañ.

Loma Larga: a mining project that continues the trajectory of vulnerability by causing the division of the peasant population

- 18 However, beyond the recent agrarian changes that characterize Victoria del Portete, in recent years, the locality has been experiencing another disruption associated with the Loma Larga mining project. Indeed, several of the leaders and peasants interviewed told us that they would not stop opposing its implementation to safeguard agriculture and livestock, thus continuing the resistance begun several years ago (Alvarado, 2016). Conversely, various interviewees told us that since agriculture did not allow them to live with dignity, they hoped that the Loma Larga project would provide them with stable incomes and that this would “prevent young people from emigrating”. Thus, even if they insisted that they were not in favor of extractivism because it is “not good for the environment”, they told us that, as a necessity, they would not hesitate to take advantage of the mine. That is why the candidate of the *Alianza País* party won a short head in the 2014 parish elections. It is apparent that this vote indicated that most of the local population was not completely opposed to the action of the government and the Loma Larga project, while in the rest of the country the indigenous and peasant movements had for some time been expressing their opposition to the policy of Rafael Correa (Ospina and Lalander, 2012).
- 19 In this context, strong tensions have emerged between the inhabitants of Victoria del Portete. In fact, some of them told us that they had suffered physical and verbal abuse for expressing a less firm position than others against the mining project. A peasant woman explained to us that she was regularly insulted when she went to the center of the town to sell some products from her farm. In the same way, a young farmer told us that to have been employed in the prospecting work carried out by INV Metals in the early 2010s, he and others had seen their families deprived of access to water by the assembly of irrigators from Victoria del Portete whose leaders were opposed to the Loma Larga project. Finally, it was interesting to note that the main opponents of the project were large farmers, like the one included in our analysis sample, for whom the only alternative to extractivism was increase in dairy farming. On the other hand, for many women farmers who, in recent years, had also taken part in the local mine resistance movement, agriculture and the development of handicrafts had to prevail. However, many of them told us that their demands were not relayed by local men leaders who were constantly defending their personal interests with public authorities and NGOs when they were proposing alternatives to mining development. Thus, it was interesting to observe in Victoria del Portete that the trajectory of vulnerability of peasant women could be prolonged further due to an obvious masculine domination and an invisibilisation of their claims despite the fact that, for thirty years, these same women have contributed greatly to the maintenance of agricultural activities at the local level.
- 20 Thus, our research in Victoria del Portete shows how the political orientations of the last decades have conditioned the trajectory of vulnerability of this territory. The liberal opening of the late 1980s weakened family farmers who, to survive, were forced to emigrate. Then, the economic vulnerability of the peasant population acted as a factor limiting mobilization against the Loma Larga mining project. Henceforth, beyond the harmful consequences it should have on the environment and agriculture and even before its starts, the Loma Larga project causes the division of the peasant population

in Victoria del Portete, in line with many other in the Ecuadorian Andes (Kuecker 2007, Avci and Fernández-Salvador 2016, Sánchez-Vásquez et al., 2016). So, it already constitutes a factor of extension of the vulnerability of this locality where the peasants' organizational capacity against new threats that could affect their resources and way of life could become even more limited than it has been in recent years.

A change in the production system at the origin of the prolongation of the trajectory of vulnerability of rural territories in Chimborazo and Cotopaxi

- 21 In the eastern part of the canton of Salcedo and San Luis, the leaders we met told us that some 30 years ago, farmers in these two areas were doing crop rotations and putting fallow of their plots to limit the growth and spread of pests, like of the rest of the Andean peasantries (Morlon 1992; Hervé and Rivière 1999; Poinso 1999). They also informed us that, in recent decades, the use of chemical pesticides had taken place on farms and that it had become the norm to fight against pests¹¹. Therefore, we sought to understand the factors that favored this systematic use of industrial inputs within production units and which effectively hindered collaboration between farmers and the application of more environmentally friendly pest management techniques.

State withdrawal forces family farmers to purchase chemicals

- 22 In Salcedo, as in San Luis, the leaders we met explained that even though farmers sometimes discussed crop pests, they did not collaborate to fight against them. In the last decades, in the context of the liberalization of the national economy, the withdrawal of agricultural technicians from the Ministry of Agriculture and the arrival of small shops of chemical inputs have led to a profound change in agricultural practices in our two study areas. In fact, for the last thirty years, the sellers of chemicals have become the most regular interlocutors of family farmers at the local level, which is why the small farmers of the eastern part of the canton of Salcedo and San Luis have increasingly resorted to buying chemicals to fight pests and maintain their production. In Salcedo, for example, farmers spent an average of USD 470,5 in chemicals pesticides per hectare of potatoes. In Sans Luis, the expenditures were even higher: although the farms studied had an average area of only 1,1 hectares, they nonetheless spent USD 184 per month on chemical pesticides.
- 23 In addition, our fieldwork enabled us to observe that, due to the absence of public services, the family farmers of Salcedo and San Luis had never received the necessary technical support to know how to identify the characteristics of the pests affecting their fields¹², to learn how to coordinate in a common fight against these same pests, to develop strategies for the agroecological control of pests, or simply to use in a reasonable way the chemical pesticides they acquired. That is why the farmers we met did not try to cooperate to develop IPM strategies. From their point of view, it seemed “easier” to buy a chemical pesticide, thanks to their agricultural and sometimes non-agricultural incomes (Rebaï et al., 2016), even though input sellers often referred them to inappropriate products due to a common lack of knowledge of pests. Thus, we could note the danger posed by chemical input sellers, which, with the sole purpose of making money, can encourage the dissemination of unsuitable practices on farms, for

example by encouraging farmers to apply more than just products that are harmful to the environment.

An increasingly flawed public action that reinforces the subordination of family farmers to sellers of chemical inputs and intermediaries

- 24 Paradoxically, the farmers of Salcedo and San Luis have repeatedly told us that reducing the use of pesticides was “*irrelevant*” because at the Salcedo fair or on the market in Riobamba, the intermediaries did not favor agro-ecological production and instead wanted “*well-calibrated and flawless*” products that had received phytosanitary treatments. In other words, even if the farmers admitted that, in many cases, the use of pesticides on their plots was disproportionate, and therefore expensive and bad for the environment, for their health and that of the consumers, they were not ready to take the risk of not applying chemicals in their fields for fear of not being able to sell their products. Later, in both Salcedo and Riobamba, the government officials we interviewed ignored the question of the detrimental influence of the intermediaries, stating that what was important for the peasants was to gain access to the market and “*get income quickly*”. For them, the reduction of the use of toxic products or the valorization of agro-ecological productions was therefore not a priority since the free access of family farmers to the Salcedo fair and the Riobamba market was already a form of support for peasant farms.
- 25 In recent years, the lack of public action has therefore forced the family farmers of Salcedo and San Luis to depend daily on chemical sellers to fight crop pests. At the same time, it has contributed to strengthening the power of city intermediaries who impose on farmers the use of phytosanitary products and low prices. In this context, even if the family farmers we met were satisfied with being able to sell their products without much difficulty, they considered to be in a situation of economic vulnerability because they were subordinated to the power of the intermediaries. However, the vast majority of them did not seem ready to engage in a collective dynamic to try to change this situation, for fear of wasting time or because they did not know how to do it. Thus, besides promoting the spread of expensive and polluting agricultural practices in Salcedo and San Luis, the lack of public action has also prevented the family farmers from benefiting from interventions that would have given them the opportunity to strengthen its organizational and collective action capabilities, in particular to emancipate themselves from the influence of actors keeping them in a precarious economic situation.

Conclusion

- 26 While the rural territories of the Ecuadorian Andes have historically been subject to multiple constraints, the comparative analysis produced in this text has shown that, in recent decades, the “modernizing” project of the primary sector in Ecuador has been the determining factor in extending their trajectory of vulnerability. In Victoria del Portete, this led to an exodus of peasants, which led to a logical decrease in the available labor within the production units. As a result, the area under cultivation has only decreased while dairy farming has increased significantly. In Salcedo and San Luis,

family farmers have been able to develop and maintain cash crops by being forced, however, to resort to massive and expensive purchases of chemical inputs.

- 27 In this context, the peasant families of our three study areas are caught in a “vicious circle of vulnerability” (Becerra, 2014: 4), at first, economically and nutritionally. In Victoria del Portete, farms that once produced maize and tubers that, for the most part, provided their livelihoods, now depend on often irregular income (Rebaï, 2013 and 2015) from migration to cover their food needs. In Salcedo and San Luis, farmers are also forced to stock up on the market to feed themselves but with the risk of having few economic resources because of the sometimes-limited profits they can derive from their fruit sales, vegetables or tubers. In addition, the current practices of the Azuay, Chimborazo and Cotopaxi peasants reinforced their environmental vulnerability. In Victoria del Portete, soils and water resources are becoming more and more affected, like in several neighboring localities also marked by a strong growth of dairy farming in recent years (Rebaï 2012 et 2015), while in Salcedo and San Luis the health of the population and the quality of products is endangered using chemical pesticides on farms (Yanggen *et al.*, 2003; Cole *et al.*, 2007).
- 28 Beyond these already alarming findings, our study has shown that the “modernizing” project of the primary sector in Ecuador has helped to disrupt or even divide the peasant population in the Andean regions. In both Salcedo and San Luis, the withdrawal of public agricultural management services has forced family farmers to rely on input businesses for technical advice that is often inappropriate for their needs. Logically, this context has favored the generalization of individual practices, costly and polluting, and limited the establishment of strategies of cooperation between farmers for the resolution of common problems, such as that of crop pests. In Victoria del Portete, in a context where the vulnerability of local agriculture has led for several decades to a high emigration, some of the inhabitants, who recognized that extractivism could have adverse consequences on the environment, are in favor of the development of the Loma Larga mining project since, according to them, it would be a source of employment and income. As a result, there has been considerable tension among the peasant population, which, more than ever, seems divided and unable to mobilize despite the recent interventions of certain public institutions that have sought to reinvest this locality by carrying out different types of projects. Thus, ETAPA technicians who, in recent years, have reached various localities to integrate family farmers into environmental protection projects (Rebaï, 2018), told us that they have great difficulty in mobilizing Victoria del Portete’s population due to ongoing conflicts among peasants. In the same way, the officials of the Ministry of Agriculture told us that they had not yet succeeded in creating an association of small producers in the parish whereas there are currently about forty in the region of Cuenca. This situation is all the more singular because during the last twenty years peasant collectives have played a key role in the agricultural supply of the city of Cuenca (Rebaï, 2014). The example of the Victoria del Portete parish is also interesting because it reveals that despite a renewal of the political discourse in Ecuador, the project led by Rafael Correa has reproduced for the national primary sector an economic pattern comparable to that of the last decades (Acosta and Cajas Guijarro, 2016; Villalba-Eguiluz and Etxano, 2017). In the end, the direction taken by the former Ecuadorian president helped to prolong the trajectory of vulnerability of the Andean family farmers, since beyond the province of Azuay alone, multiple mining projects affected the farming communities of

the Ecuadorian Sierra (Latorre, 2015), and few major steps have been taken to change an agricultural model that values intensive crops, especially those for export (Martínez Godoy, 2015 and 2016; Clark, 2017; Martínez, 2017).

- 29 Finally, our research in the provinces of Azuay, Cotopaxi and Chimborazo, indicate that for several decades, the prolongation of the trajectory of vulnerability of the rural territories of the Ecuadorian Andes results from political orientations that force family farmers to make inconsistent choices, both economically and environmentally. In this context, the priority is therefore to rethink the contours of public action and rural development strategies in the Ecuadorian mountain range with a view to recovering higher levels of agrobiodiversity, to meet the population's dietary needs, limit pressures on water resources and soils at altitude and, finally, mitigate the spread of crop pests by forming plant barriers (Fonte *et al.*, 2012; Oyarzun *et al.*, 2013). Therefore, there would undoubtedly be a major interest in promoting the reconstruction of solidarity relations between farmers as they have existed in the past, allowing Andean peasant societies to face the many constraints related to their environment. Thus, the emergence of government-supported peasant collectives would make it possible to improve the quality of the market integration of family farmers. It would also contribute to the adoption of innovative practices to improve production systems and the protection of the environment and, finally, to facilitate the participation of individuals in decision-making concerning their territories (Raimbert and Rebaï, 2017). In sum, strengthening the organizational capacity of peasants in the Ecuadorian Andes could facilitate the resilience of rural areas to cope with global change, but before that, a break with the "modernizing" logic of public policies is clearly necessary.

BIBLIOGRAPHY

Acosta A., 2006.- *Breve historia económica del Ecuador*, CEN.

Alberti G., Mayer E., 1974 - *Reciprocidad e intercambio en los Andes peruanos*, IEP.

Acosta A., Cajas Guijarro J., 2016.- « Ocaso y muerte de una revolución que al parecer nunca nació », in *Ecuador Debate*, n°98, pp. 7-28.

Avci D., Fernández-Salvador C., 2017.- « Territorial dynamics and local resistance: Two mining conflicts in Ecuador compared », in *The Extractive Industries and Society*, Vol. 3, n°4, pp. 912-921.

Alvarado J., 2016.- « Movimientos sociales con racionalidad ambiental: el caso de Kimsakocha », in *Revista Colombiana de Ciencias Sociales*, Vol. 7, n°1, pp. 80-95.

Barragán Ochoa F., 2017.- « Les petits producteurs, les villes et le lait : Défis du ravitaillement alimentaire dans les Andes du nord de l'Équateur », Thèse de doctorat, Université Paris 1.

Becerra S., 2012.- « Vulnérabilité, risques et environnement : l'itinéraire chaotique d'un paradigme sociologique contemporain », in *Vertigo*, Vol. 12, n°1, visited November 6th 2017, <http://vertigo.revues.org/11988>

Bretón V., 2006.- « Glocalidad y reforma agraria: ¿de nuevo el problema irresuelto de la tierra? », in *Íconos*, n° 24, pp. 59-69.

Cantero P. (coord.), 2013.- *Sara Llakta: el libro del maíz*, MIES.

Chiriboga M., 1984.- « Campesino andino y estrategias de empleo: el caso de Salcedo », in Sanchez-Parga J. (ed.), *Estrategias de supervivencia en la comunidad andina*, CAAP, Quito, pp. 59-124.

Chonchol J., 1996.- *Systèmes agraires en Amérique latine. Des agricultures préhispaniques à la révolution conservatrice*, IHEAL.

Clark P., 2017.- « Neo-developmental and 'via campesina' for rural development: Unreconciled projects in Ecuador's Citizen's revolution », in *Journal of Agrarian Change*, Vol. 17, n°2, pp. 348-364.

Cole D., Sherwood S., Paredes M., Sanin L.H., Crissman C., Espinosa P., Muñoz F., 2007.- « Reducing Pesticide Exposure and Associated Neurotoxic Burden in an Ecuadorian Small Farm Population », in *International Journal of Occupational and Environmental Health*, n°13, pp. 281-289.

Cortes G., 2000.- *Partir pour rester : survie et mutation de sociétés paysannes andines (Bolivie)*, IRD.

Décamps H., 2007.- « La vulnérabilité des systèmes socioécologiques aux événements extrêmes: exposition, sensibilité, résilience », in *Natures Sciences Sociétés*, n° 15, pp. 48-52.

Deler J-P., 1981.- *Genèse de l'espace équatorien. Essai sur le territoire et la formation de l'Etat national*, IFEA/ADPF.

Deler J-P., 1991.- « L'Équateur bipolaire », in C. Bataillon, J-P. Deler, H. Théry (dir.), *Amérique latine*, Tome III, *Géographie Universelle*, Belin/Reclus, Paris/Montpellier, pp. 264-275.

Ferraro E., 2004 - *Reciprocidad, don y deuda. Formas y relaciones de intercambios en los Andes de Ecuador: la comunidad de Pesillo*, FLACSO-Ecuador/Abya Yala.

Fonte S.J., Vanek S.J., Oyarzun P., Parsa S., Quintero D.C., Rao I.M., Lavelle, P., 2012 -« Pathways to agroecological intensification of soil fertility management by smallholder farmers in the Andean highlands », in *Advanced Agronomy*, n° 116, pp. 125-184.

Gastambide A., 2010.- *El camino hacia la dolarización*, FLACSO-Ecuador.

Giunta I., 2014.- « Food sovereignty in Ecuador: peasant struggles and the challenge of institutionalization », in *The Journal of Peasant Studies*, Vol. 41, n°6, pp. 1201-1224.

Gondard P., 1976.- « Zonas agrícolas de la sierra », in *Boletín del Instituto Panamericano de Geografía e Historia - Sección nacional del Ecuador*, n° 9-10, pp. 1-7.

Gross J., Guerron C., Berti P., Hammer M., 2016.- « Caminando hacia adelante, mirando hacia atrás: en la primera línea de las transformaciones alimentarias en Ecuador », in *Íconos*, n°54, pp. 49-70.

Guilbert M-L., 2005.- « Environnement et migration : les difficultés d'une communauté rurale andine (El Terrado, Potosi, Bolivie) », in *Vertigo*, Vol. 6, n°3, visited May 23th 2018, <http://journals.openedition.org/vertigo/2441>

Hervé D., Rivière G., 1999.- « Les jachères longues pâturées dans les Andes. Acquis interdisciplinaires », in *Natures, Sciences, Sociétés*, Vol. 6, n° 4, pp. 5-19.

Huttel C., Zebrowski C., Gondard P., 1999.- *Paisajes agrarios del Ecuador*, IRD/IFEA/PUCE.

INEC - Instituto Nacional de Estadísticas y Censos, 2002.- *III Censo nacional agropecuario*.

- Hewitt K., Mehta M., 2012.- « Rethinking risk and disasters in mountain areas », in *Revue de Géographie Alpine | Journal of Alpine Research*, Vol. 100, n°1, visited May 23th 2018, <http://journals.openedition.org/rga/1653>.
- Kroschel J., Mujica N., Alcazar J., Canedo V., Zegarra O., 2012.- « Developing integrated pest management for potato: experiences and lessons from two distinct potato production systems of Peru », in He Z., Larkin R., Honeycutt W. (eds), *Sustainable Potato Production: Global Case Studies*, Springer, Berlin, pp. 419-450.
- Kuecker, G. 2007.- « Fighting for the Forests: Grassroots Resistance to Mining in Northern Ecuador », in *Latin American Perspectives*, Vol. 34, n°2, pp. 94-107.
- Latorre S., 2015.- « Visibilidades e invisibilidades del extractivismo en Ecuador: insumos para el debate », in Latorre S. (coord.), *Extractivismo al debate. Aportes para los Gobiernos Autonomos Decentralizados*, Abya Yala, Quito, pp. 15-56.
- Latorre S., Farrell K., Martinez-Alier J., 2015 - « The commodification of nature and socio-environmental resistance in Ecuador: an inventory of accumulation by dispossession cases, 1980-2013 », in *Ecological Economics*, n°116, pp. 59-69.
- Lefebvre L., 2008.- « La agricultura y el desarrollo rural. Una crítica a las políticas del establishment en Ecuador », in North L. and Cameron D. (eds.), *Desarrollo rural y neoliberalismo. Ecuador desde una perspectiva comparativa*, UASB-Ecuador/CEN, Quito, pp. 39-61.
- Lyle H., 2017.- « Volver a Nuestras Raíces: the reemergence and Adaotation of Traditional Forms of Andean Reciprocity », in *The Journal of Latin American and Caribbean Anthropology*, Vol. 22, n°3, pp. 419-437.
- Lyle Henry, Smith Eric, 2014, « The reputational and social network benefits of prosociality in an Andean community », in *PNAS*, Vol. 111, n°13, pp. 4820-4825.
- Magnan A., Duvat V., Garnier E., 2012.- « Reconstituer les 'trajectoires de vulnérabilité' pour penser différemment l'adaptation changement climatique », in *Natures Sciences Sociétés*, n°20, pp. 82-91.
- Martínez L., 1985.- « Migración y cambios en las estrategias familiares de las comunidades indígenas de la Sierra », in *Ecuador Debate*, n°8, pp. 110-152.
- Martínez, L., 2015.- *Asalariados rurales en territorios del agronegocio: flores y brócoli en Cotopaxi*, FLACSO-Équateur.
- Martínez L., 2017.- « Agribusiness, Peasant Agriculture and Labour Markets: Ecuador in Comparative perspective », in *Journal of Agrarian Change*, Vol. 17, n°4, pp. 680-693.
- Martínez Godoy D.- 2015, « Entre economía social y economía popular. Confusiones y desaciertos políticos en el 'Ecuador del Buen Vivir' », in *Eutopía*, n°7, pp. 147-161.
- Martínez Godoy D.- 2016, « Territorios campesinos y agroindustria: un análisis de las transformaciones territoriales desde la economía de la proximidad. El caso Cayambe (Ecuador) », in *Eutopía*, n°10, pp. 41-55.
- Mayer E., 2002 - *The Articulated Peasant : Household Economies in the Andes*, Westview Press.
- Mina D., Struelens Q., Carpio C., Rivera M., Rebaï N., Rebaudo F., Dangles O., 2017 - « Lupine Pest Management in the Ecuadorian Andes: Current Knowledge and Perspectives », in *Outlooks on Pest Management*, Vol. 28, n°6, pp. 250-256.
- Morlon P., 1992.- *Comprendre l'agriculture paysanne dans les Andes centrales. Pérou - Bolivie*, INRA.

- Murra J., 1975.– *Formaciones Económicas y Políticas del Mundo Andino*, IEP.
- North L., 1985.– « Implementación de la política económica y la estructura del poder político en el Ecuador », in Lefebvre L. (ed.), *La economía política del Ecuador. Campo, región, nación*, CEN, Quito, pp. 425-457.
- Oberem U., 1981.– « El acceso a recursos naturales de diferentes ecologías en la sierra ecuatoriana (siglo XVI) », in Moreno Yáñez S. and Oberem U. (eds.), *Contribución a la etnohistoria ecuatoriana*, IOA, Otavalo, pp. 45-71.
- Ospina P., Lalander R., 2012.– « Razones de un distanciamiento político: el Movimiento Indígena ecuatoriano y la Revolución Ciudadana », in OSAL, n°32, pp. 117-134.
- Oviedo Treiber V., 2014.– *Rural Poverty, Vulnerability and Food Insecurity. The Case of Bolivia*, Potsdam University Press.
- Oyarzun P., Borja R., Sherwood S., Parra V., 2013.– « Making sense of agrobiodiversity, diet, and intensification of smallholder family farming in the Highland Andes of Ecuador », in *Ecology of Food and Nutrition*, Vol. 52, n°6, pp. 515-41
- Parsa S., Morse S., Bonifacio A., Chancellor T., Condori B., Crespo-Perez V., Hobbs S., Krosheld J., Niango M., Rebaudo F., Sherwood S., Vanek S., Faye E., Herrera M., Dangles O., 2014.– « Obstacles to IPM Adoption in Developing Countries: a Global Concept Map », in *PNAS*, Vol. 111, n°10, pp. 3889-3894.
- Peltre-Wurtz J., 1988.– « Le blé en Équateur ou le prix de l'indépendance alimentaire », in *Cahiers des Sciences Humaines*, Vol. 24, n°2, pp. 213-223.
- Peltre-Wurtz J., 2004.– *Alimentation et pauvreté en Équateur. Manger est un combat*, IRD/Karthala.
- Poinsot Y., 1999.– « L'incidence géographique des risques agricoles. Une formulation théorique à partir de cas andins et africains », in *Revue de Géographie Alpine*, Vol. 87, n°3, pp. 31-50.
- Raimbert C., Rebaï N., 2017.– « Collectifs et développement durable des territoires ruraux en Amérique latine. Une réflexion depuis le Brésil et l'Équateur », in *EchoGéo*, n°42, visited May 23th 2018, <https://journals.openedition.org/echogeo/15131>.
- Rebaï N., 2009 – « De la parcelle à l'archipel: mobilité paysanne et construction territoriale dans les Andes équatoriennes », in *Revue Interdisciplinaire de Travaux sur les Amériques*, n°2, visited May 23th 2018, <http://www.revue-rita.com/content/view/64/114/>
- Rebaï N., 2011.– « Les effets de l'émigration paysanne dans les Andes équatoriennes : une lecture photographique », in *EchoGéo*, n° 16, visited May 23th 2018, <https://journals.openedition.org/echogeo/12382>
- Rebaï N., 2012.– « À chacun son chemin. Une analyse de la redéfinition des stratégies paysannes et des dynamiques territoriales dans le contexte migratoire des Andes équatoriennes », Thèse de doctorat, Université Paris 1 Panthéon-Sorbonne.
- Rebaï N., 2013.– « Quand l'argent de la migration change la donne : développement agricole et dynamique foncière dans une localité de la province andine de l'Azuay (Équateur) », in *Autrepart*, n°68, pp. 193-212.
- Rebaï N., 2014.– « Rôle des productrices maraîchères dans l'approvisionnement de la ville de Cuenca en Équateur », in *Pour*, n°222, pp 261-273.
- Rebaï N., 2015.– « Émigration paysanne et vulnérabilité des territoires ruraux dans les Andes équatoriennes. Une analyse en image depuis la périphérie de Cuenca », in *EchoGéo*, n°34, visited November 6th 2017, <https://echogeo.revues.org/14420>.

- Rebaï N., 2016.– « Movilidades campesinas y dinámicas territoriales en los Andes ecuatorianos: una lectura geohistórica », in Goepfert N., Vásquez S., Clément, C. and Christol A. (éd.), *Las sociedades andinas frente a los cambios pasados y actuales. Dinámicas territoriales, crisis, fronteras y movilidades*, IFEA/Labex Dynamite, Lima, pp. 249-285.
- Rebaï N., 2018.– « Repenser les relations ville-campagne pour valoriser l'agriculture familiale et l'environnement en milieu rural : une analyse depuis les Andes équatoriennes » in Rouget N. and Schmitt G. (éds.), *Nature des villes, natures des champs*, PUR, Valenciennes, pp. 43-67.
- Rebaï N., Rebaudo F., Rebotier J., Dangles O., 2016.– « Logiques paysannes, production agricole et lutte contre les ravageurs des cultures à Salcedo dans les Andes équatoriennes. Stratégies individuelles ou collectives ? », in *Vertigo*, Vol. 16, n°3, visited November 6th 2017, <https://vertigo.revues.org/18240>
- Rebaudo F., Dangles O., 2011.– « Coupled information diffusion-pest dynamics models predict delayed benefits of farmer cooperation in pest management programs », in *PLOS Computational Biology*, Vol. 7, n°10, visited November 6th 2017, <http://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1002222>
- Rebaudo F., Dangles O., 2015.– « Adaptive Management in Crop Pest Control in the Face of Climate Variability: an Agent-Based Model Approach », in *Ecology and Society*, Vol. 20, n°2, visited November 6th 2017, <https://www.ecologyandsociety.org/vol20/iss2/art18/>
- Sánchez-Vásquez L., Espinosa M. G., Eguiguren M. B. 2016.– « Perception of socio-environmental conflicts in mining areas: the case of the mirador project in Ecuador », in *Ambiente & Sociedad*, Vol. 19, n°2, pp. 23-44.
- Scurrah M., de Haan S., Oliveira E., Ccanto R., Creed H., Carrasco M., Veres E., Barahona C., 2012.– « Ricos en agrobiodiversidad, pero pobres en nutrición: desafíos de la mejora de la seguridad alimentaria en comunidades de Chopcca, Huancavelica (Perú) », in Asensio RH, Eguren F., Ruiz M. (eds), *Perú: El Problema Agrario en Debate. SEPIA XIV*, SEPIA, Lima, pp. 362-407.
- Sherwood S., Paredes M., 2014.– « Dynamics of Perpetuation. The Politics of Keeping Highly Toxic Pesticides on the Market in Ecuador », in *Nature and Culture*, Vol. 9, n°1, pp. 21-44.
- Sherwood S., Paredes M., Gross J., Hammer M., 2015.– « The Future of Sustainability as a Product of the Present: Lessons from Modern Food in Ecuador », in *Rivista di Studi sulla Sostenibilità*, n°21, pp. 83-103.
- Tonneau J-P., Piraux M., Coudel E. Guilherme de Azevedo S., 2009 – « Évaluation du développement territorial comme processus d'innovation et d'institutionnalisation : le cas du Territoire du Alto Sertão do Piauí e Pernambuco au Nordeste du Brésil », in *Vertigo*, Vol. 9, n°3, visited May 23th 2018, <http://vertigo.revues.org/9207>
- Villalba-Eguiluz U., Etxano I., 2017.– « Buen Vivir vs Development (II): The Limits of (Neo-) Extractivism », in *Ecological Economics*, Vol. 138, pp. 1-11.
- Valdez F. (ed.), 2006.– *Agricultura ancestral : camellones y albarradas: contexto social, usos y retos del pasado y del presente*, Abya-Yala/IFEA.
- Walsh-Dilley M., 2017.– « Theorizing Reciprocity: Andean Cooperation and the reproduction of Community in Highland Bolivia », in *Journal of Latin American and Caribbean Anthropology*, Vol. 22, n°3, pp. 514-535.
- Yanggen D., Crissman C., Espinosa P., 2003.– *Los plaguicidas: impactos en producción, salud y medio ambiente en Carchi*, Ecuador, CIP/INIAP/Abya-Yala.

NOTES

1. “[...] résulte d’une évolution, tant de la société que du contexte naturel.”
2. “[...] trajectoire de vulnérabilité.”
3. “Euforia petrolera”
4. Or “*Sumak Kawsay*” in kichwa. This concept, rooted in the Andean worldview, was the main pillar of the “Citizen Revolution” led by Rafael Correa during his presidential term. “*Buen Vivir*” has been used in official discourse as an important rhetorical element to express a desire to give greater importance to the social and environmental well-being of populations.
5. “Welcome to the Loma Larga mining project”.
6. Funded by the French National Agency for the Research (ANR): <http://www.equateur.ird.fr/activites/projets-de-recherche/agriculture/anr-man-pest-insectes-ravageurs-et-securite-alimentaire>
7. The Chambo-Guano system was one of the major projects carried by the National Chamber of Irrigation (Caja Nacional de Riego) to contribute, as early as the 1950s, to the development of agricultural areas of the country. It was not until the 1980s, as we specify in the text, that this project took on a large scale and contributed to the rapid change of rural space around Riobamba.
8. Since the mid-19th century, Panama hat making represented one of the main regular incomes for thousands of peasant households in Azuay. In the mid-1950s, when exports of this artisanal production fell, Azuay peasants began to emigrate to the United States (Rebaï, 2012). Thus, it is important to underline that the crisis in the Panama hat sector is to be considered as an essential element of the trajectory of vulnerability of the Azuay peasants in the 20th century.
9. Spanish term that refers to the reciprocal work exchanges between parents or members of the same peasant community.
10. The *páramos* are an ecosystem of the northern Andes (Ecuador, Colombia, Venezuela), which is found above 3200 m.a.s.l. and whose vegetation is composed of shrubs and grasses.
11. In the eastern part of Salcedo, the potato moth complex, formed by *Tecia solanivora*, *Phthorimaea operculella*, and *Symmetrischema tangolias* (Lepidoptera: Gelechiidae), and the weevil *Premnotrypes vorax* (Coleoptera: Curculionidae), are the main insect pests present in the tuber fields. In San Luis, the main pests are *Plutella xylostella* (butterfly) and *Brevicoryne brassicae* (aphid), which particularly target cabbage, broccoli and cauliflower crops, while *Phyllophaga* sp (beetle) and *Tetranychus urticae* (spider) mainly affect the strawberry plots.
12. In this regard, a recent study of small lupine producers in the Cotopaxi and Chimborazo provinces showed that farmers had little knowledge of pests affecting their fields and that this was the first factor limiting effective control of pests harmful (Mina *et al.*, 2017).

ABSTRACTS

While the peasant populations of the Ecuadorian Sierra have been marked by multiple constraints in their history, for thirty years, the liberal policies that aimed at the “modernization” of the primary sector of the economy in Ecuador have led to profound changes in the Andean regions. From fieldwork conducted in the provinces of Azuay, Cotopaxi and Chimborazo, during which interviews with institutional actors and surveys within family farms were carried out, it was highlighted that the disappearance of public agricultural services, the

promotion of chemical pesticides and the development of mining have favored the disunity of the peasant groups. In addition, we observed that in recent years, family farmers have developed agricultural practices that have adverse effects on the environment while, at the same time, their food security was not ensured. Finally, the work done over the past three years provides an opportunity to take stock of the negative effects of the “modernizing” project of the primary sector in Ecuador and, through the comparison of several local situations, to characterize the extension of the trajectory of vulnerability of Andean rural territories.

INDEX

Keywords: Andes, Ecuador, rural territories, primary “modernization”, trajectories of vulnerability

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