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Peri-urbanization in Sacaba, Bolivia: challenges to the traditional urban planning approach

Paola J. Ledo Espinoza

Department of Urban and Rural Development, Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden

ABSTRACT

In Bolivia, as in many cities of the Global South, rapid and unplanned urban growth expanded widely into peri-urban areas with high levels of poverty and vulnerability. However, the public administration do not acknowledge the peri-urban areas in policies and planning. Moreover, the peri-urban complex realities exceeded local planners capacity to cope with them. This paper examines the challenges that peri-urban areas pose to urban planning in Sacaba, Bolivia. The methodology includes questionnaire surveys, interviews and workshops with actors in peri-urban areas. Findings reveal that peri-urban areas appeal to be formally recognized in urban planning at the same time that traditional urban planning need to readjust its approach to fit the reality of the cities in the Global South.

KEYWORDS

Peri-urban; urban planning; self-helped; informal; social conflicts; Bolivia

Introduction

Many cities in the Global South (GS) are characterized by peri-urbanization; rapid, informal and extensive urban settlements spreading at the outskirts of the city urban centres, transforming peripheral rural areas into low-income urban settlements (Garcia-Ayllon 2016; Lopez-Goyburu and Garcia-Montero 2018). These peri-urban areas suffer from poor economic, social and environmental conditions (Haller and Borsdorf 2013; Inostroza 2017) and face multiple challenges that are not address by local governments (Garcia-Ayllon 2016; Watson 2009). Peri-urban settlements are often neglected in policies and plans because local capacities get overwhelmed by the complex dynamics and neither urban nor rural administration takes responsibility for them (Madaleno and Gurovich 2004)

The United Nations' New Urban Agenda (NUA) addresses the urgent need to take action over peri-urbanization (United Nations 2017) in order to achieve 'Sustainable cities and communities' that have 'career and business opportunities, safe and affordable housing, and building resilient societies and economies' (UNDP 2020).

Scholars concerned about peri-urban areas of the GS often argue that traditional urban planning approaches have little, if any, effect in the GS because peri-urbanization is neglected (Geneletti et al. 2017; Haller and Borsdorf 2013; Inostroza 2017; La Rosa et al. 2018; Madaleno and Gurovich 2004; Mortoja, Yigitcanlar, and Mayere 2020; Simon 2008; Singh and Narain 2020; Watson 2009). Scholars assert that peri-urban areas need to be explicitly recognized in urban planning and management (Lopez-Goyburu and Garcia-Montero 2018) in order to make planning approaches more suitable to GS cities.

CONTACT Paola J. Ledo Espinoza paola.ledo@slu.se Department of Urban and Rural Development, Swedish University of Agricultural Sciences (SLU), Almas Allé 8, Uppsala 750 07, Sweden

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This paper aims to contribute to the international debate on the peri-urban phenomenon by examining the peri-urban challenges faced in a Bolivian city (Sacaba), in relation with local urban planning. I discuss that traditional urban planning approach holds on assumptions that reproduce the peri-urban difficulties and create new ones. Thus, I claim urban planning framework and practices need to, parallel to recognizing the peri-urban area, make changes in its use of dichotomies to fit the profile of peri-urban areas.

The peri-urban context

The pressing need to recognize the peri-urban area in the framework of urban planning presupposes a peri-urban definition; however, there is no universal definition of peri-urban areas. On contrary, studies engaging with the planning and design of the peri-urban employ a variety of criteria and different terminologies when defining the peri-urban areas (Lopez-Goyburu and Garcia-Montero 2018); ambiguity that contributes to the neglect of the peri-urban areas in practice. The multiple different conceptual and geographical definitions respond on one hand, to different 'urban' and 'rural' definitions hold across countries (Singh and Narain 2020); and, on the other hand, to the unique characteristics peri-urban areas have in every context (Geneletti et al. 2017; La Rosa et al. 2018; Mortoja, Yigitcanlar, and Mayere 2020).

Although, there is an implicit understanding of 'peri-urban' as a mix of 'rurality' and 'urbanity' (Singh and Narain 2020); it is claimed that peri-urban areas are grounded in the socio-economic and cultural characteristics of the context in which they are located (Garcia-Ayllon 2016). The peri-urban complexities and dynamics vary across cities according to the specific political systems, institutional arrangements, societal characteristics, environmental qualities, economic factors, etc. of the contexts (La Rosa et al. 2018).

Although this limits the transferability of studies about peri-urban planning and management strategies, it strengthens the urgent need to develop peri-urban characterizations for different cities. Thus, enriching our understanding about the context-variability of peri-urban areas can raise new propositions for testing and calibrating enhanced, less normative, urban planning approaches for the overall achievement of the NUA,

The peri-urban context presents us an opportunity to rethink urban planning in relation to the prevailing problems of the new urban world and open new questions to urban planning in different parts of the world. The diverse experiences around the globe may become an inspiration to invent new urbanities and new ways of planning in the cities (Cielo and Céspedes 2010; Haller 2017; Watson 2009)

Case study and methods

The study is founded on Soft Systems Thinking (SST), a tradition within the Systems Thinking approach that holds that real world problems are unstructured, messy, unbound and uncertain (Checkland and Scholes 1990). SST is founded on the argument that everyone sees, understands and evaluates the world differently, thus problems and solutions are perceived in multiple ways (Graham 2003; Packham and Sriskandarajah 2005).

Accordingly, the study embraces the idea that the understanding of the peri-urban area should be built through the multiple perspectives existing in the peri-urban context. To do so, the research question guiding the inquiry was why urban planning does not address the problems of peri-urban areas. The study analyse the peri-urban problematical situation from the perspective of those engaged with it i.e. the local government and the peri-urban settlers. Therefore, researchers' role in data collection for this study was to encourage the research participants to examine and debate their own perceptions.

Case study description

The paper draws on primary and secondary data from Sacaba, Bolivia. Sacaba is the second most populated municipality of the metropolitan area of Cochabamba.[1] Besides, it is among the ten municipalities of Bolivia with highest rates of urbanization, its population in urban areas increased from 5554 to 150,110 inhabitants between 1976 and 2012 (INE 1976, 2012).

Sacaba has an area of 1362.37 Km^2, of which 137.53 Km^2 are plain areas (adequate for agriculture and human settlement) and the rest are mountainous areas (GAMS 2014a). The municipal territory is divided, politically and administratively into urban and rural districts,[2] within which the population is grouped into grassroots organizations called OTBs. Every OTB has a leader, elected by the OTB population, who has the responsibility of mediating between the local government and the population, transmitting the demands of the people in the participatory planning processes, and organizing social mobilizations (HAMS 2007). Sacaba has six urban districts made up of 149 OTBs (71.12 Km^2 area) and six rural districts made up of 121 OTBs (1291.25 Km^2 area) (GAMS 2014a). Districts vary in size and population; the population density in the urban districts ranges from 4406 to 1647 people per Km^2, and in the rural ones ranges from 204 to 8 people per Km^2 (See Figure 1).

Methods

The study utilized participatory workshops, semi-structured interviews and survey questionnaires for data collection. All data was collected in Spanish and translated to English by the author of this paper. Additionally, documents and archival records were analysed to identify the drivers of urban

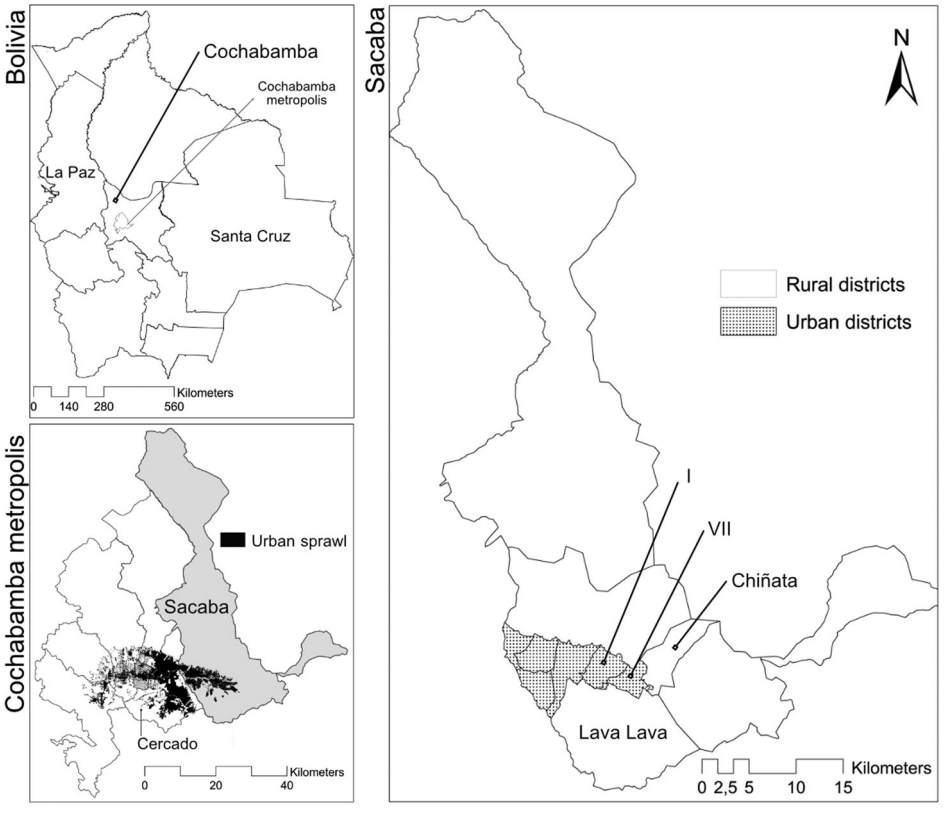

Figure 1. Location of Sacaba in Bolivia and in the Metropolitan area of Cochabamba (right) and Sacabas districts (left). Adapted from GADC (2011); and GAMS (2014a).

growth in Sacaba, the population growth rate and the spatial distribution of the urban sprawl over time.

Initially, National Census databases (INE 1976, 1992, 2001, 2012) were reviewed to understand the demographic dynamics of Sacaba. Moreover, written documents related to the urbanization process in Sacaba were reviewed with a focus on events that prompted the process of peri-urbanization. The reviewed documents comprised municipal plans from Sacaba (GAMS 2014b, 2015, 2016; HAMS 2007) and a municipal institutional internal report (GAMS 2013). Additionally, geospatial databases of the metropolitan region (GADC 2011) and Sacaba (GAMS 2014a) were examined to analyse the spatial pattern of peri-urbanization in Sacaba. Descriptive tables and maps were produced to illustrate the process of urban growth and expansion linked to possible drivers of such development.

Secondly, four OTBs of the peri-urban districts were selected to conduct workshops with peri-urban settlers and municipal planners during 2015 and 2016. The OTBs Catachilla Baja, Curubamba Alta, Lopez Rancho and Molino Blanco were selected because of their location on the fringes of the urban sprawl and recent process of informal urbanization. The workshops were designed with SST methodology process of inquiry (see Checkland and Poulter 2006), which consists on a four-stage social learning cycle (Finding out, Model building, Discussing/debating and Defining/taking action). Thus, at each OTB, participants brainstormed and debated their different perspectives on peri-urban problematical issues while elaborating rich pictures of the main problematics in their peri-urban districts and OTBs (Figure 3). The workshop's results are presented in this paper complementing the other methods data and in a synthetic rich picture accompanied of a briefly description.

Semi-structured interviews were conducted in 2017, in total 18 interviews were undertaken, these comprised four (4) district sub-mayors, six (6) local planners, four (4) OTB leaders and four (4) OTB former leaders. The purpose of the interviews was to collect peri-urban area leaders' and municipal public servants' opinion about the peri-urban area situation for planning and management; e.g. the perceived problematical issues, challenges, possible solutions, ideal futures. These are presented in narrative structuring the results; additionally relevant quotes were selected to present interviewees opinions.

Finally, a household survey questionnaire was conducted in 2017 in order to collect data about the demographic, socio-economic, housing and basic services characteristics in the peri-urban areas of Sacaba (see the questionnaire Annex 1). Since peri-urban areas are not formally recognized in Bolivia's legislation, a representative peri-urban area was selected around the municipality's urban – rural boundary. At the selected neighbouring districts, urban district I, urban district VII, rural district Lava Lava and rural district Chiñata; 665 peri-urban households were surveyed (167, 177, 159 and 177 at each district respectively). The questionnaire survey was aimed to be completed by the household head, or the next person in the households' hierarchy to be present at the time of the survey. The questionnaire contained 76 questions relating to: personal characteristics, health, employment, housing, basic services, land use, agriculture, social organization, perceived needs and incomes-expenses. 77.6% of respondents were men. The survey results were analysed through calculations of economic social and demographic indicators and percentages of total households using IBM SPSS Statistics 26. Data interpretation was informed by the interviews and workshops.

The selected mix of methods were aimed to complement each other in a explorative processes about research participants concerns about the peri-urban context and its connection with planning. The workshops enable a collective discussions about the overall peri-urban reality experienced at the selected OTBs. These discussions allowed the identification of relevant topics for the interviews, which permitted to examine participants' opinion about the planning practice and outcomes in the peri-urban area. Finally, the survey allowed sightseeing the socio-economic and housing characteristics of the peri-urban population quantitatively, triangulating the qualitative collected data.

The peri-urbanization process in Sacaba

From the 1950s onwards, Bolivia's national governments focused on the construction of a road system to boost trade and mobility between the metropolitan centres of La Paz, Cochabamba and Santa Cruz (see Figure 1) and also between Bolivia and the neighbouring countries (Urquieta 2016). As part of the road system, three highways were built running East to West through Sacaba (HAMS 2007). The first highway was constructed between 1965 and 1989; it became one of the busiest national routes ever since. It positioned Sacaba as a national hub of transit and economic exchange between the east and the west of the country (GAMS 2015, 2016). The other two highways, built during the periods 2007–2017 and 2012–2020, consolidated Sacaba as a highly trafficked city. Thus, during the 1970s and 80's, given Sacaba's growing economic dynamism as axis of national articulation, impoverished rural population began to move to Sacaba looking for better economic opportunities (HAMS 2007; Urquieta 2016).

Consequently, from 1976 to 2017, Sacaba's population multiplied from 29,995 inhabitants to 206,298 inhabitants (GAMS 2016). Most of the urbanization process happened along the peri-urban areas, exceeding the local government's capacity to catch-up with it. Although, first spatial plans in 1961 already expressed concern about the rapid population growth in urban areas, no measures were implemented in this regard.

Until 1992, planning competence was exclusive to the central government (De la Fuente 2001), characterized by the allocation of most of the resources to the elaboration of plans, salaries and hiring of consultancies; leaving insufficient resources for the realization of the planned projects (Prado 2007). Also, plans were elaborated based on purely economic and expert-based criteria (GAMS 2013), not taking into account the poor regulatory framework, little availability of resources and human capital; nor social problems such as the informal economy, economic migration and environmental impacts (Peres, Mendoza, and Pereira 2009). Consequently, according to the analysis of the reviewed planning documents, plan implementation was not feasible whether because they were inconsistent with the available resources and local capacities; or they became outdated in the face of rapid urban growth dynamics (GAMS 2015; Prado 2007).

From 1992 onwards, municipal governments' acquired planning competence but the status-quo regarding guiding and controlling urban expansion remained the same. *Sacaba only had plans that were drawn up for the metropolitan region between 1981 and 1983* … , a planner noted. The municipality did not prepare any plan of their own but adapted national or regional old plans to comply their planning responsibility. Between 2007 and 2013, the municipality hired external consultants to elaborate a first municipal development plan (HAMS 2007) and a municipal territorial arrangement plan (GAMS 2014b). However several interviewees pointed out that all plans *were never used as planning instruments, but stayed on the shelf* … , because they carried the same weakness of previous national planning. For instance, an interviewed planner explained, *the preparation of the urban master plan started in 2013 (…) and was finally launched this year (2017).*

Consequently, peri-urban areas expanded spontaneously and freely establishing and defining peculiar characteristics inherent to their context, which trigger problematical issues for the population and the local governments performance. The topics reported as more critical and representative of the peri-urban area are presented below from the perspective of its inhabitants and the local government that participated in this study.

Informal land occupation

Initially, given the absence of government control of land occupation processes, farmers in rural areas adjacent to the city centre began to informally trade portions of their lands with the growing low-income population in order to cushion the decline in income from agriculture (GAMS 2013).

Later, as demand for land was high, informal land merchants took over the dynamics of the peri-urban land occupation (GAMS 2016). They illegally appropriated land and put them up for sale at

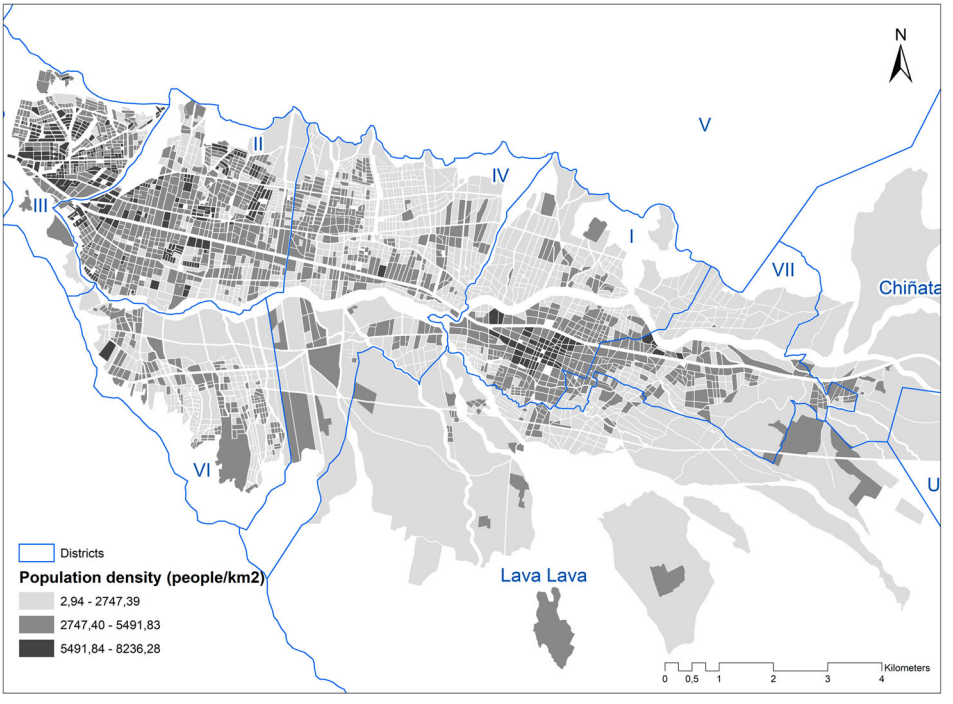

Figure 2. Population density of Sacaba. Adapted from GAMS (2014b).

prices cheaper than the formal land market. An interviewee explained, *If the land price inside the official urban area was \$60/m²; a hundred meters away, outside the approved urban polygon, it could be \$15/m²*.

According to those interviewed, people were scammed in the face of urgency and seduced by the price … *unfortunately people think that their purchase is legal (…) long after they find out that they do not have property rights nor legal documentation of the land.* Faced with this condition of illegality, the newly settled population exerted pressure on the municipality to regulate their land tenure (i.e. strikes, protest marches). Thus, pushed by *the pressing social demand*, planners expanded the formal urban area perimeter, which contributed to further expansion of the informal land occupation because *a belt of illegal settlements is continuously generated, people continue buying land two or three blocks beyond the urban boundary …* (Interviewed planner).

Consequently, in 2013, the urban sprawl covered an area of approximately 48 Km²; from which 21 Km² were occupied by informal peri-urban settlements with very low densities of 3–2747 people per Km² (see Figure 2).

Informal poverty

Given the weak governmental capability to accommodate the increased labour forced into formal economic activities, informality also took over the labour market in the peri-urban areas (GAMS 2014b).

According to the survey, three of four workers were in the informal economy, whether in the construction sector (21.3%), transportation services (17.8%), agriculture and livestock (15.2%), and retail trade sector (11.7%). Informal economic activities[3] were those self-employed and contract-free occupations with day-to-day fluctuating incomes and a lack of minimum wage protection, social protection and employment benefits. Most of the informal workers were self-employed (64%)

but similar to the rest of the country, were members of sector unions (i.e. transporters union, merchant's union) to have a voice to negotiate with the government when needed.

Moreover, 34% of the peri-urban workers reported in the survey a yearly income lower than the national minimum wage (NMW) of $3450.[4] Thus, 23% of the peri-urban population lived in extreme poverty,[5] 31% lived on $1.91–3.20/day, and 24% on $3.21–5.50 a day. Congruently, 21% of the households reported that their income was enough mainly to afford food, 22% household managed to cover food expenses plus the education of their children, and 19% covered food and basic service expenses. Although poor incomes levels were not exclusive in informal economy, it is noteworthy that 14% of the peri-urban labour force reported having informal jobs with a salary below the NMW, living in extreme poverty.

Self-helped basic needs

Given the lack of public services and infrastructure, collective initiatives were developed in the peri-urban area in order to meet the settlements basic needs, i.e. basic services not provided by the local government. In the survey, almost all the peri-urban households reported having self-helped water provision (85%), 63% had self-helped sewage systems, 14% carried self-helped garbage disposal strategies, and 46% reported treating sicknesses through self-helped strategies.

The self-helped water service had a major presence, not only in the peri-urban area but also in the entire municipality (GAMS 2016). According to the interviewed peri-urban settlers, 'water social organizations' emerged from the collective urgent need for water. The households got together and took complete responsibility for finding water sources, building pipeline networks, defining the distribution strategy, fixing prices, and administrating finances. However, given the urgency, the water systems were constructed rapidly, with little technical criteria, limited budget, and without any environmental or health and safety criteria. Accordingly, OTB leaders stated that the water quality from the self-helped systems is not always of good quality:

> … in 2000, we have drilled a 125-meter-deep well and gas came out … when we did the pumping test, something like foam came out and when we set it on fire, it burned. We expected that the gas would disappear, but to date it has increased. Now a dense substance has appeared, like tar, and has already contaminated two other wells.

While these initiatives were the only way to meet the peri-urban basic needs, according to the local planners and sub mayors, they represent a hazard for people's health and a problem to the environment. As explicitly defined by one of the interviewed planners *(peri-urban) are the most vulnerable areas because they had consolidated their living conditions informally, in self-managed processes*. Although the municipality does not have information on the exact number of wells, interviewees estimated that around 500 informal deep wells were drilled along the urban sprawl, which is considered an over exploitation of surface and ground water.

Peri-urban settlers reported that similar initiatives, collective and self-helped, had emerged for sewage, garbage collection, education, health, and citizen safety. The interviewees noted that self-helped initiatives were even used, in one of the peri-urban districts, to regulate the land market. According to OTB leaders, the settlers organized and agreed to reserve a consensual right of admission to their district. The community established land prices, admission fees and communal duties for the accepted new settlers. Planners noted that control of the informal urban expansion over agriculture land was possible for Chiñata because, due geographical location, the district has many natural water sources (i.e. slopes, lagoons). Water availability sustained agriculture profitability and motivated farmers to protect their land, instead of trade it like other districts' farmers did.

Public servants and OTB settlers agreed that through collective self-helped strategies the peri-urban households were able to cope with the government's shortfalls; but that the strategies were not ideal nor sustainable under the conditions these were created and managed. However, there was no consent between the interviewees about what the solution would be. On one hand, according to the interviewed public servants, the long-term solution to basic service provision was to

transfer self-helped systems to public or private administrations. However, they reported failed experiences when trying to convert self-helped systems into public administration systems; they attributed the failure to settlers seeking personal benefits from self-helped systems

> They are resistant to our intervention because some leaders have economic and political interests. For example, when they are going to change the directory, the accounts appear empty. No one knows what happened with the money … besides they do not have regulations, they charge whatever they want, sometimes $600, other times $800.

On the other hand, according to the OTBs, transferring the self-helped systems was not a solution because settlers did not see a benefit for the OTB. On the contrary, they knew about experiences where the transfer made water access more expensive and complicated. In the words of an OTB leader:

> we do not want to transfer them (public enterprise) because we do not agree with the conditions they offer us. The minimum consumption price would be higher, and the transfer would be merely administrative; they would not invest in new wells, networks or anything … we would have to pay any new investments with our OTB budget.

From the peri-urban settlers' perspective, the self-helped strategy is more efficient for solving problems because they do not have a protocol to follow, thus, they can react faster.

> I know an OTB that transferred their system, after some time the pump burned-out, and they had to wait almost a month before fixing it. Why? Because it was not foreseen in the budget … the OTB got mad and the management of the system got back to the people again … As a self-helped organization, we do not depend on a planned budget. If we need a new well, we drill it immediately.

Besides, the OTB leaders reported lack of motivation from the municipality to collaborate with them.

> … they do not fully fulfil their role as public servants, they do not want to help us nor guide us. For example, we had the idea to bring water from the hills, so we asked them to help us with the pre-investment and we would pay the subsequent costs. They did not want to. Another example, now that the wells are drying up and abnormal substances are appearing in the water, we asked them to use the municipality's laboratory to do water analysis. They did not want to collaborate either. They told us that because we were self-helped, we needed to pay to use the laboratory.

Social conflicts

Given that the urbanization process resulted from an immigration process, the population of the peri-urban districts is very diverse. According to the survey, 44% of the population are immigrants coming from 93 different municipalities in Bolivia.

The interviewed planners perceived the different cultural backgrounds as a problem as it makes it more difficult to design planning regulations that fit the entire population. From a planning perspective, immigrants

> have their own vision, their own lifestyles, which makes planning more complicated. Either we catch up with the people who come, or we make those people catch up with our vision, our policies, and our regulations. We do not want to discriminate against the people who arrive because this is how our country is built, but obviously, there will always be sectors that are not translated into policies, regulations, and may feel excluded. Unfortunately, 100% of the population expectations cannot be met, especially when the population is very heterogeneous in terms of lifestyles, traditions, viewpoints about urban development … .

Accordingly, the survey suggested that the conjunction of different people's cultural backgrounds implies a diversification of activities, interests, priorities, etc. along the peri-urban districts. For instance, although the immigrant population is slighter lower than the native is, they have a significantly higher proportion of economically active working-age population.[6] While 45% of working-age immigrants (81% of the immigrants) had a job, only 28% of the working-age natives

(64% of the natives) did. Thus, natives had a larger percentage of working age population exclusively dedicated to their education than the immigrants but also a larger percentage of extremely poor households (15% more). Besides, immigrants were not as engaged in agriculture as natives were; 6% of the immigrant households had crops, while 19% of the natives did.

According to the interviewed district leaders, there was friction between different population groups with different backgrounds, interests and activities; ultimately affecting the social organization and cohesion of the district and the OTBs. Apart from the migration related conflict, leaders reported conflicts between the people who identify themselves as farmers and those who did not. Because of population growth, their OTBs became divided between two groups that no longer met, nor cooperated; both with their own agenda but a shared annual budget. Their conflicts related to land regulation; farmers pushed to maintain the peri-urban under a rural category, and non-farmers pushed to reclassify the peri-urban to urban. Consequently, the OTB seldom agree on how to allocate budgets, so the OTBs annual plan usually has little relevance for the needs of either group, instead results in projects aimed at appeasing conflicts of interest (for instance, most of the peri-urban OTBs have large sports courts but no basic or social services). Besides, the rivalry and sense of competitiveness had blocked budget executions and project implementations, causing budget reversal. For example, a planner presented a case where

> in a fully consolidated area, a group of people have pressed for belonging to the urban area so that they are provided with basic services. We agreed but the farmers have absolutely refused to be urban because as rural area they do not pay taxes … but since they are not urban, they cannot be provided with services either … after fights, protest marches, in the end, nothing has been done with that budget.

Complex dynamics

According to the debate between peri-urban settlers and planners in the workshops, the greatest complexity of the peri-urban lies in the interconnection between all the problematical issues. The rich pictures drawn during the workshops, which are represented in Figure 3, attest to this.

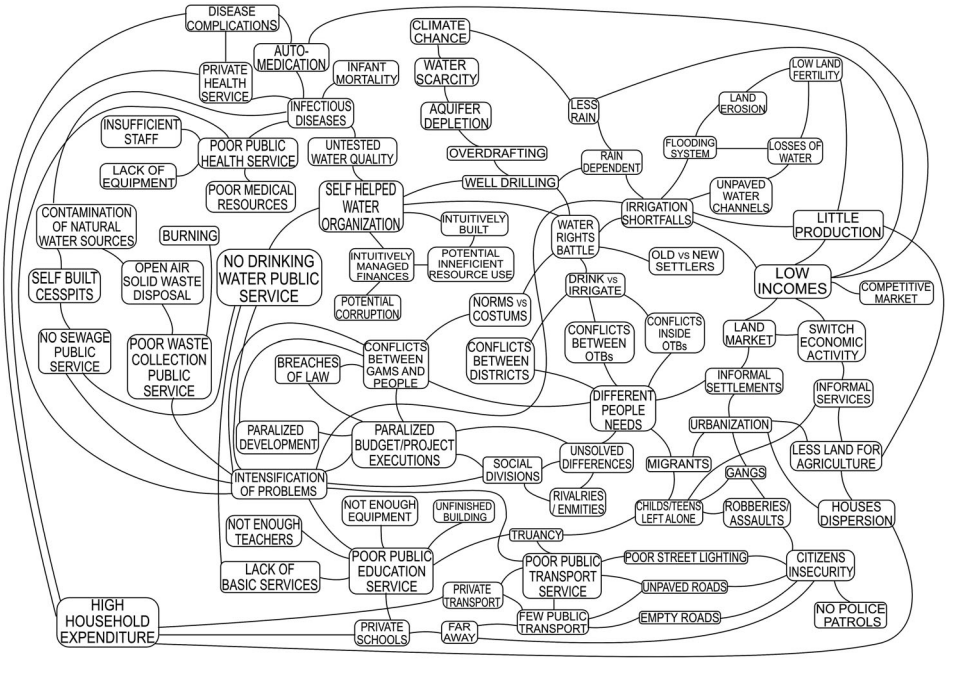

Figure 3. Aggregated rich picture of main peri-urban issues from the perspective of peri-urban settlers and local planners.

The complexity and mess that peri-urban problems produce and co-produce were highlighted as a crucial issue in the discussion. Peri-urban settlers and planners alike were unable to ignore the direct interconnections between urgencies, needs, and peri-urban dynamics. Although in all the workshops, water scarcity emerged as the first point of debate. From it, many other issues were tangled, fluidly and collectively, in a network that connected diverse problematics (i.e. health risks, environmental damage, socio-economic inequality and injustice, citizen unsafety and social conflicts).

According to workshop participants (see Figure 3), self-helped water organizations represent a risk to the health of households as they widely distribute contaminated water. In addition to the poor-quality conditions of the systems, they believed that natural water sources are prone to contamination from other community initiatives for dealing with wastewater and solid waste. Households dug themselves cesspits, either blind wells or septic tanks, which cause environmental contamination of the underground and surface water sources by the filtered wastewater into the soil, and the air and land quality through the gas emissions and remaining waste compounds. Households also throw garbage on empty lands, riverbeds, etc. or destroy it through periodical burning; all of which contributing to the contamination of the natural water sources and the environment. Water, in addition to Waste management initiatives, is recognized as focus of infection for diarrhea and other diseases especially among infants, and is an environmental hazard.

According to the peri-urban settlers, the health risk of the people is aggravated by the absence of health services in the area. The households rely mostly on alternative traditional medicine and self-medication because public or private healthcare is considered a luxury. People opt for formal medical care only when diseases get critical however, letting diseases progress until critical, sometimes results in higher expenses than a timely treatment would cost, or causes worse irreversible consequences. Thus, the lack of basic public and social services not only represents an inequality of opportunities, but also creates social economic injustice.

The water issue was also linked to conflicts between different population groups; between farmers from the mountains and from the valleys; between farmers from north and from south of the valley; between urban and rural settlers; and between water social organizations. All actors in defense of their rights to the water sources, dispute the legitimacy of one another's interests. According to the workshop participants, the conflicts were reinforced by the lack of attention paid to peri-urban farmers', which affected the productivity of the agrarian system. The production system was described to be labour intensive, dependent on a flood irrigation system of uncoated irrigation channels. Which contributed to low productivity, land erosion, crop losses and water losses; therefore, creating little produce for trading and poor incomes. Additionally, even at local markets, local product must compete against imported goods, which push prices down, resulting in low agriculture revenues. Under these circumstances, farmers often abandon agricultural activity, and contribute to the informal fragmentation and trade of land.

According to the interviewed planners, the messy connection between problematic issues resulted in policy-making delays, uncoordinated planning; and ultimately, inefficient local planning and public administration. The dynamic reproduction of social divisions, poverty and resource exhaustion had a direct impact on the governmental ineffectiveness. Accordingly, OTB settlers expressed that the municipal government actions were insufficient, because the attempts to tackle one issue per year was too slow, small and thus sometimes useless.

Limitations of traditional urban planning

The characteristics of the studied peri-urban area exposed an urban reality marked by diversity, instability and chaos, where society plays a critical role in local development. Many of the described characteristics, similar to peri-urban contexts of Bolivia (Cielo and Antequera 2012; Ledo Garcia 2012, 2013; Marston 2014; Vargas 2014) and the Global South (Garcia-Ayllon 2016; Inostroza 2017; Lopez-Goyburu and Garcia-Montero 2018; Singh and Narain 2020; Watson 2009, 2019), are often accused of being neglected in traditional planning.

Moreover, the case studied in this paper suggests that traditional dichotomies used in urban planning magnified the peri-urban challenges and resulted on a vicious circle of poverty, inequity, vulnerability, socio-economic exclusion, marginalization and spatial segregation.

Urban and rural

The urban-rural classification, held by urban planning institutions, positioned the city and countryside as opposite mono-functional areas competitors over resources (Cielo and Céspedes 2010), which promoted a valorization of the urban over the rural. A collective longing for the city and rejection for the countryside was generated due the historic governmental urban bias in the country (e.g. long-held priority given to the construction of a road system between metropolises) that hindered planning, caused social conflicts, and triggered social marginalization.

The dichotomy incentive the spreading informal precarious settlements and placed the already vulnerable growing population in a position of greater insecurity. The dichotomy encouraged a high variation in the land price and illegal land market practices that placed poor immigrant population at risk of being scammed (Vargas 2014) and at high social and legal uncertainty (Cielo and Antequera 2012; Ledo Garcia 2009; Vargas 2014).

Besides, the urban-rural built appreciation limited projects executions, which positioned planners and population in conflict. On one hand, peri-urban population based their acceptance of projects to the urban-rural social status to with which the project is related to, instead to assess the benefit of the project per se. For instance, Silveti and Andersson (2019) and Helgegren et al. (2018) illustrate peri-urban settler's preference for flush toilets (perceived as progress and modernity), and rejection for off-grid dry toilets (perceived as the rural poor man's alternative). On the other hand, planners and citizens own perceptions about the urban – rural categories led them to underestimate each other's capacities or blame each other for problems, which worsened their relationship and diminished possibilities to agree on solutions.

The dichotomy also triggered conflicts between peri-urban settlers due opposed interests to classify their settlements as urban or rural. The resulting social divisions weakened the OTBs ability to define common planning objectives, which resulted over time in preference to assign budgets to non-conflictive projects instead of addressing the real needs of the peri-urban districts. Furthermore, it created a social fragmentation among the peri-urban population and further marginalization of some groups of people (Cielo and Antequera 2012).

Thus, the urban rural classification results inadequate in defining the context of the peri-urban area, as discussed by the GS peri-urban scholarship, it limits the local government action and triggers vulnerabilities for the population. The peri-urban prevalence of conflicts of interest were reinforced by the urban-rural strict categories, which questions urban planning capacity to deal with conflict and echoes the call to shift urban planning towards a 'conflict model of society' (Watson 2009). Moreover, overcoming the urban rural dichotomy have potential to be a way to transform the biased perceptions installed in the population and the government towards the city and the countryside. The recognition of the peri-urban area, as a impartial area, should be embraced as an opportunity to develop new planning arrangements and define the new image of the city (Cielo and Céspedes 2010; Haller 2017; Watson 2009).

Formal and informal

Public institutions held the traditional formal-informal categorization that considers informality as opposed to the correct mode of behaviour, 'an impediment to generate resources from taxes' in the words of an interviewed public servant. This dichotomy led public servants to adopt a position of whether sanction or inattention of what is considered informal, which in turn aggravated the problems of poverty, inequality, and marginality in the peri-urban area.

The limited capacity of the government to provide equal opportunities to the entire population positioned self – helped, informal strategies as the only alternative for many households to survive e.g. peri-urbanization itself. As a result, population growth in and around urban areas developed hand in hand with diversification of survival strategies, beyond those formally offered/recognized by the state.

Peri-urban household were forced to diversify their economic activity to cope with the insecurity and instability of informal economy. They created different complementary survival strategies, in parallel dependent on the city and on the countryside, and at times, even dependent to international economies i.e. remittances (Jokinen 2018). Nevertheless, their informal status excludes them anyway from any social protection and, on contrary, condemns them to poverty and precariousness. For instance, their limited saving/investing capacity and lack of legal requirements for financing applications, impedes them to improve their housing conditions (Ledo Garcia 2012).

Similarly, the informal status of the self-helped basic needs provision, especially water provision, perpetuated vulnerabilities for the peri-urban population and the environment. Peri-urban settlers, relegated by the government due to their informality, self-organized to meet their basic needs without any technical nor economic support from the formal institutions. Thus, self-helped water systems were built with limitations and deficiencies that created health and environmental risks, which increase the peri-urban socio-economic and environmental vulnerability, similar to peri-urban areas across the GS (Inostroza 2017; Ledo Garcia 2012, 2013; Mehta et al. 2014; Vargas 2014; Wutich et al. 2014).

The antagonist relationship built between informality and planner's generated rejection and distrust of government from the peri-urban population and hindered the execution of planned programmes e.g. the attempt to convert self-help water systems into public administration. The self-helped water organizations expressed reluctance transferring the water systems to public administration, despite recognizing their systems had deficiencies and demanded much collective effort, because they perceived themselves were 'better than the state' in responding to the emerging needs.

Similar to other peri-urban failed attempts to regularize the informal to formal (Cielo and Antequera 2012; Mehta et al. 2014), peri-urban settlers cherished self-helped collective efforts as mechanisms to build bonds between settlers and strengthen their legitimacy as citizens (Helgegren et al. 2018). The shared responsibility and ownership creates a sense of belonging that goes beyond their differences, which facilitates their social self-organization to fight for their oppressed citizen rights.

The scholarship concerned about the peri-urban areas of the South often discuss to acknowledge and embrace certain qualities of the context as potentials to enhance planning practices (Haller 2017; Inostroza 2017; Singh and Narain 2020; Watson 2009, 2019). In the case of Sacaba, such argument appears applicable to informal self-helped strategies of peri-urban settlers. Findings from Sacaba show that informal self-helped strategies were successful from an organizational point of view, and that the formal-informal categories limited government's ability to envision new ways to work with them.

The agency and cohesion achieved by social organizations when pursuing collective goals represent great potential for partnerships and collaboration between the public, private and societal institutions (Marston 2014; Wutich et al. 2014). Revaluing formal – informal mechanisms as complementary, not substitute, modes of behaviour (La Rosa et al. 2018; Singh and Narain 2020), especially in the context of scarce public economic resources common in the GS, like Sacaba, may create space for better, innovative and legitimate planning and management processes.

Sectored and integrated

From the organizational structure of the local government, to the structuring of the planning documents were divided into sectors, i.e. personnel, budgets and plans were separated to address issues separately e.g. transportation, education, citizen security, etc.

However, the case findings exhibited that the multiple challenges of the peri-urban areas, range from issues of economic, social and environmental sustainability to issues of governance and

politics (Garcia-Ayllon 2016; Simon 2008; Watson 2009), in an interconnected way. The research participants exposed that peri-urban problems were closely interrelated between one and other, meaning that actions to address issues in one specific sector could affect others or have no impact at all. The complex correlation and aggregation of problems in vicious circles sustained among them lead to vulnerabilities that heightens the conflict-laden situation under which planners attempt to practice. The sectored approach to planning and development disregards the complexity of the peri-urban issues at stake, which precludes an effective addressment of problems and leaves certain issues adrift e.g. conflict resolution. Besides, divinding institutional efforts in sector units works against efficient use of municipal resources in the face of resource scarcity.

The adoption of more holistic, integrated approaches that simultaneously pull all actors at all levels should be considered as a alternative to address the peri-urban problems more effectively, cutting cycles and covering problem resolution more cross-disciplinary i.e. in collaborations between public servants from different disciplines, organized society and private entities.

Methodological considerations

Finally, the methodology allowed an exploratory process of data collection; delving into relevant topics for the research participants, thus, identifying the meanings they attributed to the peri-urban context. The methods allowed gradually focusing from a broad and collective rich picture constructed in the workshops, to more topic specific individual perspectives collected in the interviews. The mix of methods permitted to triangulate the collected data, e.g. with numerical and graphical figures. However, the methodology presented weaknesses with respect to time consumption. The amount of data collected was extensive and occupied long time to be collected and digitized to text or database. The extensive amount of data also hindered the writing process; difficulties arose to critically assemble the findings and analysis into a straight line of thinking. Finally, this paper does not pretend to generalize from the case but to share knowledge (specific to Sacaba, Bolivia) as a feedback to the international body of work concerned with peri-urban areas and urban planning in the South.

Conclusion

This paper builds on the pressing need to address the (peri) urban problems of the South in order to fulfil the NUA. From the case study presented, it is argued that the explicit recognition of peri-urban areas entails putting aside traditional categories sustained in traditional urban planning.

The categorical dichotomies discussed in the paper, urban-rural, formal-informal, and sector-whole, were identified as partly responsible to the appearance of problematic and conflictive situations in the peri-urban area. The categories limited the local government and planners capacities to cope with rapid growth, poverty, and diversity. Moreover, contributed to the reproduction of vulnerabilities, marginalities and segregation in the peri-urban area.

The analyses dichotomous categories aggravated the 'conflict of rationalities' (Watson 2003, 2009) between the planners attempts to govern and settlers strategies to survive of the peri-urban area, and exacerbated it by supporting various additional conflicts between the diverse logics of survival among the peri-urban population. Which precluded possibilities to envision new ways of planning the city.

The paper discusses and questions traditional urban planning appropriateness to the characteristics of the peri-urban reality of Sacaba, and cities that share a similar context across the GS.

Notes

1. Seven municipalities form the metropolitan area of Cochabamba. The urban centre of the metropolitan area is the municipality of Cercado which is adjacent to Sacaba municipality (see Figure 1).

2. The urban or rural categorization of districts is based on population size criteria only, more than 2000 inhabitants is considered urban.
3. Bolivia has the largest informal economy in the world with 62.3% of its total economy. Informal activities are those hidden from authorities for regulatory, monetary and institutional reasons (Medina and Schneider 2018). According to Ledo Garcia (2012), two out of every three Bolivian workers belong to the 'informal' sector; i.e. in the absence of social protection, steady incomes and insurance mechanisms, and under exposition to physical, chemical, biological and psychological dangers.
4. Calculated from the monthly MNW at the time of the survey, 2017. Currencies where converted through a rate of $1 = 6.96BOB.
5. The International Poverty Line to define Extreme Poverty is set at $1.90 per person per day, additionally a lower middle-income International Poverty Line is set at $3.20/day; and an upper middle-income International Poverty Line is set at $5.50/day.
6. From 14 to 65 years old.

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ORCID

Paola J. Ledo Espinoza http://orcid.org/0000-0002-2643-9877

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