

# The peripheries of development: development and labour in circumstances of constant shortages, as exemplified by the Frías district of Peru\*

## Abstract

Empirical research into social vulnerability – and into strategies that allow people to persist or secure their existence – has most often concerned itself with peripheral, poorly-developed regions with a long history of shortages; frequently even ones in which a failure to solve socio-political problems over decades or even centuries, manifests itself in a permanent crisis. One such region is north-western Peru, presented in this article by the authors who have proceeded on the assumption that the socio-economic development of the country's mountainous areas (including Frías, the district selected for study) not only reflects a peripheral location as regards central areas of Peru and the department of Piura, but is also an outcome of the workings of political and environmental factors that do not help sustain (or in many cases even obstruct) processes of development.

## Keywords

Rural development • vulnerability • sustainability • Peru • Sierra de Piura • local labour market

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## Introduction

Geography is now more and more likely to be used in research matters concerning social vulnerability, not only in circumstances of observable crises and threats, but also in situations of the stagnation, marginalisation or peripherality of regions and social groups. The subject of social vulnerability is associated with a matter that is also now more likely to be taken up by geographers, i.e. the safeguarding of livelihoods, otherwise termed as the sustainable securing (or safeguarding) of existence (Bohle 2001).

It is not by chance that geography has taken an interest in the above subject matter, but rather very much a reflection of the ever-greater popularity of research into development and development policy that began in the 1980s. At that point, an increasing number of researchers – initially in the UK and later elsewhere – began to debate development policy. These were scientists who showed a particular involvement in policy that encouraged development in developing countries. Recently, the growth in the popularity of studies in development and development policy has been associated with the ever-greater interest of EU Member States (including the CEECs) in activities that raise the levels of development in countries and societies in the global “south”.

Empirical research into social vulnerability, survival strategies and securing existence has most often concerned itself with weakly-developed, peripheral regions that have a long history of shortages and other failings. Often these are areas in which socio-economic problems have gone unresolved for decades or even centuries and display symptoms of permanent crisis.

In the 1990s, as well as the first decade of the twenty-first century, interesting reports appeared from empirical research done in various diverse parts of the world, but first and foremost in mountainous areas, and above all by geographers. Studies included a very interesting analyses done by Bohle (2001, 2007, 2008). Several of these are devoted to, for example, the survival strategies employed by inhabitants of Nepal. Other work has analysed the phenomenon of the vulnerability of local groups inhabiting the mountainous areas of Bolivia (Schaeff & Brunner 2007) and Ethiopia (Müller-Mahn & Rettberg 2007), or else areas afflicted by natural disasters (Müller-Mahn 2008; Braun & Shueb 2008). In contrast, rather few studies have been concerned with the phenomena in question as they apply to post-communist states, though the leading study representing an exception would be the article by Stenning, Świątek, Smith and Rochovská (2002), which is concerned with the inhabitants of some of Central Europe's large, formerly-industrial cities.

All authors that study the phenomena of social vulnerability and the securing of livelihood, or existence are keen to stress the huge complexity and diversity of social phenomena ongoing in the regions they study, as well as the degree to which context is important, and the extent to which the dynamics may vary.

Equally, there is the view that analyses of the above issues are of practical political and social significance, especially for development policy (Bohle 2001). This is true of such topics as the structural conditioning of vulnerability to the occurrence of various natural phenomena, processes of social transformation, political relationships, and regional and global linkage and conditioning.

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### Geographical research on local development and the level of social vulnerability

The concept of social vulnerability to threats, crises and disasters of all kinds has, for at least two decades now, been one of the central themes present in the social sciences. It has also featured in geographical studies since the 1990s. Wide-ranging discussion on the said vulnerability to potential threats, both of individuals and society in general, is evoked by the now classic article by Chambers entitled *Editorial introduction: vulnerability, coping and policy* (Chambers 1989), which appeared in 1989 in the working documents of the Institute of Development Studies (IDS). In the article, Robert Chambers defines social vulnerability as "exposure to contingencies and stress, and the difficulty in coping with them." The World Bank, in turn, explains vulnerability as a lack of protection against phenomena that is unfavourable to the life of the individual or the existence of an entire social group from their point of view (2001: 23). The World Bank definition is more suitable when it comes to analysing the situations of local communities present in regions that do not suffer spectacular catastrophes, but remain in marginalised situations characterised by constant shortages (as is the case for the region presented in the remainder of this article).

The social vulnerability concept has become a powerful tool by which to describe situations as regards vulnerability to harm, powerlessness and marginality on the part of both physical and social systems; as well as to run analytical studies on actions that might lead to the enhancement of favourable developmental processes through the limitation of threats (Adger 2006). Analyses and the results of research into resistance on the part of social, socio-natural and socio-economic systems represent a key element in the studies of human-environment relationships, as well as the pressures and stresses to which individuals and groups in society are subject thanks to global changes in the natural environment, and unfavourable social processes that help frustrate progress (Adger 2006). Here there is an underpinning assumption that social vulnerability arises out of the relationship between a society (or an individual) and a threatening factor (or factors), as well as the internal relationships that provide (or do not provide) for the counteraction of the said threats.

The concept of social vulnerability, first and foremost, revolves around two variables, i.e. the form a threat takes and the intensity of the attendant phenomena (Bohle 2001a; Bohle 2007). It is no surprise that some of our knowledge regarding social vulnerability or resistance to threats arises out of earlier ecological research, or else studies on the relationship between humankind and the natural environment. The concept of the socio-ecological system is predicated on the idea that human activity and social structures constitute an integral part of nature, with the result that any division between the social and natural systems is seen as arbitrary (Adger 2006). Obviously, natural systems relate to biological and biophysical systems; while social systems comprise governments and institutions that influence people's use of resources, as well as the knowledge and ethical system holding sway over a given group that interprets those natural systems from the point of view of the inhabitants of the given region (Berkas & Folke, 1998). In the context of the study of these socio-economic systems, resistance relates to the scale of disruption capable of being absorbed (accepted without harming the system) before a deepening of the crisis takes place, and mechanisms and capacities come into operation that allows for self-organisation and adaptation to other, new conditions that have arisen (Carpenter et al. 2001; Berkas et al. 2003; Folke 2006).

It was in the early 1990s that the first articles appeared in geographical journals drawing attention to the fact that both the vulnerability of social groups and the securing of their basic needs might constitute subjects of study for human geography,

especially when it came to the causes of underdevelopment and differences in the levels of socio-economic development present between regions (Watts & Bohle 1993). The 1990s also brought a growth in the interest in research on development processes that also took in geography (Hann & Zoomers 2005; Zoomers 2006; Bohle 2007, 2001). Geographers took up the analyses of societal reactions and behaviours within the context of various research fields: for example, in studies of the relationships between people and the environment, or between policy and individuals or social groups, as well as the threats posed to humankind by new technologies (Bohle 2007; Krüger & Macamo 2003; Schaef & Brunner 2007; Scholz 2006; Czerny 2008; Czerny, Łuczak & Makowski 2007). A theory began to appear in geographical analyses, to the effect that contemporary demographic, economic and political processes, as well as ongoing processes in the natural environment, were of and in themselves factors intensifying feelings of uncertainty – and a tendency to emigrate – among the inhabitants of peripheral areas. For example, the consequences of global climate change, shortages of water, environmental pollution or degradation and many other factors might exert a direct impact on both the standard of living and other dynamics related to developmental processes at local and regional levels.

On the basis of their empirical research on the concepts of vulnerability and the peripherality of local socio-territorial structures, the authors of this article first assert that local development in the peripheral region of Peru under study, (which natural conditions and historical linkages have kept out of the main current of development) was encountering renewed and intensified barrier effects that reflected the lack of any strategies or developmental plans for those areas lagging behind. And so lacking this indispensable political and economic support, it was considered that the local community of the Frías district was unable to bring into play the kind of developmental mechanisms that might allow it to link up, economically, with other regions (Czerny and Córdova-Aguilar 2014). This state of affairs was deemed to reflect the backward subsistence agricultural that was being engaged in, combined with a reactionary attitude on the part of locals to any projects that might serve development.

To verify the validity of the above scenario, the authors visited the region three times during the years 2011–2013. The aim was to carry out questionnaire research, give interviews and run workshops with the local inhabitants. A total of 300 interviews were run on the basis of two blocks of questions: the first concerning sustainable management in peripheral areas; and the second on the scope of underdevelopment, as well as the identification of any local potential that could spearhead development if it were to be supported by political decisions.

### A geographical characterisation of the region under study

The research was carried out in the Frías district of Peru's Sierra de Piura. This is in the southern part of Ayabaca province, in the *department* of Piura. The district covers 567.8 km<sup>2</sup>, though size is a less relevant factor to the present considerations than is topography. Lying on the west side of the Andes, this is an area of slopes, Andean valleys and Andean plateaus, with altitudes ranging from just 400 MASL to as much as 3360 m.

Historically, Frías was always associated with the Piura Valley, because the economy – as well as the social and cultural relations – of this whole area of the northern Andes has been orientated towards the coast. Roads laid out along river valleys have served to facilitate contact of this kind, and the valleys have been used to transport goods to the Pacific coast. In the reverse direction, people originating on the coast have come to the Sierra de Piura with a view to settling the fertile mountain valleys. Today, the Frías district has 114 settlements (*caseríos* and *centros poblados*) distributed inline with the topographic



Figure 1. Location of the District of Frias<sup>1</sup>

<sup>1</sup>Cartography – Anna Rzucidło, University Maria Curie-Skłodowska - FACULTY OF EARTH SCIENCES AND SPATIAL MANAGEMENT



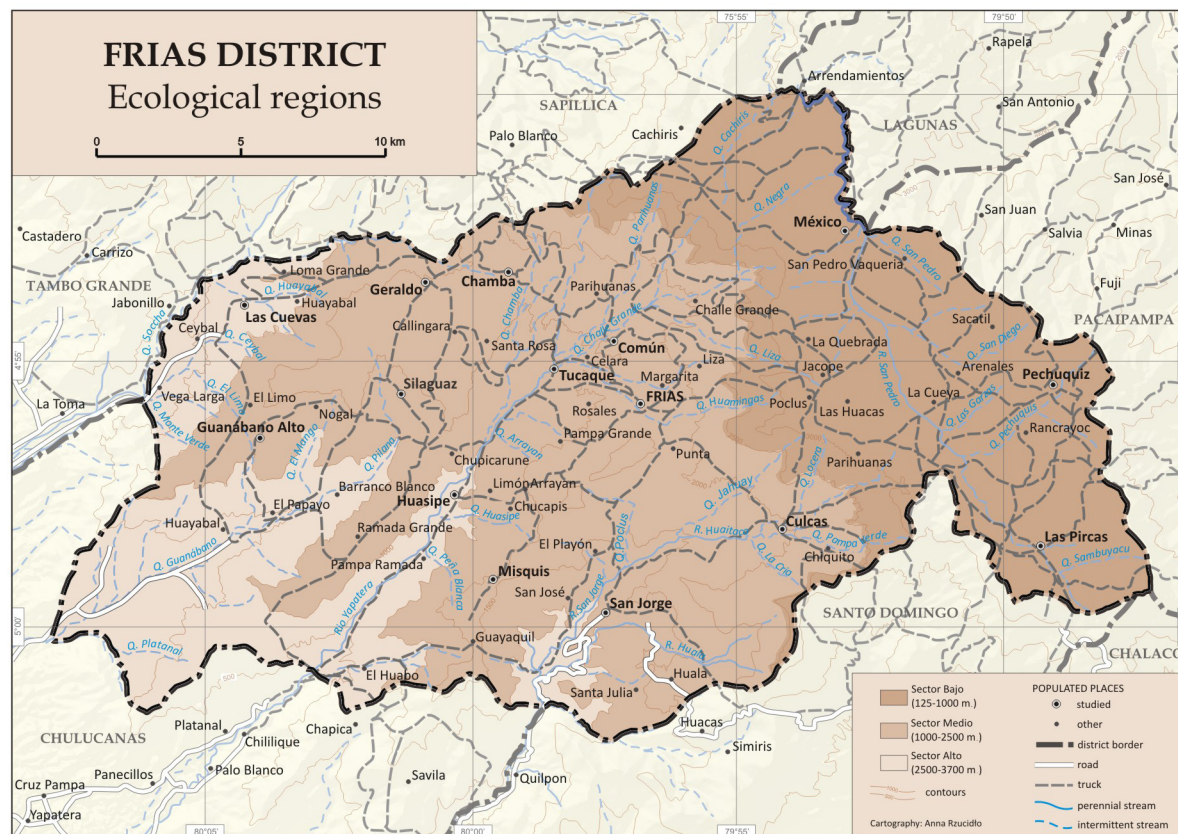


Figure 2. Frias District. Ecological Regions

conditions, with the highest population densities present in the Yapatera Valley. A total of some 23,000 people live here, of which 2300 are classified as town-dwellers, while the remainder form the rural population (Córdova-Aguilar 1982; 2013).

A matter of some importance for this study is the demographic statistic showing that more than half (c. 52%) of the district's inhabitants are men, which is in contrast to the gender structure of the national population, where women prevail. The index reflects the increased emigration of women – as opposed to men – from the region. In line with census data from the 11<sup>th</sup> *Censo Nacional de Población* and the 6<sup>th</sup> *de Vivienda del año 2007*, there are 6,100, or 26.3% of inhabitants, occupationally-active within the district. Among these (in the 15-64 year age group), there are 82.1% rural residents with only 47.8% holding primary school education. From the point of view of the labour market, this is therefore a very under-qualified population; in other words an example of low-level human capital that impedes innovation. This further denotes that, alongside those whose usual work is in their own fields, there are also contracted agricultural workers (*peones*) doing physical work, as well as a certain number of people employed in services. Overall, though, this is overwhelmingly a district of village-dwellers for which meeting one's own needs is the dominant farm production activity.

Data from the agricultural census shows that 70% of the occupationally-active population in the Frías district is involved in crop cultivation or livestock rearing. Bearing in mind that the latter activity is a supplementary one for farms, it is reasonable to state that the district's inhabitants are farmers. Furthermore, it is subsistence agriculture that prevails, a side effect of this having an exceptional diversity of cultivated crops, in structural terms.

To recapitulate, the economic base of the Frías district comprises crop-growing and livestock rearing, the latter mostly supplementing the former, with a wide diversity of crops (first and foremost food crops), grown with a view to meeting the needs of the famers' own families. The corollary to this is the very limited commercialisation of crop-growing, and a failure of local producers to compete in any way for the urban markets (e.g. Piura or Lima) against the farmers operating along the coast. The means and techniques of cultivation are traditional, verging on primitive, and this fact combines with the prevalence of food crops to obstruct the development of agriculture, notwithstanding the relatively favourable environmental conditions for this type of economic activity.

### The production sector – opportunities and limitations

The Act known as *Ley Orgánica de Gobiernos Locales* encourages local authorities to take steps to promote development and draw up Strategies and Programs for Economic Development (*Planes y Programas de Desarrollo Económico*). In line with the current policy of the Peruvian government, the tools used by local authorities should assist with the locating of markets for local products, as well as make clear the benefits arising out of regulations concerning economic activity at the local level. In the case of Frías, this manifests itself in hope for the support of agricultural modernisation, this being understood as the promotion of commercial crops (rather than the region's traditional crops), including: avocado, peaches, beans, agaves and sugar cane. The programme in question also includes forest management and the promotion of different forms of forest use. Farmers are also encouraged to re-establish the cultivation of

Table 1. The occupationally active population of the Frías district

URBAN AND RURAL AREAS, GENDER AND CIRCUMSTANCES AS REGARDS ECONOMIC ACTIVITY	TOTAL	Age structure (population of school or productive age)				
		6-14	15-29	30- 44	45- 64	Over 65
<b>District of Frías</b>	<b>19,257</b>	<b>5,897</b>	<b>5,184</b>	<b>3,631</b>	<b>3,061</b>	<b>1,484</b>
Occupationally active	6,052	160	2,054	1,804	1,497	537
Employed	5,742	136	1,888	1,732	1,461	525
Unemployed	310	24	166	72	36	12
Other	13,205	5,737	3,130	1,827	1,564	947
<b>Men</b>	<b>9,899</b>	<b>3,053</b>	<b>2,792</b>	<b>1,752</b>	<b>1,548</b>	<b>754</b>
Occupationally active	5,059	129	1,736	1,458	1,265	471
Employed	4,799	113	1,599	1,394	1,234	459
Unemployed and others	4,840	2,924	1,056	294	283	283
<b>Women</b>	<b>9,358</b>	<b>2,844</b>	<b>2,392</b>	<b>1,879</b>	<b>1,513</b>	<b>730</b>
Occupationally active	993	31	318	346	232	66
Employed	943	23	289	338	227	66
Unemployed	50	8	29	8	5	
Other	8,365	2,813	2,074	1,533	1,281	664

Source: INEI - Censos Nacionales 2007: XI de Población y VI de Vivienda

Table 2. Structure to the use of land in the Frías district

FRÍAS district	Area (ha)	%
<b>Total area</b>	<b>45,804</b>	100.0
<i>Area under cultivation</i>	<i>18,715</i>	40.8
Area irrigated	8,208	43.9
Area not irrigated	10,507	56.1
<i>Other agricultural</i>	<i>27,089</i>	59.2
Natural pastureland	22,360	82.5
Tended pastureland	3,499	15.6
Meadows	18,861	84.4
Forest and scrub	3,490	12.9
Other	1,239	4.6

Source: Authors' own work based on data from III CENAGRO, 1994.

local crops known and used in the pre-Columbian period, as well as medicinal plants.

An action strategy was adopted to ensure that the local authorities are interested in supporting organised groups of local farmers seeking to compete with their products, at least on the

regional (northern Peruvian) market. The organisers of the first alliances of producers that came into existence (*i.e.* coffee and maize) are seeking to build up a network of small-scale producers that have so far transferred production surpluses on to the market in Piura. This is not, of course, output entirely earmarked for the market, but is rather an *ad hoc* affair whose scale depends on the yield in any given year. The choice of an appropriate development strategy in a tough environment, as far as accessibility and investment possibilities are concerned, requires linkages between mechanisms for local governance and policies for natural-resources management, agricultural production and agribusiness, the improvement of rural infrastructure, organising a network of small-scale producers, and appropriate risk management expanded to include consideration of the variables of a climate that stand in the way of the traditional model of development, which has long been pursued in this region.

Also of importance for the dynamic development of agriculture are matters of land ownership. Farmland within the district belongs to the farmers, but the ownership structure is dominated by a *minifundio* system of small plots covering between 1.5 and 5 ha (according to information obtained during interviews carried out in 2012 and 2013). The limited output level achievable from small fields makes it impossible to produce any larger surpluses that could be earmarked for sale. For this reason also, it is important for farmers to join together in alliances of producers, in order that they might sell products and negotiate the prices jointly. Our research shows that, thus far, it is "middle-men", travelling out to the villages, who buy directly from individual farmers, and in this way ensure that (in the case of maize, for example) the product is sold at a price below the cost of production.

Table 3. *Frías district: agricultural output for the years 2007–2008*

Crops	Area (ha)	Production (kg/ha)
<b>Single-year cultivation</b>	<b>4,617</b>	
Maize	2,374	1,200
Wheat	786	2,000
Peas	490	1,200
Hard maize	349	2,000
Barley	204	2,000
Beans of the <i>bayo</i> variety	190	800
Beans of the <i>canario</i> variety	70	900
Oca	50	1,500
Manioc	30	2,000
Rice	27	2,000
Olluco	16	1,500
Potatoes	12	4,000
Garlic	11	2,500
Broad beans	08	1,500
<b>Multi-year cultivation</b>	<b>5,910</b>	
Sugar cane	420	10,000
Bananas	412	650
Coffee	151	300
Avocado	11	300
Cherimoya	11	300
Granadilla	10	300
Peaches	40	..
Cultivated pasture	4,855	3,000
TOTAL	10,527	---

Source: *Región Agraria Piura - Sede de Agencia Frías, 2008, en Plan de Desarrollo Local Concertado 2011-2021:17.*

### Rural areas and agriculture in the Frías district for the years 2012-2013

As was noted above, the research project implemented in the Frías district assumes that the development of this part of Peru is based around traditional forms of management, owing to an isolation that reflects both environmental and technical/technological factors. Thanks to the low levels of both human capital and support of a political and administrative nature, the management forms in question stand in the way of modernisation in the region, and its integration with the wider regional and national economies. At the same time, the prevalent subsistence agriculture combines with growing internal demand, to encourage over-intensive use of existing natural resources (water, soil and forests), thus further disturbing the ecological balance, and

ensuring that local communities become yet-more prone to the external factors underpinning development.

Verification of the above thesis necessitated field research, and this took in some 15 villages (*caseríos*) in the Frías district, which were located at different altitudes and characterised by very different natural conditions and opportunities for agricultural development.

Differences in forms of agricultural management and in crop structure are very much dependent on environmental conditions here, and first and foremost on the altitudinal zone of the climate and vegetation within the district in which people live and are active. Thus, in the *Yunga* zone, which extends up to 800 MASL, 85% of those of productive age are apparently (according to the questionnaires) at work on their own farms, and should be regarded as characterising subsistence agriculture. Only on 12% of these farms are any livestock (cattle or pigs) being raised. As many of 54% of respondents declared that the level of production is so low – and so variable from year to year – that they are under constant pressure of shortages and even threats to the life and health of their families. In their opinion, this pressure – and social vulnerability – is attributable to limited output (mentioned by 23.5%), a lack of technical backup (7.7% of respondents) or a simple lack of interest in work that requires so many measures to be taken and so much commitment and sacrifice.

### Factors shaping social vulnerability and barriers to development

Questionnaire-based research and interviews carried out in the field provided a basis for the authors to draw conclusions regarding social vulnerability and barriers to development in a district that is peripheral (in terms of location and socio-economic achievement), in the sense that it is located in the highlands of north-western Peru, outside the economic heartland of the department of Piura. This article has only taken into account the agricultural sector as the main shaper of the population's wellbeing and labour market.

From the above compilation of results, as well as interviews conducted with the inhabitants of the 15 villages, it has been possible to arrive at the following conclusions concerning the causes of peripherality and social marginalisation in the region, as well as its high levels of visible and hidden unemployment.

1. There is a total (or almost total) lack of interest in the situation faced by the people in peripheral regions on the part of the regional and national authorities. The state is simply absent from these areas.
2. The political situation has combined with the environmental conditions to lead to disintegration of a territory that was historically well integrated by a system of local linkages. This is now the result of the lack – or very bad state – of roads. If precipitation is heavy, the roads in question are simply impassable, even to the extent that farmers need to have reserves of food as and when a period of this kind occurs. It is also nothing unusual for farmers to be held up by bandits and have the goods or cash they are transporting stolen.
3. Only primitive cultivation techniques are made use of, with little resort to modern techniques, such as certified seed, organic fertilisers, etc.
4. There is a lack of credit or technical-advisory programmes addressed toward poor people in low-productivity peripheral areas. There is also a lack of training as regards the commercialisation of agricultural products.
5. There are no programmes to counteract or combat the degradation of soils.
6. There is a lack of strategies seeking to achieve the appropriate management of water resources, and hence



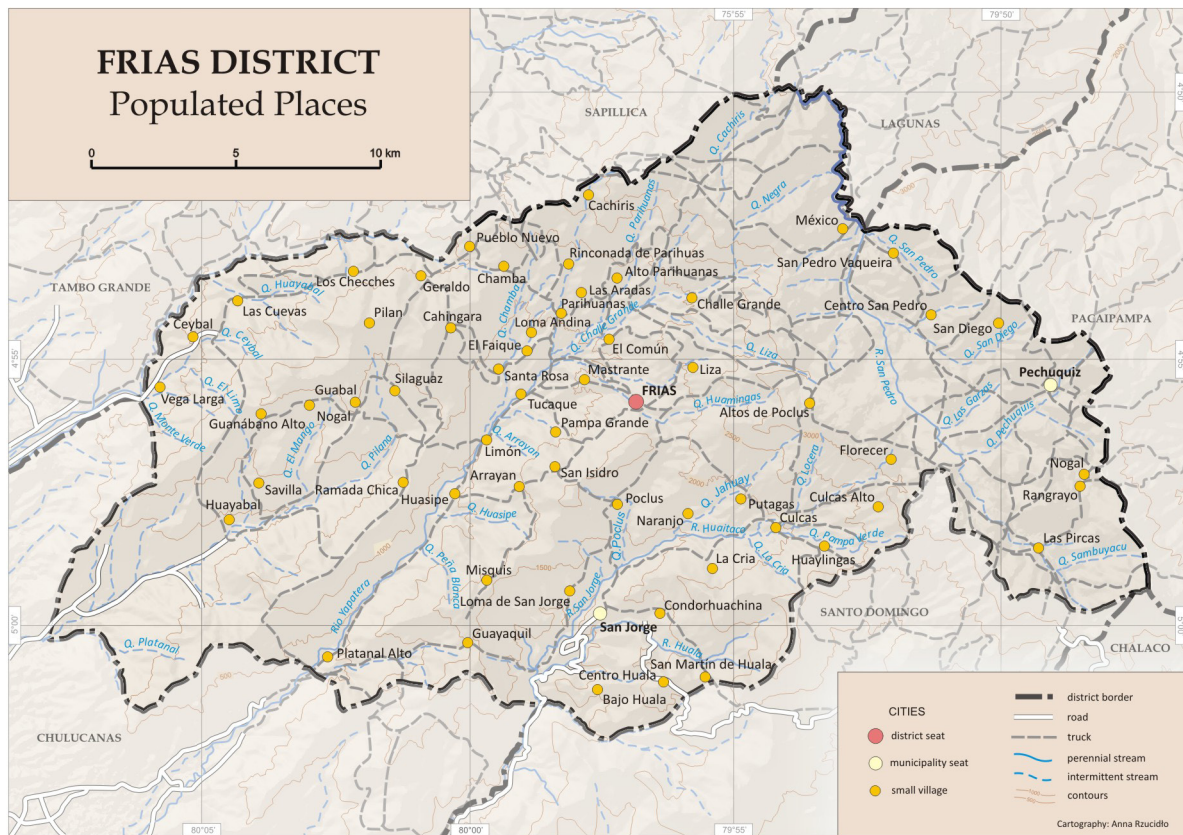


Figure 3. Rural settlements in Frias

favour the development of more sustainable farming. Maintenance of the system of agricultural production is dependent on rain, but, thanks to the very tangible climatic change ongoing in this region, this is less and less regular. Rain may fail during the rainy season, while the dry seasons seem to be becoming hotter and hotter. Farmers also complain that plagues of pests that destroy crops are ever more in evidence.

The ecological problems lowering the region's productive potential are detailed as follows:

1. Forest fires are encouraged by farmers, even though these are sufficient to destroy ecosystems in the upper parts of the Andes whose streams and rivers represent accumulated water that flows down into the rural areas under study. The loss of tree stands and of low vegetation cover ensures that water for both consumption and agriculture is lacking in the dry season.
2. Land erosion is stimulated by excessively intensive agriculture, as well as by the open-cast working of mineral resources.
3. Pollution of water is caused by sewage and refuse, which is discharged into it by residents of the region living along all sections of rivers.
4. There is also pollution of soils and groundwater by way of refuse disposed of in places not set aside for the purpose.

The problems of the production sector are summarised as follows:

1. There is almost nothing more than subsistence agriculture in the district, with the output very much earmarked for own consumption.
2. Agricultural output is only to a very limited extent oriented towards the market. Only in years of surplus is part of the output – mainly maize – allocated for sale. This reflects a low level of efficiency. Farmers wanting to produce to sell would need to compete with producers along the coast who are better informed about the marketing process, and thus, it is very difficult for them to draw any benefit from their own crops.
3. The low productivity of agriculture also reflects a lack of water and a very poorly developed system of land irrigation.
4. A serious hindrance to the development of commercial agriculture is the lack of accessible credit, lack of skills in negotiating prices with "middle-men", and a failure to work together, on the part of the farmers, who could theoretically have their collective interests represented as product prices are negotiated.

In the course of the workshops and interviews run in December 2012, the discussion turned to, for example, the appreciation of natural threats and the expectations regarding an applicable means of preventing them from becoming a reality, as well as recovering from them. Presented below are lists of the problems affecting residents that they themselves considered to be of the greatest significance.

**Current problems as indicated by the inhabitants of the low elevation Sector Bajo, in the district of Frías, in December 2012.**

Sector Bajo	Problems
Huasipe (20 workshop participants)	<ul style="list-style-type: none"> <li>• Littering of areas along roads leading to Frías</li> <li>• Lack of drinking water and sewerage system</li> <li>• Lack of a chapel</li> <li>• Health centre poorly supplied with medicines and lacking the proper numbers of auxiliary medical staff</li> <li>• Low level of education of children going to primary school</li> <li>• Lack of training for farmers in proper farm management</li> <li>• Deforestation</li> <li>• Lack of places for rest and recreation (squares or parks)</li> <li>• Poor state of village roads</li> </ul>
Las Cuevas (27 participants)	<ul style="list-style-type: none"> <li>• Very poor state of roads</li> <li>• Inadequately developed irrigation systems</li> <li>• Lack of good quality seed material</li> <li>• Monocultures in agriculture and a lack of alternative crops (capable of bringing greater profits)</li> <li>• Inappropriate breeds of cattle for the given environmental conditions and a lack of pasture</li> <li>• Poor education</li> <li>• Lack of medical personnel and medicines on site</li> <li>• Poor state of the meeting hall for village inhabitants</li> <li>• Lack of promotion of the locality seeking to attract tourists</li> <li>• Lack of green space for rest and recreation</li> </ul>

Misquiz (49 participants)	<ul style="list-style-type: none"> <li>• Lack of water</li> <li>• Lack of a health centre</li> <li>• Deforestation</li> <li>• Lack of usable roads during the rainy season</li> <li>• Lack of information on the environmental consequences of human activity (like stubble-burning)</li> <li>• Low agricultural productivity</li> <li>• Lack of advice on the sale of products at markets</li> <li>• Unemployment</li> </ul>
San Jorge (32 participants)	<ul style="list-style-type: none"> <li>• Disorder (disorganisation of the life of the community)</li> <li>• Alcoholism</li> <li>• Violence in the family</li> <li>• Ineffective training</li> <li>• Lack of medicines</li> <li>• Lack of plans for help should a natural disaster occur</li> <li>• Illegal felling of trees</li> <li>• Frequent droughts afflicting the region</li> <li>• Epidemics (diseases) – dengue fever and leishmaniasis</li> </ul>

Created on the basis of materials from fieldwork in December 2012: *Talleres de Diagnóstico Participativo Local*, December 2012, NCN 2011/01/B/HS4/03248.

Key problems mentioned by inhabitants of the Sector Bajo are seen to be those associated with water shortages, a lack of appropriate medical care, the poor level of teaching in schools and limited agricultural productivity. These problems are referred to repeatedly in the declarations of all participants at all the meetings at this altitude above sea level. This in turn means that inhabitants are most vulnerable when it comes to these issues, while the assets at their disposal can, at the same time, be said to be depleted in the areas of human and physical capital. There were also problems that rural inhabitants had only rarely spoken of previously, like environmental pollution (litter and the dirty, stinking water in ditches), disease and the general disorganization and mismanagement of the district.



**Current problems as indicated by inhabitants of the Sector Medio in the district of Frías, in December 2012**

Sector Medio	Problems		
El Común (16 participants)	<ul style="list-style-type: none"> <li>Lack of an organization for bringing farm producers together</li> <li>Low level of teaching at local schools</li> <li>Lack of adequate healthcare</li> <li>Lack of preventive health and nutrition programs</li> <li>Lack of information on how to safeguard against plagues and other diseases of plants and animals</li> <li>Lack of access to low-interest loans for rural inhabitants</li> <li>Impoverishment of soils</li> <li>Lack of information on the opportunities for selling produce at markets</li> <li>Lack of road connections in the rainy season</li> </ul>	Chamba (29 participants)	<ul style="list-style-type: none"> <li>Threat of landslides and mudslides</li> <li>Poor state of education</li> <li>Narrow roads lacking storm-water drainage</li> <li>Lack of infrastructure for irrigating fields and managing water for use in agriculture and the home</li> <li>Lack of health centres and doctors</li> <li>Lack of a booster station for TV signal</li> <li>Lack of a secondary school</li> <li>Uncontrolled deforestation</li> <li>Lack of technical advice for farmers</li> </ul>
Culcas (46 participants)	<ul style="list-style-type: none"> <li>Unfamiliarity with, or poor knowledge of, farming techniques and modern methods of raising livestock</li> <li>Lack of technical support for agricultural production.</li> <li>Disorganisation and a lack of information in rural areas on legal matters, and on running farm cooperatives</li> <li>Lack of medical care</li> <li>Decision making regarding the district as a whole centralised in the capital, Frías</li> </ul>	Geraldo (26 participants)	<ul style="list-style-type: none"> <li>Roads impassable and dangerous for part of the year</li> <li>Health centre sited in building threatened by collapse</li> <li>Lack of pastureland for cattle</li> <li>Lack of preparation of parents for proper upbringing of children and instilling correct standards of behaviour</li> <li>Deforestation</li> </ul>
Frías – rural area (18 participants)	<ul style="list-style-type: none"> <li>Deforestation</li> <li>Ground frosts</li> <li>Plagues and plant diseases</li> <li>Lack of training on the means of cultivation and commercialization of agricultural output</li> <li>Disorganisation within the system of educational governance</li> <li>Lack of technical support for the development of agriculture</li> <li>Lack of proper outfitting and staffing of health centres</li> </ul>	Silahuá (36 participants)	<ul style="list-style-type: none"> <li>Inadequate equipping of health centre and lack of a doctor</li> <li>Earth road that links the village with the world, narrow and in a very poor state</li> <li>Chilly relations between local leaders and the Frías district authorities</li> <li>Lack of technical support for farming</li> <li>Incompetent, poorly trained teachers</li> <li>Lack of development plan taking in production sector</li> <li>Unemployment</li> </ul>

Guanábano Alto (42 participants)	<ul style="list-style-type: none"> <li>• Lack of a passable road</li> <li>• Too little water for the irrigation of fields</li> <li>• Disorganization of the rural community</li> <li>• Lack of security</li> <li>• <i>Machismo</i> – male dominance within the family</li> <li>• Lack of supply of media – breaks in the supply of electricity and a lack of sewers</li> <li>• Deforestation</li> <li>• Lack of technical assistance and advisory services for farmers</li> <li>• Low level of learning and no Internet</li> </ul>
Tucaque (30 participants)	<ul style="list-style-type: none"> <li>• Poor state of earth roads, roads are dusty</li> <li>• Lack of sewerage</li> <li>• Lack of a well-equipped health centre</li> <li>• Lack of public space and places to take rest and recreation</li> <li>• Poor state of the <i>casa comunal</i> community meeting hall</li> <li>• Poor state of street lighting</li> <li>• Low level of education</li> <li>• Lack of a secondary school</li> <li>• Lack of infrastructure for irrigating fields</li> <li>• Lack of control over plagues and diseases carried by insect and wild-animal vectors</li> </ul>

Source: *Talleres de Diagnóstico Participativo Local*, December 2012, Project NCN 2011/01/B/HS4/03248.

The participants of the workshops run in the *Sector Medio* first and foremost stressed the poor state of education (mostly blaming this on poorly trained teachers) and shortfalls as regards healthcare that are deemed to reflect both a lack of medicines and an unsuitable level of readiness in the *posta de salud* treatment rooms that should be found in villages. There is a lack of not only doctors but also nurses, who might be in a position to dispense medicines. Finally, the issue of very poor road connections was also commonly raised. These related to access, not only to the

capital of the district but also to the coast on which Piura, as the regional capital, is located. Piura also being the main market for harvested crops and the main source from which farmers may supply themselves with everything they need at home and on the farm.

A serious drawback limiting farming in the region, in the most fundamental sense, is the total lack or shortage of water, for farming purposes in particular. The system of ditches is sparse, and there is no reservoirs into which water might be collected for distribution in time of drought.

A further matter is the tangible lack of community integration. Indeed, many respondents referred to disintegration and disorganization (alluding in this way to an ongoing breakdown of traditional social ties). In the view of those surveyed, this stands in the way of concerted, joint action that might help attract additional funding for the development of infrastructure and promotion of the region. One response to this feeling of abandonment and severing of traditional ties takes the form of efforts by certain leaders to establish support groups, and to begin taking certain local-authority tasks into their own hands. Such is the case with the *rondas campesinas*, a self-help organizations that provides security to the rural inhabitants against robbery. Among other things, they attend to the maintenance of order in the villages, and thus, also deter actions that breach the peace. More generally, local leaders harbour a strong conviction that organizations and associations that would act to further rural development are a crucial need. Disappointed or disillusioned with the local authorities, they now seek out support for themselves, trying to establish organizations that would represent local interests beyond the district itself. Efforts are also being made to create producers' associations for those growing crops (primarily coffee).

**Current problems indicated by inhabitants of the high-altitude sector (*Sector Alto*) in the district of Frías, in December 2012.**

Sector Alto	Problems
Méjico (28 participants)	<ul style="list-style-type: none"> <li>• Degraded natural environment</li> <li>• Lack of electricity in many villages scattered across the region</li> <li>• Extensive deforestation</li> <li>• Ineffective, poor quality education at all levels</li> <li>• Lack of health centres and medical personnel</li> <li>• Lack of agricultural advisory services (certified grain/seed, plant protection agents)</li> <li>• Inefficient irrigation system</li> <li>• Very poor state of roads linking villages with the wider region</li> <li>• Lack of phone connections and TV signal</li> </ul>

Pechuquiz (26 participants)	<ul style="list-style-type: none"> <li>• Lack of basic infrastructure supplying drinking water to villages</li> <li>• Lack of sewerage and electricity</li> <li>• Gale-force winds in the dry season that destroy houses</li> <li>• Lack of appropriate equipment at primary school</li> <li>• Lack of medical care and medicines (at the time of our visit, supplies of all main medicines were exhausted)</li> <li>• Deforestation</li> <li>• Lack of leaders or delineation of community land</li> <li>• Poor-quality roads destroyed in the rainy season</li> </ul>
Las Pircas (31 participants)	<ul style="list-style-type: none"> <li>• Ill-equipped health centre</li> <li>• Village only accessible in the dry season</li> <li>• Lack of street lighting</li> <li>• Lack of drinking water for dispersed households</li> <li>• Lack of septic tanks and wastewater treatment plants</li> <li>• Lack of assistance with tackling diseases in livestock</li> </ul>

Source: *Talleres de Diagnóstico Participativo Local*, December 2012, Project NCN 2011/01/B/HS4/03248.

It is in the *Páramo* zone (*Sector Alto*) of the district that living conditions are most difficult, and assets available to rural inhabitants very limited. Poverty, a lack of conditions for people to live with any kind of dignity and a lack of state assistance, all ensure that people living above 3,000 MASL encounter considerable difficulties in organizing their lives and have to show enormous commitment. A fundamental problem is the lack of electricity, which ensures that life here looks little different from that of a century ago. It is also common for inhabitants to succumb to respiratory diseases and chills. A lack of healthcare so severe that even basic medicines may be inaccessible ensures that mortality rates are higher in the villages located in the *Páramo* than in the lower zones.

#### Programmes supporting the development of agriculture

The results of the research carried out point to there being many different causes for under-development in the Frías district of the Sierra de Piura. Causes of various kinds include:

1. the institutional and political,
2. those resulting from conditions in the natural environment,
3. the social and historical.

1. Without well-founded anthropological research it is very difficult to assess how far-reaching the processes are of institutional and social dependence that paralyse initiatives supporting growth, or else ensure that such initiatives fail

to appear altogether. It can only be said – on the basis of the answers received in the course of interviews – that the ties of blood existing for centuries among the members of large local communities, dictate conditions for solidarity and support, even where some members of the society are forced out on to the margins and deprived of the backing of other residents. The large so-called families that take power at the local level are driven by political clientelism and can frequently be said to represent the interests of only half of the inhabitants.

2. The pursuit of investment projects, for example, those involving roadbuilding, irrigation, etc., serve to strengthen political positions. Societal features in the region do not favour any significant expansion of democracy in people's lives, while the difficult natural conditions (the dispersed nature of settlements, lack of roads, isolation from the world during the rainy-season, and so on) all ensure that most inhabitants seek to safeguard their livelihoods by way of agricultural production that meets only their own needs.

For many years now, the municipal authorities in Frías have been joined by the PIDECAFE and CEPICAFE organisations in supporting local producers and assisting with the development of agribusiness – first and foremost production for export of dark cane sugar and sugar-cane vodka.

Another programme – *el Programa Nacional Sierra Exportadora* – seeks to introduce a rationalisation of farm production whereby farmers obtain credit for planting peach tree orchards. It is still too early to assess the results of this effort.

The development of coffee production in the Frías area has encountered major market-related barriers as plantations are located in areas accessible only with difficulty via mountain tracks. For example, the Santa Rosa plantation is a two-hour march from the road between Frías and Chulucanas. The lack of facilities to roast and grind coffee prior to sale also obstructs any expansion of sales on the regional market. In general, farmers do not know how or where to sell their coffee, and they pay no attention to promotional elements such as attractive packaging in different sizes. They are, however, at the stage of establishing an association, which may make it possible for them to reach distributors in Piura.

#### Conclusion

Analysis of the information obtained in the course of the fieldwork gives rise to the following conclusions regarding the causes of social vulnerability in the Frías district.

#### Within the social sphere

1. The lack of a Physical Development Plan inevitably ensures that land use is chaotic and uncontrolled. For example, some of the land under cultivation should be protected (not used for agriculture at all), on account of the major threat to stability posed by natural phenomena. The ongoing felling of trees accelerates still further the processes of environmental degradation, with serious concomitant changes to the region's natural conditions. Global scale climate change can augment this, threatening an already-vulnerable region to the point where the very existence of settlement and human activity in the mountains is put in question.
2. Community organizations and networks are in a weak and often parlous state, with none of the mechanisms in place that might allow for a concerted joint action in the name of development and the better protection of the environment.
3. Likewise, local authorities are in no position to satisfy the population's needs or to safeguard inhabitants against the impacts of unfavourable climatic and economic changes. A paternalistic relationship between the authorities and the

inhabitants is in place, but this is *ad hoc* and often nepotistic, with little or nothing being done in the more general interest of the district.

#### Within the economic sphere

1. Farmers are engaged in subsistence agriculture; traditionally, as they seek to feed their families, but also as a result of an unfamiliarity with market mechanisms generally and the specific means by which their produce or products might be sold on the regional market.
2. Inappropriate management of natural resources (water, forest, plant cover, soil, etc.) results in far-from-effective use of their full potential, and hence also to profligacy and waste. The absence of a better developed system by which fields could be irrigated and water stored, ensures that the full productive possibilities of soils is not being made use of, and such chances as might exist for crop yields to be increased.
3. Continued reliance on the cultivation of traditional crops, which forms the basis of the inhabitants' diet, greatly hinders attempts to introduce the kind of commercial crops that might bring greater profits. Poor farmers, dependant on agricultural output for their livelihoods and not having any other more significant assets at their disposal, have neither the patience nor the time to wait the several years needed for the growth of more commercial, long-lived plant species. It also happens that crops are abandoned, and established plantations destroyed, through, for example, the grazing of livestock on cultivated fields.

The most spectacular example of this kind of procedure would be the attempt to bring into cultivation the dragonfruit plant (*Hylocereus undatus*), which is a member of the cactus family that grows on a dry substratum, often even among rocks. This species can bear fruit as many as five or six times per year, making it very bountiful indeed, by crop standards. A single cultivated hectare may in this way yield 30 tonnes of fruit annually. Since the taste is pleasant, the plant has become increasingly popular as a tropical crop. It is even present in the wild state in dry parts of the Andes, in the so-called *yunga* altitudinal zone. A group of scientists from the Pontifical Catholic University of Peru even sought to encourage farmers to establish plantations. Students led by the scientists planted the species and returned a year later to check on progress, only to find that – rather than waiting for the three or more years needed for fruiting to begin – local peasants had brought their livestock in to graze on the fields, thereby ruining the plantations entirely. Attempts at the commercial cultivation of coffee have also been made. Academic staff and students from the PUCP organised meetings between representatives of the producers and buyers in Piura. Workshops have also been offered, in relation to marketing and selling principles not known by the farmers. However, while the Piura region is indeed supplying more of the demand for coffee on Peru's home market, the coffee from Frías is not yet being sold on export markets.

4. The limited development of infrastructure that supports possible progress in agriculture, combines with outdated cultivation techniques to exert an unfavourable effect on soils. Erosion is a severe problem that reduces the area of farmland and is associated with a loss of water, whose distribution is not as it should be.
5. Climate change is making the kinds of pest infestations and diseases that were either entirely absent from the region, or only occurring rarely in the past, extremely problematic. Farmers are absolutely not equipped to tackle these problems, and in any case lack the knowledge to do so.
6. Activity on the part of intermediaries, who negotiate purchase prices for the produce from small farms, is such that the latter often fail to receive sufficient money to even cover the costs of production. Middle-men thus take advantage of farmers' lack of knowledge of town market prices (for example for maize), and of their weaknesses when it comes to organising representation in order to achieve the kind of financial wellbeing that would no longer necessitate selling at any price.

#### Within the infrastructure sphere

1. Local roads and most of the field tracks were built in an unplanned manner, without reference to the usual principles that should underpin such developments. They therefore lack verges and ditches that would help carry away rainwater safely and effectively. This means that each rainy season sees the road surfaces destroyed, and in this way raising maintenance costs beyond what they ought to be. It is typical for road repairs to take the form of community work in which all inhabitants of a given village take part. The participation of village-dwellers in work of this kind (as well as ditch clearance and dredging, and the building of schools and meeting halls) has been a tradition in Andean communities since pre-Hispanic times.
2. There is underfunding for treatment rooms and health centres, which are, by definition, places only offering first aid and the most widely used medicines. The latter are universally in short supply, while it is rare for nurses to be *in situ* at all. Frías itself was alone in having a doctor, though only one.
3. The very low level of education on offer is likewise the subject of universal criticism by inhabitants. They are concerned that their children will not be educated as they should be, if their goals include working in the city or further study. While many parents are themselves illiterate, they fully appreciate the importance of education for the further and fuller development of individuals and the community alike. The predominant kinds of school within the district are primary schools, which offer six years of elementary education. There are very few secondary schools. Equally, criticism of the limited amount of equipment and facilities at schools is still less severe than that concerning the education itself, which is considered to be in the hands of teachers lacking appropriate training.



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