# Local Development: An Analysis of Spatial Disparities in Congo

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## Abstract

The purpose of this research is to show from a multidimensional measure that spatial disparities lead to different levels of development in the territories. A multidimensional local development indicator was constructed using data from the general census of agriculture, carried out in 2015. The results from the analysis of the local development indicator show that all the districts have a deficit in high development. This deficit is greater for certain development dimensions such as communication, infrastructure, social services and health. In terms of economic policy, the public authorities must make decentralization effective with a poverty reduction policy which takes account of territorial specificities.

## Keywords

Local Development, Poverty, Indicator, Congo

## 1. Introduction

The need to reduce the poor to a series of clichés has been around as long as poverty itself (Banerjee & Duflo, 2012). This assertion by two authors who were honoured in 2019 for their work in poverty analysis contains a truth that puts the debate on poverty reduction at the heart of development policy. Indeed, under the impetus of international organisations, several countries, particularly in Africa, had to draw up poverty reduction strategy papers (PRSPs) in the decade 2000. The common feature of these documents was that they considered poverty to be a homogeneous phenomenon localised on a territory, and all that was needed was to implement a set of strategies to reduce it. Thus, starting from a given cliché, governments in several developing countries implemented these PRSPs with mixed results. The failure of PRSPs, like the structural adjustment

programmes (SAPs) of the 1980s, is probably linked to the choice of development models, which were much more macroeconomic and centralising.

After more than three (3) decades of implementation of the more centralised anti-poverty policies, it has been observed that these have not enabled the vast majority of developing countries to significantly improve the living conditions of the populations, particularly in sub-Saharan Africa (World Bank, 2018). One of the explanations for the ineffectiveness of anti-poverty policies is the failure to take into account local specificities in the design and implementation of the various strategies. Several authors in the 1980s and 1990s had already denounced centralised development policies in general and the fight against poverty in particular. This is the case of Anglade (1992), who states, with regard to local development, "a more intelligent action on the core of resistance where there are more interesting conditions for development than a centralised policy". Turcan (1985) believes that development from below would be a condition of survival for the population. The author proposes to abandon centralised development from above. It is therefore essential that thinking about the fight against poverty emphasises the territorial anchoring of the phenomenon. Centralised development strategies have never succeeded in tackling the factors leading to the impoverishment and devitalisation of marginalised communities (Mislie, 2014). The different positions of the authors argue for an increased role of communities in development. Local development is defined as a process by which the populations of a given territory participate in the improvement of their living environment and conditions, through actions identified, planned and carried out in synergy with the actors concerned.

The effectiveness of anti-poverty policies can be hampered by the fact that specific territorial characteristics are not taken into account. Indeed, despite the considerable progress recently made in understanding household deprivation in developing countries, important dimensions such as education still seem to be insufficiently explored (World Bank, 2018). This situation is likely to hamper the effective targeting of actions to combat poverty. Work treating poverty as the lack of achievement of basic functions is constantly developing and tends to confirm the need for a multidimensional understanding of deprivation (Ouadika, 2018).

The Republic of Congo, like other African countries south of the Sahara, is experiencing a situation of unequal distribution of economic infrastructure throughout the country. This territorial inequality is reflected in the existence of pockets of poverty in the districts and communes. Indeed, the process of territorial transformation in the Congo has long focused on indicators with national coverage and strategies defined at central level still do not involve the local populations concerned. Development as a process of structural transformation of society is designed and implemented at the central level. This approach hides many local spatial disparities and does not allow for a harmonious development process. Moreover, Clement (2013) is critical of legal and administrative decen-

tralisation, which he believes can never produce local development. It sometimes happens that these territories suffer complications in terms of implementing policies defined at central level, the origin of which is linked, depending on the case, to their history, their identity or the particularly specific environment (Boudedja, 2013).

It is obvious that districts have particularities linked either to nature (settlement, relief, hydrography) or to history (presence of railways, large schools, physical and social infrastructures, etc.). It is also acknowledged that the preservation of specific identity elements such as language, production methods and traditional organisations partly justifies the marginalisation of these territories and their difficulty in integrating other, sometimes better adapted, methods and value systems from elsewhere.

On the basis of these elements, this article attempts to analyse poverty, using a local development indicator, in each district in order to analyse the development deficit linked to each territory. In this way, the problem of poverty analysis, which focuses on the deprivation of basic capabilities, is understood in terms of local development. Since one of the characteristics of poverty is the absence of assets, the under-equipment of certain territories or the absence of assets constitutes a major deprivation in the same way as low income. This corroborates Sen's (2000) approach, on the importance of the criterion of deprivation of capacities compared to that of low income.

Local development, depending on the sources or philosophical currents, has been given a range of hybrid names: "community development", "territorial management" and "decentralised rural development", "self-development", etc. (Ouattara, 2003). In this abundance of definitions, we can retain with Verhaegen (1998), we can say that it constitutes a new paradigm in the fight against poverty which emphasises the participation of a population so that it can develop by its own means. The local development paradigm is based on the capacity of local actors to organise themselves around a project, i.e. to federate around a common development objective by mobilising the potential and resources existing in a territory (Angeon & Callois, 2005).

The objective of this article is to show, using a multidimensional measure, that spatial disparities lead to different levels of development in each territory. The results of this research should make it possible to implement more targeted anti-poverty policies. Thus, this research aims to contribute to giving a new impetus to local policy by avoiding the accentuation of the sociological divide that penalises Congolese territories.

The rest of the article is organised as follows: a first section devoted to the literature review, followed by a section presenting the methodology. The fourth section deals with the results and elements of discussion and finally a conclusion.

## 2. Review of the Literature

The theoretical literature on local development reveals a diversity of approaches

due to the multidimensional nature of the concept. Indeed, local development, in addition to its economic dimension, covers several other dimensions, notably cultural, community and environmental.

From this nature stems the absence of a common vision as stated by Angeon & Callois (2005), the concept remains little stabilised. In this article, particular emphasis will be placed on work related to the economic and community dimensions of local development. However, it should be noted that not all of these writings on the theme lead to a theoretical framework of reference. Most of the contributions are limited to a range of empirical examples of the principles of local development but are not very well developed from a theoretical point of view (Pecqueur, 1989; Teisserenc, 2002; Greffe, 2002).

## 2.1. Theoretical Overview of Local Development

From a theoretical point of view, several works have been carried out to explain local development, they refer to sociology, geography, prospective and economics. In economics, there are two main theories that explain local developmen t: the theory of social capital and the economy of proximity. The social capital approach apprehends, through the analysis of social links, the different resources that can be mobilised for local development. The concept of social capital appeared for the first time in Hanifan's work (1916). It was then theorised by Bourdieu (1986). According to the latter author "Social capital is the set of actual or potential resources which are linked to the possession of a durable network of more or less institutionalised relationships of inter-knowledge and inter-recognition; or, in other words, to belonging to a group, as a set of elements which are not only endowed with common properties (likely to be perceived by the observer, by others, or by themselves) but are also united by permanent and useful links".

Social capital is defined as the social networks, norms of reciprocity and trust that emanate from them (Putnam, 1993). It should also be noted that social capital is distinguished from other types of capital by the fact that it requires the presence of at least one other actor, a relationship. At the level of the territory, apart from the network constituted by the governance of the territorial organisation, the identification of relational networks and their interconnection is an imperative on which the functioning of territorial institutions is partly based (Taddéi, 2012). By the fact that the theory of social capital is based on the relational, it is important to define a network. According to Bejean and Gadreau (1997), a network is a set of organisations or individuals reciprocally engaged in recurrent and regulated transactions according to a coordination mode that is neither strictly market nor strictly hierarchical. Powell (1990) defines a network as a form of organisation within which exchanges are sustainable and reciprocal. Several other authors place social networks at the heart of social capital theory. This is the case of Nahapiet and Ghoshal (1998) who see social networks as a necessarily beneficial component for the organisation in which individuals have a rational and controllable approach. Another element of social capital theory, in

addition to networks, is trust. Trust, presented as a "lubricant of social relations" (Arrow, 1974), makes it possible to repeat acts of cooperation and thus becomes a form of coordination between actors.

Finally, as can be seen, a local actor acquires social capital through interaction with others, and it is the others who are the source of these advantages. It is also recognised that local development requires the involvement of local actors and especially the territory with its specific characteristics, taking into account the economic dimensions. This phenomenon is known in the literature as territorial embedding. Suire (2004) defines territorial embedding by the grouping of the enterprises that are best integrated into a territory and that develop relations between themselves but also with other institutions.

The economy of proximity provides a framework for analysing the different modes of interaction between actors located on a territory. These interactions can be based on physical proximity relations (geographical proximity) but also on the membership of identical or similar organisations (organisational proximity) or on the cognitive similarity of individuals (institutional proximity) (Angeon & Callois, 2005).

Historically, the economy of proximity was born in the wake of the industrial economy, which was baptised in terms of "industrial districts", "local productive systems" or "innovative environments". This concept appeared in the literature with the works of Bellet et al. (1992) and Bellet et al. (1993). In this respect, the economy of proximity is at the crossroads of industrial and spatial economics. Indeed, this new economic discipline takes into account the rooting of economic activities in the territory which becomes an explanatory factor of economic mechanisms. We note with Pecqueur and Zimmerman (2004) that the problems of industrial economy and spatial economy summarise the economy of proximity. It is necessary to distinguish fundamentally on the one hand a geographical proximity which corresponds to the objective conditions of localization of the agents, and on the other hand [...] an organized proximity which translates their respective positioning in terms of potential of coordination. It should be noted, moreover, that the term proximity reflects the general importance given to the interactions between economic agents on a territory.

The concept of proximity refers to a plural denomination (Bellet et al., 1998; Rallet, 1999). The term covers various notions. The terms geographical, organisational, relational, material, territorial, institutional proximity, etc., are found side by side in the literature. Some authors, such as the sociologist Grossetti (1998), consider three types of proximity: material proximity (relative to the physical space), social proximity (refers to the social space of individuals) and relational proximity (deals with effective exchanges between agents). This is in the logic of the economy of proximity,

Alongside these two major theories, several other theories have explained local development, notably historism, actor theory, economic sociology, the spatial poverty trap theory, etc. The common point of all these theories is, without

doubt, to place the local actor at the heart of territorial development as stated by Granovetter (1973): the central hypothesis is based on the condition of the actor. The common point of all these theories is, without any doubt, to place the local actor at the heart of territorial development as stated by Granovetter (1973): the central hypothesis is based on the condition of the economic actor who is not isolated but situated in the networks and social structures which act on his strategy.

## 2.2. Empirical Work on Local Development

Several concepts and sciences are used in the literature to explain local development and especially its place in the process of improving well-being in the territories. Despite this semantic inflation, as Fréry (1998) states, several empirical works on local development have been carried out and published. These works have addressed various issues ranging from the role of local actors to globalisation and local strategies to combat poverty. By way of a summary of the empirical literature, we can group them into four main themes, which are not exhaustive in terms of the challenge that local development represents for countries. These are the role of local actors, the valorisation of territorial resources, delocalisation/globalisation and academic know-how.

Several concepts are used in the literature to explain local development and especially its place in the process of improving well-being in the territories. Despite this semantic inflation, as Fréry (1998) states, several empirical works have dealt with the issue of local development. These works have addressed various issues ranging from the role of local actors to globalisation and local strategies to combat poverty. This empirical literature can be grouped into four main themes, which are not exhaustive with regard to the challenge that local development represents for countries. These are the role of local actors, the valorisation of territorial resources, delocalisation/globalisation and academic know-how.

The work on the role of local actors highlights their specific contribution to the local development process. As shown by Klein & Rauflet (2014), the state has an essential role to play in the fight against poverty and the development of territories.

In this respect, Granovetter (1973) states that local development as an economically oriented action is intended to ensure the viability and development of a community. It is therefore up to the various actors to act or interact to ensure the development of their locality as defined by Granovetter (1973). Analysed from this angle, it is clear that local actors are at the heart of community development and must coordinate their actions for a common goal. It is in this respect that Loufoua-Lemay (2013) states: elected officials (mayors, councillors, deputies and senators) must benefit from training in the sense of openness to other local development actors. These local actors can be grouped into three categories: public actors (mayors, presidents of departmental councils, prefects, etc.), businesses and citizens and their various groupings, which are referred to as civil society. These different actors come together around a unifying project

and in a collective action build the territory. To this end, the outcome of the collective action presupposes that the actors manage to agree on the objectives and the means to achieve them (Angeon & Callois, 2005). The specificities of the actors and most probably the interests of each other, which do not always converge, may require coordination of actions in order to guarantee the success of the common project in the territory. Indeed, the divergent interests of the various local actors may constitute a blocking factor in ensuring the development or success of the joint project. This potential constraint is also the most important strength of the local development system. It is often the responsibility of local government to build a system that brings all its different components together in a positive synergy that makes maximum use of all available resources (Clark et al., 2010). As far as the fight against poverty is concerned, in the territories impoverishment processes are taking place that are not being addressed by public actors, private capital and local actors have few resources at their disposal to reverse their situation (Klein & Rauflet., 2014).

Another area of local development on which researchers have focused is that linked to the development of territorial resources in relation to the fight against poverty. Indeed, local development implies the adoption of a common objective for all actors, which is based on the development of territorial resources (Angeon & Callois, 2005). These resources are plural and diverse in nature (Colletis-Wahl & Pecqueur, 2001; Peyrache-Gadeau & Pecqueur, 2002; Angeon & Caron, 2004). To this end, the resource development strategy can be conceived as the result of the coordination of actors involved in collective action. The valorisation of resources leads companies to settle in the territory by using local inputs or cheap labour. It is in this respect that Klein & Rauflet (2014) recall the role of enterprises and the fight against poverty in a local context with the notion of the base of the pyramid. The notion of the base of the pyramid refers to people with an annual income of less than $1500, which represents about 70% of the world's population. The territorial poor are found at the base of the pyramid and conduct their transactions mainly in the informal economy (London, 2007).

In this context, the development of local resources is a major lever in the fight against poverty at local level. On the specific issue of reducing social inequalities in the territories, it is recognised that the provision of basic services accessible to the population, which is part of the distributive function of an authority, is an important lever.

Moreover, it often happens that the international or even national agenda is not compatible with local interests, as shown by the work of Ndaguba and Hanyane (2018) on community development in South Africa based on a qualitative analysis of data. Moreover, several authors such as Ndaguba and Hanyane (2018) and Gagnon (1995) show the mismatch between international poverty reduction programmes and those of local communities. The structural adjustment programmes (SAPs) of the 1980s as well as the Millennium Development Goals (MDGs) of the 2010s have shown their limitations in driving local devel-

opment and thus poverty reduction. With regard to poverty, the National Observatory for Human Development (ONDH) published a study on poverty in Morocco's municipalities and regions in 2017. Indeed, the ONDH (2017) used a local development indicator that measured achievements in terms of living conditions and access to community services, highlighting the development deficits of each territory.

The interest in a spatialised analysis of poverty can be understood in the context of local development by the relocation of companies in the territories and the increased role of local actors in the development of their community. Indeed, one of the problems of development, and a fortiori of local development, is the inability to take into account two simultaneous movements (Tremblay, 2003). These are, on the one hand, the relocation of companies driven by globalisation and, on the other, the localisation of activities where globalisation is structured around places. This shows the growing role of the spatial analysis of poverty.

Another study, on poverty, published by Costa et al. (2017) on municipalities in Brazil considered territories as the unit of analysis. Indeed, the authors constructed a multidimensional poverty indicator at the level of each municipality in the country and ranked them from poorest to least poor.

Another important dimension in spatialized studies of development is education and training as stated by the World Bank (2018) "education must equip high achievers with the skills they need to lead healthy, productive and meaningful lives". Indeed, nowadays, knowledge is considered a fundamental and necessary component in a globalised world and an important tool for local development (Zulfukar & Izzet, 2014). The presence of a university or training centre in a locality improves its productive capacities. Several studies have highlighted the positive role of universities in a knowledge-based society. Etzkowitz & Leydesdorff (1997) rightly referred in their work to the triple helix model as an approach that connects tree-like spheres: university, business and government. Universities located in territories improve the well-being and ideological, social and cultural values of the whole community. The scientific community is almost unanimous in recognising that education and training activities improve the level of human capital of individuals attending universities and society as a whole. Moreover, it is also recognised that the basic and applied research activities of universities and research centres contribute to improving the scientific and technological knowledge stock of the economy. In sum, in a knowledge-based economy, knowledge acquisition is an important factor that determines the future of individuals and companies, but also the economy of a whole country (Zulfukar & Izzet, 2014).

## 3. Methodological Approach

The positive impact of decentralisation on poverty reduction is therefore not organically constitutive of national development strategies established in the centrally defined PRSP framework. The record of three decades of implementation of centrally defined poverty reduction policies requires that progress be

examined with another locally defined instrument. This requirement justifies the use of a multidimensional local development indicator (MDI). The MDI is a composite measure of accumulated progress in several key dimensions of development. It should be noted that interest in a spatialised analysis of poverty is not recent but is driven by the rise of new analytical techniques.

## 3.1. Data

The data used for this research comes from the community module of the general census of agriculture carried out between 2014 and 2015 by the Ministry of Agriculture with the technical support of the National Institute of Statistics and the United Nations Food and Agriculture Organization (FAO). It is important to note that this research analyses local development with territorialised data, which is an innovation. The community module consisted of collecting information on all administrative villages in the country. A total of 3269 villages were surveyed in 88 districts.

## 3.2. Construction of the Multidimensional Local Development Index

Three (3) main steps characterise the construction of a synthetic indicator.

They range from the selection of variables to the aggregation through the construction of elementary indices. It should be noted that the aggregation approach used is that recommended by the United Nations Development Programme (UNDP) for the calculation of human development indicators.

The variables selected were in seven (7) dimensions of development. These are health, education, physical infrastructure, communication, community life, public services and social services. In each dimension, a certain number of variables (Table 1) were retained, taking into account their availability in the database. Standardisation is achieved through the selection of elementary indicators that best express the level of development at the district level. The choice of indicators is based on two criteria: internal consistency and direct expression of an aspect of the economic and social well-being of the population.

Finally, to obtain the multidimensional local development index, three main steps are followed:

### Step 1. Calculation of the sub-indices for each dimension for each district

$$\text{Sub-index} = \frac{\text{Observed value} - \text{minimum value}}{\text{maximum value} - \text{minimum value}}$$

The maximum or minimum values retained are those observed in the most and least developed villages along that dimension.

### Step 2. Calculation of dimensional indices

For each given dimension, a dimensional index is the simple arithmetic mean of the sub-index.

$$\text{Dimensional indice} = \sum_i^n \frac{\text{Sub} - \text{index}}{n}$$

where $n$ is the number of sub-indexes i of the dimension.

Table 1. Dimensions of local development.

| N° | Dimensions | Variables |
|---|---|---|
| 1 | Health | % of villages with at least one medical practice or integrated health centre (IHC) |
| | | % of villages with at least one IHC |
| | | % of villages with a medical practice within 1 km |
| | | % of villages with an IHC within 1 km |
| 2 | Education | % of villages with a primary school |
| | | % of villages with a general secondary school |
| | | % of villages with a primary school within 1 km |
| | | % of villages with a general secondary school within 1 km |
| 3 | Physical infrastructure | % of villages with a telephone network |
| | | % of villages with electricity connection |
| | | % of villages with a passable road within 1 km |
| | | % of villages with a landing for fishery products |
| 4 | Communication | % of villages with a rural community radio |
| | | % of villages receiving national radio |
| | | % of villages with at least one telephone booth |
| 5 | Community life | Local mutual |
| 6 | Public services | % of villages with a gendarmerie |
| | | % of villages with a police station |
| | | % of villages with a rehabilitation centre |
| 7 | Social services | % of villages with drinking water |
| | | % of villages with at least one reception centre |
| | | % of villages with at least one trade centre |

### Step 3. Calculation of the multidimensional local development index

The arithmetic average of the dimensional indices constitutes the multidimensional local development index (MDLI)

$$\text{IDLM} = \sum_1^7 \frac{\text{Dimensional index}}{N},$$

IDLM is in the interval [0, 1], N the number of development dimensions.

The complement to the IDLM unit gives the development deficit in relation to a fictitious district recording performance in all the dimensions measured by the selected indicators. It should be noted that this deficit can be decomposed according to the dimension and makes it possible to identify the structural reasons for a territory's lag in relation to the highest level of development.

It is also accepted, as for any statistical object, to carry out statistical tests to ensure the robustness of the indicator obtained. To refine the choice of elementary indicators, statistical tests of homogeneity have been carried out, such as

Hotelling's T-squared test.

Local development is a multidimensional concept. It is measured by a multi-dimensional local development indicator (MLI) which reflects public policy in several areas. The MLI is interpreted by comparing the value of the indicator per district with that of a fictitious district that performs better in all the selected dimensions.

Our work on local development has focused on the rural environment. Thus, for the analysis of poverty in the territories, all villages were taken into account. The communes, towns and urban communities were therefore excluded from our work. The unit of analysis used for our work is the district and the unit of observation is the village.

## 4. Results and Discussion

Table 2 presents the results for each district according to the local development index for each of the dimensions. This synthetic index measures the level of development of the territories, in particular the rural environment. Thus, the local development of all rural communities measured by the LDI is 0.1503, which means that only 15.03% of the way to decent living conditions is covered at the national level in rural territories. On the other hand, the development deficits amount to an average of 84.9% in each of the development dimensions selected, namely health, education, infrastructure, social services, public services, community life and communication. The results (Table A1 in Annex) show a strong disparity between the territories for all the dimensions of development.

The IDLM values range from 0.0062 (minimum) for the Moungoundou North district to 0.4672 (maximum) for the Owando district, with an average development deficit of 99.4% and 53.3% respectively. In the country as a whole, only

Table 2. Distribution of the ten (10) districts (top 5 and bottom 5) according to the IDLM by dimension.

| Rank | Department | District | development index |
|------|-----------|----------|-------------------|
| 1st | Cuvette | Owando | 0.4672 |
| 2 | Plateaux | Makotimpoko | 0.4472 |
| 3 | Pool | Mindouli | 0.4131 |
| 4 | Plateaux | Gamboma | 0.3804 |
| 5 | Pool | Ngabé | 0.3602 |
| 84 | Cuvette-ouest | Etoumbi | 0.0255 |
| 85 | Plateaux | Mbon | 0.0254 |
| 86 | Sangha | Sembé | 0.0111 |
| 87 | Sangha | Souanké | 0.0111 |
| 88e | Niari | Moungoundou nord | 0.2842 |
| | Ensemble | | 0.1503 |

Source: author's calculation based on RGA-2015 data.

38.6% of districts have a development index above the average. It is the district of Banda in the department of Niari that has an average value close to the national average.

In terms of the local development deficit, there is a strong disparity in terms of size.

Of the seven (7) dimensions retained, each district is not deficient in the same dimensions. At the extremes, the Owando district, with the lowest deficit (53.3%), has a large deficit in communication (37.6%), health (44.2%) and education (45.7%). On the other hand, the district of Moungoundou North with the highest deficit (99.4%) is deficient in practically all dimensions (see Table A1 in Annex). There are several reasons for these differences: historical, economic, political and geographical. In the Owando district, for example, several villages are located along National Road No. 2, and this proximity to an asphalt road gives them easier access to social infrastructure (health centre and school) and physical infrastructure (asphalt roads, telecommunications network and electricity grids), which is not the case in the Moungoundou North district, which is landlocked and therefore does not benefit from all of these infrastructures. Under these conditions, territories such as Moungoundou North, but also Souanké, Sembe and Mbon cannot ensure the viability and development of the community, as Granovetter (1973) states in one of his works in Africa. With a high development deficit, these territories cannot benefit from the territorial embedding that generally accompanies local development. The analysis in terms of dimensions shows that the development deficit is more important in the dimensions of community life (88.5%), communication (87.1%), physical infrastructure (85.9%), the provision of public security services (85.5%) and health (85.5%).

The high deficit in these dimensions shows that rural territories more affected by development problems (Figure 1). These results are close to those obtained by the ONDH in Morocco with a local development indicator. Public action in the 2000s with the so-called "accelerated municipalization" programme, which consisted of providing departments with basic infrastructure, was not entirely beneficial to
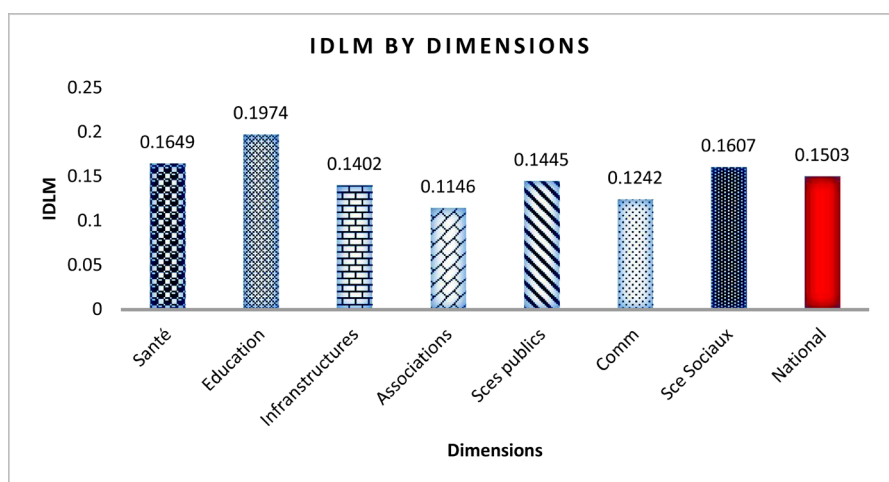


Figure 1. Local development index by dimensions.

rural people. The infrastructure was mostly concentrated in the departmental capitals and sometimes did not allow the rural population to access it. This is the case in the districts of Mbon, Kimba, Itoumbi, Komono, Mayoko, Zanaga, Souanke and many others with infrastructure deficits of over 95%. These districts are not even connected to the capital of their respective departments by a fully passable road. There is inadequate provision of basic services accessible to the people. This accentuates their level of poverty probably due to the limited resources available to local actors as shown by Klein & Rauflet (2014).

The problem of the infrastructure deficit in explaining territorial poverty has already been highlighted by the work of Sen (2000). Indeed, Sen magnifies the role of public goods such as physical infrastructure in the fight against poverty by criticising the efficiency of market mechanisms in relation to certain goods, in particular public goods. It is clear that several districts have a significant deficit in physical infrastructure, which makes development from below necessary (Turcan, 1985) in order to satisfy the basic needs of the rural masses.

Education must equip the educated with the skills they need to lead healthy, productive and meaningful lives (World Bank, 2018). This assertion by the World Bank confirms the key role of education in development, particularly in the territories.

Despite a fairly good value of the average deficit in comparison with the other dimensions, education does not offer a bright picture for several territories. Unfortunately, social infrastructure is another dimension where the deprivation of the territories is expressed. With an average development deficit of 80.3%, enormous efforts are still required in the school infrastructure in rural areas. One third of the districts have a deficit in education above the national average. The districts with extremely high education deficit values are Souanké, Sembé, Nkokou, Liranga, Mbomo, Moungoundou North, Nzambi and Bambama. It is therefore difficult to bring about any kind of development in these territories and thus to eradicate poverty. The process of knowledge acquisition as stated by Zulfukar & Izzet (2014) is an important factor that determines the future of individuals and businesses. These results are close to those obtained by Clark et al., (2010) who place local authorities in the front line in the construction of territories.

## 5. Conclusion and Policy Implications

The objective of this paper was to show from a multidimensional measure that spatial disparities lead to different levels of poverty in the territories in Congo. Using data from the community module survey conducted in villages in 2014 and 2015 by the Ministry of Agriculture with the support of the National Institute of Statistics, a multidimensional local development indicator (MDLI) was constructed using the UNDP aggregation approach. The analysis of the results highlights the existence of a strong disparity between the territories. Moreover, it

also makes it possible to identify the districts with the greatest deficits in local development, but also and above all to identify in which dimension of development they are deficient. The deficit is high in all the development dimensions selected, but slightly higher in dimensions such as communication, physical infrastructure, health and public services. The nature of the dimensions with a high development deficit calls for public authorities to take action in the fight against poverty and in the development process in general.

The results of this research should lead to more targeted poverty reduction policies. Targeting programmes should take into account the level of development of each district in order to mitigate the devitalisation of marginalised areas. Thus, in terms of economic policies, the public authorities must increase investment in rural areas. While developing a more targeted approach to poverty alleviation policy, the public authorities must connect all districts to the departmental capital by at least one passable road. They should also encourage and develop competitive clusters in the districts to increase the interest of rural actors in development. Finally, all these recommendations should be more relevant if the authorities implement decentralisation with an effective territorial civil service.

Some limitations of this research should be noted. The main limitation is the lack of current data. It would be possible for future research to go further with more current data collected at local level. One of the contributions of this research is to have measured local development using a multidimensional indicator, given the scarcity of work on these issues in developing countries and particularly in Congo.

## Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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## Annexe

**Table A1.** Distribution of districts by IDLM and dimension.

| District | Development index | Health | Education | Infrastructure | Community life | Public services | Communication | Social services | Development |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Average deficit in | | | | | |
| Abala | 0.2217 | 88.7 | 63.9 | 84.7 | 69.4 | 94.8 | 58.1 | 85.3 | 77.8 |
| Allémbé | 0.0970 | 98.6 | 82.6 | 74.4 | 100.0 | 100.0 | 90.1 | 86.5 | 90.3 |
| Bambama | 0.0319 | 100.0 | 95.9 | 99.7 | 83.3 | 100.0 | 98.8 | 100.0 | 96.8 |
| Banda | 0.1516 | 81.5 | 69.4 | 94.2 | 75.0 | 94.8 | 97.0 | 82.1 | 84.8 |
| Bétou | 0.0388 | 100.0 | 93.7 | 88.2 | 97.2 | 99.0 | 100.0 | 94.8 | 96.1 |
| Boko | 0.2240 | 83.2 | 71.2 | 82.5 | 66.7 | 84.5 | 72.4 | 82.7 | 77.6 |
| Boko-Songho | 0.1147 | 100.0 | 79.4 | 95.2 | 75.0 | 95.8 | 75.5 | 98.8 | 88.5 |
| Bouanila | 0.0528 | 98.6 | 89.7 | 87.7 | 91.7 | 100.0 | 98.1 | 97.2 | 94.7 |
| Boundji | 0.1519 | 78.2 | 80.5 | 91.4 | 77.8 | 91.5 | 94.2 | 80.3 | 84.8 |
| Divénié | 0.2684 | 42.6 | 46.6 | 91.7 | 94.4 | 75.5 | 82.6 | 78.6 | 73.2 |
| Djambala | 0.2429 | 87.3 | 73.4 | 85.6 | 94.4 | 40.0 | 71.4 | 77.8 | 75.7 |
| Dongou | 0.0603 | 100.0 | 89.0 | 91.5 | 88.9 | 94.8 | 96.9 | 96.6 | 94.0 |
| Enyéllé | 0.0754 | 100.0 | 90.6 | 91.7 | 97.2 | 85.0 | 95.6 | 87.1 | 92.5 |
| Epéna | 0.1385 | 100.0 | 75.6 | 81.5 | 72.2 | 91.1 | 93.7 | 88.9 | 86.1 |
| Etoumbi | 0.0255 | 100.0 | 90.3 | 99.2 | 100.0 | 100.0 | 100.0 | 92.6 | 97.4 |
| Ewo | 0.3440 | 62.4 | 64.1 | 89.6 | 0.0 | 72.0 | 91.1 | 80.0 | 65.6 |
| Gamboma | 0.3804 | 88.3 | 31.3 | 40.4 | 86.1 | 89.0 | 38.1 | 60.6 | 62.0 |
| Hinda | 0.1360 | 97.2 | 81.5 | 79.3 | 97.2 | 95.6 | 92.6 | 61.4 | 86.4 |
| Ignié (Ex PK Rouge) | 0.2045 | 84.9 | 67.5 | 77.3 | 77.8 | 86.8 | 86.4 | 76.2 | 79.6 |
| Ile Mbamou | 0.1723 | 96.2 | 92.7 | 53.9 | 100.0 | 71.7 | 77.8 | 87.1 | 82.8 |
| Impfondo | 0.1444 | 78.1 | 87.4 | 74.6 | 83.3 | 83.6 | 100.0 | 91.7 | 85.6 |
| Kakamoeka | 0.1019 | 100.0 | 83.0 | 91.4 | 97.2 | 73.5 | 100.0 | 83.5 | 89.8 |
| Kayes | 0.0746 | 98.4 | 88.9 | 93.6 | 100.0 | 100.0 | 77.2 | 89.7 | 92.5 |
| Kellé | 0.1035 | 97.9 | 92.2 | 89.8 | 88.9 | 84.9 | 92.5 | 81.4 | 89.6 |
| Kibangou | 0.1024 | 90.0 | 78.3 | 96.3 | 91.7 | 99.5 | 94.6 | 77.9 | 89.8 |
| Kimba | 0.0888 | 91.4 | 84.9 | 97.4 | 97.2 | 82.1 | 95.8 | 89.1 | 91.1 |
| Kimongo | 0.2332 | 53.4 | 66.4 | 90.5 | 100.0 | 88.5 | 60.1 | 77.8 | 76.7 |
| Kindamba | 0.2842 | 11.6 | 76.2 | 98.3 | 100.0 | 51.8 | 91.1 | 72.0 | 71.6 |
| Kingoué | 0.0915 | 92.9 | 90.5 | 79.7 | 83.3 | 99.0 | 91.2 | 99.4 | 90.8 |
| Kinkala | 0.3331 | 61.2 | 44.2 | 85.5 | 97.2 | 62.3 | 32.7 | 83.7 | 66.7 |

**Continued**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Komono | 0.0353 | 99.2 | 92.2 | 98.8 | 97.2 | 95.8 | 97.9 | 94.2 | 96.5 |
| Lékana | 0.0887 | 97.0 | 77.0 | 87.3 | 97.2 | 93.8 | 89.6 | 95.9 | 91.1 |
| Liranga | 0.0635 | 91.3 | 95.7 | 86.7 | 100.0 | 90.9 | 96.8 | 94.1 | 93.6 |
| Londéla-Kayes | 0.1310 | 90.0 | 86.4 | 94.3 | 75.0 | 92.5 | 75.6 | 94.4 | 86.9 |
| Louango | 0.1994 | 72.5 | 75.4 | 72.9 | 100.0 | 76.8 | 89.8 | 73.1 | 80.1 |
| Loudima | 0.0929 | 97.2 | 85.6 | 94.4 | 88.9 | 95.8 | 87.7 | 85.4 | 90.7 |
| Louingui | 0.1329 | 98.6 | 87.0 | 90.5 | 83.3 | 76.0 | 75.5 | 96.0 | 86.7 |
| Loukoléla | 0.3496 | 45.1 | 28.1 | 77.2 | 100.0 | 49.0 | 89.3 | 66.5 | 65.0 |
| Loumo | 0.1887 | 87.5 | 81.5 | 84.5 | 52.8 | 67.5 | 97.0 | 97.2 | 81.1 |
| Louvakou | 0.1553 | 92.9 | 84.7 | 92.2 | 97.2 | 94.8 | 54.1 | 75.4 | 84.5 |
| Mabombo | 0.0905 | 93.6 | 86.8 | 94.3 | 91.7 | 100.0 | 84.2 | 86.1 | 90.9 |
| Madingo-Kayes | 0.2219 | 86.9 | 82.2 | 54.9 | 88.9 | 85.7 | 86.0 | 60.1 | 77.8 |
| Madingou | 0.1719 | 92.8 | 72.1 | 89.7 | 75.0 | 94.8 | 81.4 | 73.9 | 82.8 |
| Makabana | 0.1369 | 60.7 | 89.0 | 92.9 | 97.2 | 89.1 | 93.7 | 81.6 | 86.3 |
| Makotimpoko | 0.4472 | 1.6 | 68.0 | 57.5 | 100.0 | 27.1 | 71.6 | 61.1 | 55.3 |
| Makoua | 0.2705 | 96.2 | 68.3 | 53.9 | 75.0 | 74.8 | 90.3 | 52.3 | 72.9 |
| Mayama | 0.0265 | 98.6 | 93.7 | 90.7 | 100.0 | 100.0 | 98.5 | 100.0 | 97.4 |
| Mayéyé | 0.0413 | 100.0 | 90.2 | 99.5 | 91.7 | 100.0 | 99.8 | 89.9 | 95.9 |
| Mayoko | 0.0733 | 93.1 | 86.8 | 99.1 | 83.3 | 96.1 | 99.8 | 90.5 | 92.7 |
| Mbama | 0.1448 | 43.9 | 81.9 | 100.0 | 100.0 | 86.3 | 100.0 | 86.6 | 85.5 |
| Mbandza-Ndounga | 0.0817 | 100.0 | 82.9 | 94.7 | 100.0 | 92.5 | 76.1 | 96.6 | 91.8 |
| Mbinda | 0.0937 | 97.2 | 91.1 | 98.8 | 100.0 | 52.9 | 100.0 | 94.4 | 90.6 |
| Mbomo | 0.0480 | 92.8 | 95.9 | 99.2 | 94.4 | 89.9 | 96.0 | 98.1 | 95.2 |
| Mbon | 0.0254 | 100.0 | 93.6 | 99.0 | 100.0 | 94.8 | 95.5 | 99.4 | 97.5 |
| Mfouati | 0.1214 | 100.0 | 87.0 | 88.7 | 86.1 | 96.7 | 68.6 | 87.9 | 87.9 |
| Mindouli | 0.4131 | 24.9 | 49.6 | 84.9 | 88.9 | 44.8 | 48.3 | 69.5 | 58.7 |
| Mokéko | 0.1577 | 78.4 | 91.3 | 83.2 | 80.6 | 71.1 | 96.3 | 88.6 | 84.2 |
| Mossaka | 0.2541 | 52.6 | 79.5 | 67.9 | 100.0 | 65.7 | 76.1 | 80.2 | 74.6 |
| Moungoundou-Nord | 0.0062 | 100.0 | 97.8 | 99.3 | 100.0 | 100.0 | 98.5 | 100.0 | 99.4 |
| Moungoundou-Sud | 0.0587 | 100.0 | 90.9 | 98.8 | 100.0 | 87.0 | 91.2 | 91.0 | 94.1 |
| Moutamba | 0.0744 | 92.2 | 88.1 | 97.0 | 83.3 | 95.8 | 99.8 | 91.7 | 92.6 |
| Mouyondzi | 0.1628 | 99.2 | 72.0 | 85.9 | 80.6 | 100.0 | 69.6 | 78.8 | 83.7 |
| Mpouya | 0.1562 | 88.5 | 85.1 | 69.3 | 100.0 | 69.2 | 93.5 | 85.2 | 84.4 |
| Mvouti | 0.1073 | 95.7 | 83.2 | 95.0 | 100.0 | 87.8 | 90.6 | 72.6 | 89.3 |
| Ngabé | 0.3602 | 33.3 | 52.7 | 74.0 | 83.3 | 67.7 | 91.4 | 45.4 | 64.0 |
| Ngbala | 0.0396 | 98.5 | 94.3 | 97.0 | 97.2 | 95.8 | 98.3 | 91.1 | 96.0 |
| Ngo | 0.1127 | 97.1 | 79.9 | 79.8 | 77.8 | 95.8 | 93.5 | 97.2 | 88.7 |

**Continued**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ngoko | 0.0590 | 92.8 | 93.6 | 91.6 | 100.0 | 95.3 | 97.9 | 87.4 | 94.1 |
| Ngoma Tsé-Tsé | 0.1204 | 88.7 | 73.5 | 89.7 | 91.7 | 91.7 | 86.2 | 94.2 | 88.0 |
| Ntokou | 0.0626 | 81.3 | 99.6 | 88.7 | 100.0 | 94.3 | 100.0 | 92.3 | 93.7 |
| Nyanga | 0.1278 | 87.4 | 82.3 | 92.0 | 91.7 | 74.9 | 97.1 | 85.3 | 87.2 |
| Nzambi | 0.1107 | 97.2 | 96.3 | 77.2 | 88.9 | 77.5 | 97.1 | 88.4 | 88.9 |
| Okoyo | 0.1575 | 62.3 | 83.2 | 80.8 | 100.0 | 78.4 | 100.0 | 85.0 | 84.2 |
| Ollombo | 0.2764 | 91.3 | 51.6 | 69.0 | 91.7 | 81.7 | 62.9 | 58.4 | 72.4 |
| Ongoni | 0.2694 | 95.8 | 70.2 | 70.6 | 27.8 | 95.8 | 75.2 | 76.1 | 73.1 |
| Owando | 0.4672 | 44.2 | 45.7 | 47.8 | 88.9 | 60.0 | 37.6 | 48.7 | 53.3 |
| Oyo | 0.2231 | 56.7 | 92.4 | 65.7 | 94.4 | 85.4 | 90.6 | 58.7 | 77.7 |
| Pikounda | 0.0514 | 98.6 | 92.5 | 85.7 | 100.0 | 91.7 | 95.6 | 100.0 | 94.9 |
| Sembé | 0.0226 | 100.0 | 95.9 | 93.9 | 100.0 | 99.5 | 96.3 | 98.8 | 97.7 |
| Sibiti | 0.1689 | 89.4 | 81.6 | 92.2 | 80.6 | 84.9 | 82.9 | 70.2 | 83.1 |
| Souanké | 0.0111 | 97.2 | 95.9 | 99.4 | 100.0 | 100.0 | 99.8 | 100.0 | 98.9 |
| Tchamba Nzassi | 0.1121 | 87.2 | 91.3 | 74.5 | 97.2 | 99.5 | 90.4 | 81.4 | 88.8 |
| Tchikapika | 0.1307 | 85.8 | 83.8 | 73.4 | 97.2 | 91.7 | 89.8 | 86.9 | 86.9 |
| Tsiaki | 0.1812 | 56.2 | 86.5 | 97.8 | 69.4 | 82.3 | 100.0 | 80.8 | 81.9 |
| Vindza | 0.3254 | 16.5 | 42.7 | 87.5 | 63.9 | 80.7 | 100.0 | 80.9 | 67.5 |
| Yamba | 0.1314 | 95.2 | 83.4 | 89.1 | 72.2 | 100.0 | 84.5 | 83.6 | 86.9 |
| Yaya | 0.0874 | 82.6 | 93.9 | 99.4 | 91.7 | 90.6 | 100.0 | 80.6 | 91.3 |
| Zanaga | 0.1000 | 93.0 | 78.5 | 99.2 | 94.4 | 87.8 | 91.8 | 85.2 | 90.0 |