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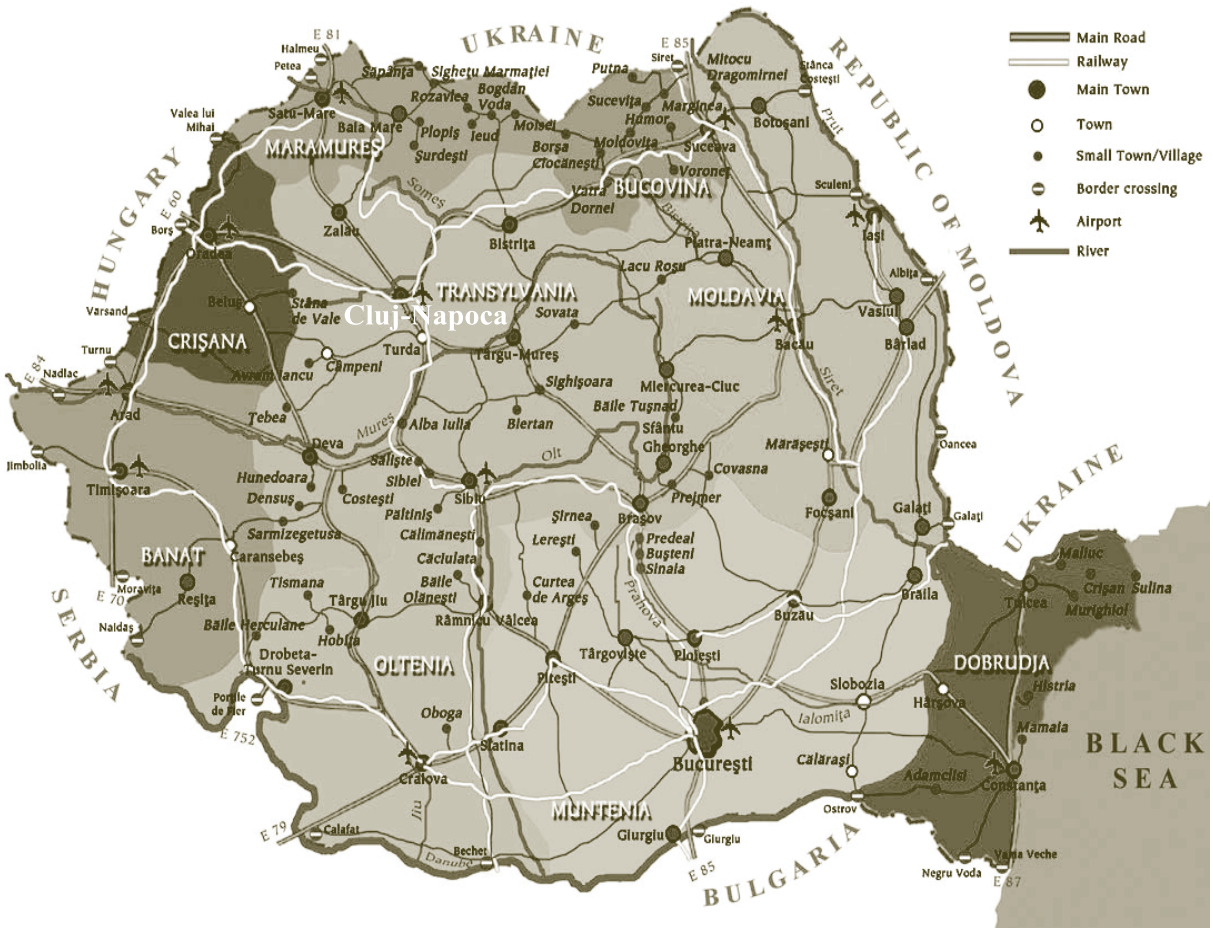

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In Memoriam:
Conf. Univ. Dr. Buz Victor
(1937-2021)

În seara zilei de 14 ale lunii Cireşar 2021, s-a stins din viaţă după o lungă şi grea suferinţă, conf. univ. dr. Victor Buz, cel care ne fusese dascăl, îndrumător de an şi, ulterior, coleg. Când am primit trista veste, în mintea mea s-au derulat imaginile primei noastre întâlniri, care s-a petrecut în Amfiteatrul de Zoologie din cadrul Universităţii Babeş-Bolyai unde anul nostru întâi (seria 1980-1984) se întrunise în prima zi de şcoală şi afla pe îndrumătorul său, domnul profesor Victor Buz. Până să aflăm cine este, să facem cunoştinţă, am trecut cu vederea pe cei câţiva dascăli aşezaţi la catedra înaltă a acelui amfiteatru; ne fusese hărăzit cel mai mic dintre ei, abia i se vedeau umerii şi capul, cu ochelari cu rame groase. Dar ce suflet mare aveam să întâlnim în fiinţa aceea micuţă şi discretă, proba timpului a dovedit-o!

Născut în comuna Poienii de Sus, Bihor, la 9 octombrie 1937, ca cel de-al doilea copil al lui Alexandru şi Ana, la doi ani îşi pierde tatăl, mort pentru Patrie pe frontul de Est în cel de-al Doilea Război Mondial, fiind crescut de mama rămasă văduvă, împreună cu fratele său mai mare cu 11 ani, Vasile.

A făcut clasele primare şi gimnaziale la Pietroasa, Bihor, după care a urmat Şcoala Tehnică de Ştiinţe comunale din Oradea (1955-1958). Imediat după absolvirea acestei şcoli, a concurat, a fost admis şi a urmat cursuri superioare la Universitatea din Cluj, Facultatea de Ştiinţe Naturale, secţia Geografie fizică, absolvite în 1963, an în care a debutat în cariera universitară la Universitatea Babeş-Bolyai, în specialitatea Cartografie-Topografie şi Hidrologie-Limnologie. În lunga sa activitate didactică: 1963-2003 (2005 la Universitatea „Vasile Goldiş" din Arad), a urcat treptele ierarhiei didactice: preparator 1963-1968, asistent 1969-1975, şef de lucrări 1976-1989, conferenţiar 1990-2005. În 1980 a obţinut doctoratul în Geografie cu teza „*Munţii Codru-Moma. Studiu de geografie fizică*", după ce, în prealabil, urmase o serie de stagii de specializare în gestionarea resurselor de apă în instituţii prestigioase din Ungaria, Italia şi Cehoslovacia (1974).

Cadru didactic riguros, întotdeauna prezent la cursuri şi lucrări practice – aveam să facem disciplinele tehnice cu dânsul, vorbea clar şi atât cât trebuie pentru a înţelege fenomenele, sobru şi cu măsură în toate, atât în sălile de curs şi laboratoare, cât şi pe teren.

După 1990, în calitate de unic specialist universitar în Cartografie – Topografie de la Universitatea Babeş-Bolyai, după pensionarea şi decesul profesorului Alexandru Săndulache, a fost solicitat să predea şi în alte centre universitare, prin cumul, disciplinele: Hidrologie, Cartografie, Topografie, Teledetecţie şi interpretare aerofotogrametrică, Hărţi şi ghiduri turistice, Limnologia bazinelor de acumulare, la extensia Facultăţii de Geografie din Cluj de la Zalău. Din 1991 a funcţionat şi la Universitatea Ecologică „Dimitrie Cantemir" din Târgu Mureş, Facultatea de Geografie-Istorie, unde a fost decan (1992-1996), precum şi la Universitatea „Vasile Goldiş" din Arad, Facultatea de Ştiinţe umaniste, secţia Geografie, în paralel cu Colegiile de Silvicultură din Arad, Baia Mare şi Satu Mare.

A publicat singur şi în colaborare cursurile şi lucrările practice *Noţiuni practice de hidrologia uscatului* şi *Îndrumător de lucrări practice* (ambele apărute în 1981), *Topografie generală cu elemente de topografie minieră* (1982), manuale

universitare cu capitole de lucrări practice incluse: *Cartografie. Curs pentru uzul studenţilor* (1984), *Geografie tehnică. Topografie* (2002), *Geografie tehnică. Cartografie* (2003), precum şi volumul *Water in Hidrographic Basin Crişuri, Romania* (1974). A colaborat la Tratatul *Geografia României*, vol. III – *Carpaţii Româneşti şi Depresiunea Transilvaniei* (Editura Academiei, 1987), cu capitolele *Munţii Crişurilor (caracterizare generală)* şi *Munţii Codru-Moma*, şi la volumele colective *Lucrările simpozionului de Geografie aplicată* (1977), *Probleme de Geografie aplicată* (1986), *Geological Formations of Transylvanian Basin, Romania* (vol. I, 1987). Singur sau în colaborare a mai publicat 35 articole ştiinţifice în diferite reviste de specialitate. De asemenea, a colaborat şi uneori a coordonat contracte de cercetare ştiinţifică, dintre care citäm: *Baza de cercetare cu utilizatori multipli* (1990), finanţat de Banca Mondială, precum şi la cercetări ştiinţifice care au vizat aspecte de hidrologie, cartografie, topografie, resurse de apă din Podişul Transilvaniei, sau zăcământul hidrominier din zona Băilor Călacea, Timiş.

Sub raport instituţional, regretatul profesor Buz are meritul dezvoltării studiului disciplinelor tehnice, precum şi a înfiinţării Centrului regional de topografie, cartografie, teledetecţie şi sisteme din cadrul Universităţii Babeş-Bolyai, al cărui director a fost (2001-2020), dotat cu laboratoare moderne, inclusiv laboratoare mobile, utilate cu calculatoare, programe de cercetare pe tematicile: cartografie digitală, topografie, teledetecţie, GIS. De asemenea, tot în această ordine de idei, a avut o contribuţie determinantă în înfiinţarea şi conducerea Facultăţii de Geografie-Istorie din Târgu Mureş, aspect amintit mai sus, oportunitate de care se bucură oraşul de pe Mureş, precum şi serii de studenţi şi cadre didactice care îşi desfăşoară activitatea acolo. Mai mult, domnului profesor Buz Victor i se poate recunoaşte meritul încadrării cu personal calificat, pasionat şi determinat a disciplinelor tehnice din cadrul Facultăţii de Geografie din Cluj-Napoca, care astăzi îi continuă opera, desigur într-un context mult mai dinamic şi articulat cu lumea ştiinţifică de peste hotare.

A fost membru al Societăţii Române de Geografie.

După prezentarea principalelor elemente ale parcursului profesional şi activităţii sale instituţionale, inclusiv ca autor apreciat de lucrări în domeniul său, să-mi fie permise câteva rânduri de suflet, aşa cum l-am perceput eu pe regretatul dascăl. Pe vremea studenţiei mele (1980-1984) se practica ţinerea unei condici de prezenţă, de care mă ocupam eu, iar sâmbăta (care nu era

liberă, se ţineau cursuri!) era obiceiul să-i fie prezentată condica îndrumătorului de an, tutorele de astăzi, pentru motivarea absenţelor din săptămâna ce se încheia…. Aşa am ajuns să-l cunosc mai bine pe domnul profesor Buz – şi mi s-a relevat astfel un om sensibil, empatic, harnic, dăruit profesiei sale, cu lecturi bogate mai ales din sfera Istoriei – el, care era un specialist al cifrelor, al calculelor… Peste toate, a fost un om modest din fire, nu avea ieşiri efuzive, era cum se spune „aşezat", avea şi promova „cultul muncii", era de certă integritate morală şi un familist convins. În tot timpul facultăţii, şi apoi ca şi coleg, pot afirma că era dreapta măsură în toate! Fire discretă, se retrăgea în biroul său de cele mai multe ori când ceva nu mergea prea bine, mai ales după 1990 când, odată cu libertăţile câştigate, cei mai vocali şi tupeişti îşi croiau drum de o manieră străină mediului universitar, când s-au înmulţit fapte de care dânsul era străin şi care îi repugnau. Atunci l-am cunoscut ca şi coleg…

În activitatea lui profesională, şi în familie desigur, domnul profesor Buz a avut-o alături pe soţia sa, dr. Zoe Buz, biolog şi bibliograf pasionat, bibliotecar-şef la Biblioteca Universitară din Cluj, ei fiind binecuvântaţi de Dumnezeu cu doi copii, Bianca şi Eugen. Viaţa însă nu a scutit familia de drame, pierderea fiului în anul 2000, în urma unui accident de circulaţie, l-a afectat profund şi iremediabil pe domnul profesor, durere pe care a purtat-o cu demnitate în public. Împreună cu soţia au crescut apoi pe cei doi nepoţi rămaşi fără tată, Roxana şi Victor Emanuel. Întotdeauna când mă gândesc la doamna dr. Zoe Buz, văd în faţa ochilor cartea „*Clujeni ai secolului 20*", o lucrare prin care domnia sa a adus mari servicii geografilor clujeni, şi nu numai lor!

În sumă, domnul profesor Victor Buz a aplicat în toate legatul savantului George Vâlsan, întemeietorul Şcolii Geografice Clujene româneşti, privindu-l din perspectiva dascălului formator de specialişti de caracter, cu vocaţie! Savantul-fondator spunea: „*Sunt multe comori în sufletul omenesc. Le descoperi şi le faci să crească numai dacă iubeşti pe oameni. Iar, dacă-i iubeşti, aproape piere grija de ce trebuie să faci: binele izvorăşte de la sine, din fântâna vrăjită a iubirii. Învăţătorii pot preface o ţară. Căci pe seama cui e dată înaintarea într-o ţară? Pe seama gălăgioşilor şi a irozilor? Nu. De atâtea ori adevărul sfânt, roditor, s-a ascuns în suflete umilite, în ceata celor cu ochii plini de visuri şi cu sufletul plin de iubire. Aceştia, uneori fără nădejdea izbânzii, îşi aruncă vorba lor, sfioasă, dar luminată, şi s-ar crede că vântul a luat-o şi a pierdut-o. Dar adevărul, odată spus, nu moare. El se prinde de suflete, chiar fără voia lor. Şi peste un timp*

se pomenesc tot mai mulţi că spun de bună credinţă vorba poate hulită mai înainte. Şi astfel se înnoiesc sufleteşte popoarele, pe nesimţite, cum se preface natura primăvara. O, să şti că şi tu ai grăbit o astfel de primăvară! Să stai de o parte, necunoscut de nimeni, şi să te bucuri de triumful vieţii tale! Da, el învăţător se va face. Şi se uită spre sat"!

Regretat de familie, de colegi, de colaboratori şi de cunoscuţi, cel care a fost Victor Buz odihneşte somnul de veci în Cimitirul Mănăştur, Requiescat in Pace!

Dr. Alexandru A. PĂCURAR

Departamentul de Geografie Umană şi Turism,
Universitatea Babeş-Bolyai, Cluj-Napoca

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ENVIRONMENTAL EDUCATION AS A VIABLE TOOL IN PREVENTING GROUNDWATER POLLUTION IN NIGERIA

IROYE KAYODE ADEMOLA[1]

ABSTRACT. - Environmental Education as a Viable Tool in Preventing Groundwater Pollution in Nigeria. The study focused on the use of environmental education, particularly at elementary level, to prevent groundwater degradation in Nigeria. This is especially germane because of the relative advantage of groundwater over other sources of water because of its near universal availability, dependability and low capital cost; groundwater remains the preferred source of water in most parts of the country. The development and management of the resource remains central to the success of rural and urban development programmes. Issues discussed in the research include importance of groundwater in meeting supply challenges imposed by ineffective and inefficient public water supply in Nigeria, groundwater resources and use in the country, sources of groundwater pollution, the need for environmental education and developments and techniques in environmental education. The research concluded by suggesting the need for environmental education, particularly at elementary level in addressing problems of environmental degradation and groundwater pollution in particular. This is considered appropriate because, once a good environmental attitude is developed in children, it will be very difficult for them to change their behavior negatively toward matters concerning the environment.

Keywords: *groundwater, pollution, aquifer, environment, education.*

Introduction

Groundwater is water which occurs below the surface of the Earth within the saturated zone where the hydrostatic pressure is equal or greater than atmospheric pressure (Wiggan, et. al., 2013). This water which represents 97% of the world's available freshwater resources is extensively abstracted

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throughout the world (Herbert and Doll, 2019). Groundwater has recently become of particular importance as a source of domestic water supply in Nigeria. This is due to both the failure of government at all levels in meeting the water needs of the people and the characteristics possessed by groundwater over other sources of water.

Although one can say that Nigeria as a country is blessed with a sizable water infrastructure including dams, treatment plants, pumping stations and reservoirs, acute water shortages affect both the urban and rural dwellers in the country. According to the Federal Ministry of Water Resources FMWR (2013), Nigeria is among the ten countries in the world that are home to two thirds of the global population without access to the improved water sources and has the highest population (more than 66 million) without improved sources of drinking water in Africa. While Sule *et al*. (2016) observed that water production facilities in the country rarely operate to capacity due to breakdown of equipment or lack of power for pumping, the World Bank (2002) linked the poor performance of water agencies in the country to high operating cost. Okeola (2005, 2009, 2014), Odigie and Fejemirokun (2005), Adah and Abok (2013) and Iroye (2014) have cited some fundamental reasons responsible for the poor level of service delivery by public water supply agencies in Nigeria.

In the light of the above stated problems confronting public water supply in the country, most private individuals and some government agencies have resulted to the use of groundwater in meeting their water demand. This usage is particularly due to the inherent characteristics possessed by groundwater. Ayoade (1988) listed inherent characteristics possessed by groundwater which makes it a preferred option as source of water supply, including:

i. it has low cost of development, maintenance and operational works;
ii. it has high chemical and bacteriological qualities;
iii. it records less fluctuations in water temperature;
iv. it has little or no seepage losses;
v. less area of land is required for its development when compared to surface water sources;
vi. its development records little or no loss of farmland or historical sites;
vii. its development causes no resettlement problems;
viii. it is available at the point of demand; and,
ix. it records no evaporation losses.

Because of the above enumerated advantages of groundwater over other sources of supply, the resource is being extensively abstracted, not only in Nigeria, but throughout the world. The UN (2018) observed thus on ground usage:

> "During the 20th century, there was an enormous boom in well construction for urban water supply, irrigation and industry, facilitated by advances in drilling and pump technology, geological knowledge, and support from state subsidies, especially for irrigation. Groundwater has therefore *de facto* become a key resource supporting human well-being and economic development. It represents a critical resource in terms of risks as well as opportunities for development in a changing world."

However, groundwater use is often unsustainable. While its supplies are diminishing in some regions, its quality is also becoming increasingly deteriorated. It is thus highly germane that these trends are quickly reversed in order to sustain its critical role, especially in the ecosystem of man. This is the trust of this study; with particular focus on groundwater pollution control. The study discussed the use of environmental education, particularly at elementary level in preventing groundwater pollution. This is very important considering the fact that groundwater is often considered a fallback resource in all countries of the world. UN (2018) observed that it is indeed a paradox that such a vast and highly valuable resource, which is likely to become even more important as climate change increasingly affects surface water sources, has been so neglected by government and development community at a time when interest and support for water sector as a whole is at an all-time high.

Sources of Groundwater Pollution

Water pollution is the addition of some foreign substances to water which degrades its quality and makes it a health hazard or unfit for use. The addition of foreign substances to water either changes its physical or chemical characteristics or interferes with its use for legitimate purposes. Normally, water is never pure in chemical sense; it usually contains impurities of various kinds, which can either be dissolved or suspended. Such impurities include dissolved gases (i.e. H_2S, CO_2, NH_3, N_2), dissolved minerals (i.e. Ca, Mg, Na, salts), suspended matter (clay, silt, sand) and microbes. These impurities which are usually derived from atmosphere, catchment areas and soil are found in low amount, they are natural and thus do not degrade water quality.

Polluted waters are however turbid, unpleasant, smelling and unfit for any domestic activities. Such waters are harmful and are vehicles for a number of diseases such as cholera, dysentery, and typhoid. WHO (2000) reported that water-bore diseases have been estimated to cause more than two million deaths and four billion cases of diarrhea annually. Infectious diarrhea according to Lee *et al*. (2002) is responsible for the greatest burden of this morbidity and

mortality, and children less than five years of age are the most severely affected population. Quality of water thus remains a vital concern for man as it is directly linked with human welfare.

Groundwater contamination occurs when man-made products get into groundwater and cause it to become unsafe and unfit for human use. Sources of man-made products that contaminate groundwater do emanate from domestic, industrial and agricultural activities. Studies such as Almasiri *et al*. (2004), Awofolu (2006), Sacchidananda and Prakash (2006), Yerima *et al*. (2008), Feighery (2010), Soladoye (2011), have revealed groundwater contamination through leachates outflow, infiltration from landfill, infiltration of trace metals from industrial production and underground flow from leaking latrines.

Domestic wastes and methods of their disposal are of primary concern in groundwater pollution in urban areas. Prime factors responsible for groundwater deterioration in these areas include pathogenic organisms, oxygen demand, nutrients and solid from domestic wastes (Gruber *et al*., 2014). Agricultural activities contaminate vulnerable aquifers with a number of pathogens and hazardous substances (Griffiths *et al.*, 2003). This is usually from the usage of fertilizers, pesticides, insecticides and herbicides. Processing and animal waste being produced on farms also go a long way in contaminating groundwater. The scale of ground pollution from agricultural practice is far greater than pollution from other human activities, as manure, agrochemicals, and wastewater are intentionally applied to land, most often in large areas.

Although pollution of groundwater resources in Nigeria has generally not reached a crisis point, the nature of groundwater resource which allows it to move from zones of recharge to zones of discharge and the difficulty associated with its clean-up when degraded suggest that action must be taken now to ensure the future integrity of the resources. Dispersion of groundwater is affected by the heterogeneity of subsurface systems and the difference in hydraulic conductivities between aquifers. And because groundwater dispersion patterns are difficult to predict, the tasks of detecting its pollution and monitoring its quality are extremely difficult and highly expensive. This thus means that once an aquifer is polluted, it may remain polluted for a long time. Even when such pollution is finally detected, and restoration of the groundwater is attempted, clean-up may be difficult to carry out because of the cost and time it will take.

The above discussed factors thus call for efforts to protect groundwater through environmental education, particularly at elementary level. However, because this approach will take a long time to be effective, the task of protecting groundwater can immediately be carried out first by reviewing the various geological conditions in the country towards resolving key practical

groundwater management questions in order to guide optimum groundwater development and to determine groundwater protection zones around boreholes in fractured rocks (Tindimugaya, 2005).

Groundwater Resource and Use in Nigeria

Nigeria, which is located between longitudes 2˚50' and 14˚20' East of the Greenwich Meridian and between latitudes 4˚10' and 13˚48' North of the Equator in the subcontinent of West Africa, South of the Sahara (fig. 1) is geologically made up of two types of rocks; i.e. the basement complex and the sedimentary rocks with each of these two formations making up about 50% of the nation's geology (Omorinbola, 1984).

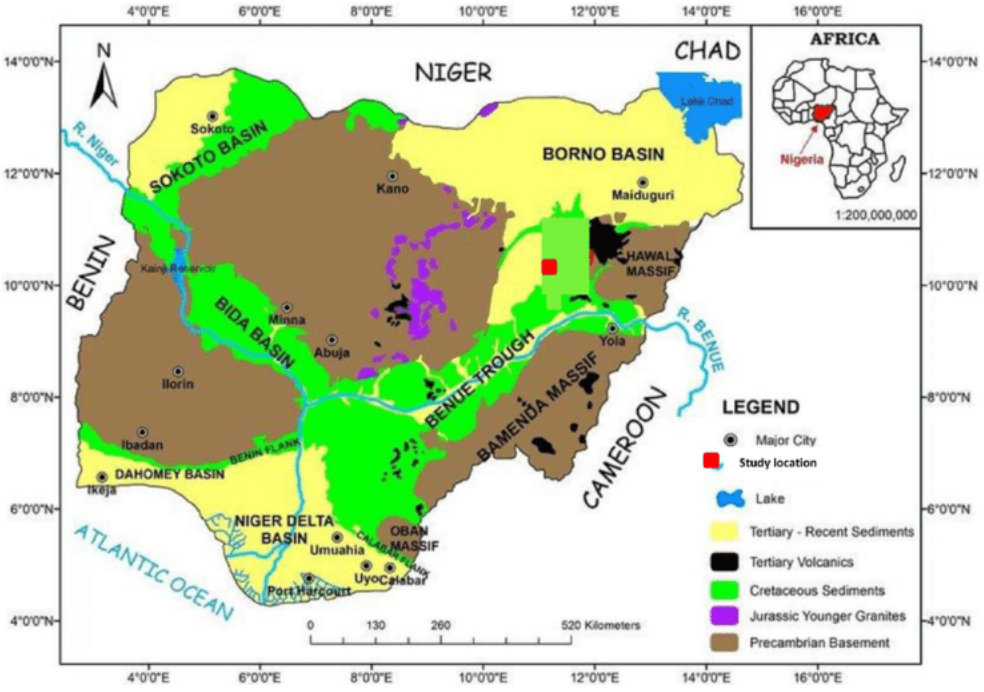

Fig. 1. Geological Map of Nigeria.
Source: Lar et al. (2018)

Although the country's groundwater resource is abundant and generally of good quality, the occurrence of groundwater in the basement complex regions of the country only accounts for 33% of the total amount of groundwater in the

country (Okeola and Salami, 2014). This is because groundwater occurrence in regions underlain by basement complex is determined by the porosity developed in geological formation as a result of various structural geological processes. Crystalline Basement Rocks do not make good aquifers because of their zero level of porosity and permeability (Azeez, 1972). According to JICA (2014), the total renewable groundwater resource potential of Nigeria derived from estimated annual groundwater recharge is around 1555.8 billion cubic meters per year. This recharge value is however variable across the country, controlled largely by climate (Tijani *et al*., 2016).

Groundwater is widely used in the country for domestic, agricultural and industrial purposes, with cities of Calabar and Port Harcourt totally dependent on its supply for their various activities. Tijani *et al*. (2016) identified a total of 77, 602 ground water access points in Nigeria, made up of boreholes with motorized pump (19,758), boreholes with hand pump (44,736) and shallow hand dug wells (13,108). While the quality of groundwater in Nigeria has been reported to be generally good (Okeola and Salami, 2014), there are reports of highly mineralized groundwater in Awe Formation Sedimentary aquifer in Benue Basin, sea water intrusion in Southern Coastal aquifers, local contamination by industrial chemicals in Lagos and metal contamination from mining activities in different parts of the country.

The Need for Environmental Education in Nigeria

The human ability to manipulate the environment is destroying the planet Earth and causing significant threat to human existence. Attempts to reduce the rate of this degradation process call for development of techniques that can be used in increasing the knowledge of the population, to provide a positive attitude and behavior towards the environment; this is what is referred to as environmental education. Environmental education aims at promoting among citizens the awareness and understanding of the environment, their relationship to it, and the concern and responsible action necessary to ensure man survival and to improve the quality of life (Okpala, 1977). According to Norris (2016), environmental education helps to enlighten individuals and give them greater insight into their own nature and the consequences of their actions. It helps people in finding novel ways of fostering positive attitudes and attributes to overcome environmentally destructive behaviours, thereby leading to the individual desire and willingness to take action for the environment (Thathong, 2012).

In its report to the congress on the need for environmental education, the National Environmental Education Advisory Council (2000) stated:

> "Our nation's future relies on well-educated to be wise stewards of the very environment that sustains us, our families and communities, and future generations. It is environmental education that can best help us as individuals to make the complex, conceptual connections between economic prosperity, benefit to the society, environmental health, and our own well-being. Ultimately, the collective wisdom of our citizens, gained through education, will be the most compelling and most successful strategy for environmental management."

The inadequate attention paid to environmental education in Nigeria, and indeed in most developing countries, is the reason why people cut trees indiscriminately, set bush on fire and ply road using vehicles that do not fully combust. According to Ogbeibu (2007), every person needs to be educated as no one can be expected to appreciate the value of sound environmental ethics or the tragedies of environmental abuse unless such a person is first equipped with the relevant working background knowledge of the entire concept of the man-environment relationship.

The Nigerian environment is full of numerous environmental challenges. Though some of these challenges can be linked to natural forces, many of the challenges are human induced (Jimoh and Ajibade, 1995; Iroye 2010). While Miller and Spolman (2011) identified population growth, wasteful and unsustainable use of resources, poverty and insufficient knowledge of the working of the environment as the major causes of environmental problems, Ofomata and Phil-Eze (2007), Jimoh and Ajibade (1995), Ajibade (1998) and Iroye (2010) linked the incidents of environmental degradation in Nigeria to poor application of the principles of environmental management.

Among the human activities degrading the Nigeria environment, one includes agricultural activities, especially the arable type, livestock rearing, lumbering, industrial production, poor liquid and solid waste generation and management, and the urbanization process. These activities have resulted in problems of soil erosion, sedimentation, deforestation and pollution of water, land and air in different parts of Nigeria.

A number of steps have however been taken over the years by the Nigerian government towards managing the environment. Some of such efforts according to Adelegan (2006) had even existed as bye-laws since the inception of the British rule in the country. The laws, regulations and policies on environmental issues in Nigeria include:

i. The Criminal Code Act of 1916 which prohibited water and air pollution;
ii. The Forest Ordinance of 1937 which led to the establishment of various forest reserves in the country;
iii. The Criminal Code of 1958 which ban burial in houses to control water pollution;
iv. The Public Health Act of 1958 which aims to control the spread of diseases through slaughtering of sick animals;
v. The introduction of environmental content in the Biology Syllabus by the West African Examination Council in the 1950s;
vi. The introduction of hygiene and nature study to be taught as environmental subjects in the 1960s;
vii. The 1974 promulgation of the Petroleum Refining Regulation Act to curb oil pollution, especially in the Niger Delta wetland;
viii. The establishment of the Nigerian Conservation Fund (NCF) in 1982;
ix. The promulgation of the Federal Environmental Protection Agency Act (FEPA Act) of 1988;
x. The promulgation of the Harmful Waste (Special Criminal Provision Act) Act in 1988;
xi. The Adoption of the National Conservation Education Strategy in 1989 as sponsored by UNESCO;
xii. The promulgation of the Environmental Impact Assessment Act (EIA Act) in 1992;
xiii. The Repeal and Replacement of FEPA Act in 2007 by the National Environmental Standard Regulation Agency (NESREA) Act.

In Nigeria today, NESREA has the responsibility for protecting the environment, conserving the biodiversity and ensuring sustainable development of Nigeria's natural resources. The Agency also coordinates and liaises with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines. The NESREA Act allows each state and local government in the country to set up its own agency for the protection and improvement of the environment. Each state agency is also empowered to make laws to protect the environment within its jurisdiction.

With specific reference to water resources in Nigeria, the laws, regulations and policies guiding both surface and groundwater resources are governed by the National Environmental Regulation of 2011 made under section 34 of National Environmental Standards and Regulation Enforcement Agencies Act of 2007. The act defines water pollution offences and prescribes

penalties for such offences. The regulations aim to protect water resources for various purposes, including clean water supply, agriculture and aquatic life. In the regulation, a permit is required:

i. for storage treatment and transportation of harmful toxic waste;
ii. where effluents with constituents beyond permissible limits are discharged into public drains, rivers, lakes, sea, or as an underground injection;
iii. when oil in any form is discharged into public drains, rivers, lakes sea, or as an underground injection;
iv. for an industry or a facility with a new point source of pollution or a new process line with a new point source. Such an industry or facility must apply to the agency for a discharge permit.

The violator of any of these laws is liable to pay a fine, compensation or damages to those affected, and restore or remediate the polluted environment. In addition, non-compliance with the provisions of the guidelines attracts imprisonment for a term up to two years for first offence.

There is also the Federal Water Quality Standard Regulation which is overseen by the National Environmental Standards and Regulations Enforcement Agency (NESREA). In this Act, the discharge of harmful quantities of any hazardous substance into territorial waters or at adjoining shorelines is prohibited except where such discharge is permitted by law. Violators of this law can incur a fine of ₦1 million for a corporate body with additional fines of ₦5,000 for every day the offence subsists or a prison sentence of up to five years. Other regulatory Acts on water pollution in Nigeria include:

i. The Nigerian Industrial Standards for Potable Water and Natural Mineral Water Act;
ii. The State Water Supply Edict/Laws;
iii. The Local Government Water and Sanitation Byelaws;
iv. The National Water Supply and Sanitation Policy;
v. The Federal Ministry of Water Resources Act;
vi. The National Water Resources Institute Act;
vii. The River Basin Development Authorities Act;
viii. The Navigable Waterways (Declaration) Act;
ix. The National Guidelines and Standards for Water Quality Act.

It is however disappointing to know that most of the environmental laws in Nigeria are not respected (Ijaiya and Joseph 2014) and they are also poorly implemented by government agencies (Otu, 2000; Ogidiolu and Balogun, 2000). The alarming rate of environmental degradation in the country is

probably borne out of the fact that the majority of the citizens do not really value nature. Most people do not understand the inter-dependence of nature, the interaction between the various species on the planet. A better understanding of the man-environment relationship when combined with behavioural change in matters concerning the environment will greatly improve the Nigeria environment.

Development and Techniques in Environmental Education

Environmental education is now considered a necessity globally due to the high rate of environmental degradation taking place in different parts of the world. Governments at various levels throughout the world have realized that continued growth on the planet Earth needs to be met with sustainable practices; hence the development and implementation of strategies towards educating the general public on matters concerning environmental issues.

The importance of environmental education was first brought to light in Stockholm at the United Nation's Conferences on Human Environment in 1972. At the conferences, participants highlighted the importance of education for both the public and specialists as a means of solving and preventing global environmental problems.

One of the recommendations proposed at the conferences was to establish an international programme on environmental education, hence the setting up of the International Environmental Education Programme (IEEP) in January 1975. In October 1975, an International Education Workshop was held at Belgrade where trends and issues in environmental education were observed. This workshop led to the establishment of the Belgrade Charter which has provided a frame of reference for global environmental education. The goal of environmental education as defined by the Belgrade Charter is:

> "… to develop a population that is aware of, and concerned about, the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively towards finding solutions to current problems and the prevention of new ones".

To attain the above-stated goals, the workshop identified six objectives which were thereafter reduced to five in the Tbilisi Declaration in 1977. The objectives are:

i. Awareness: To help social groups and individuals acquire an awareness and sensitivity to the total environment and its allied problems.
ii. Knowledge: To help social groups and individuals gain a variety of experience in, and acquire a basic understanding of the environment and its associated problems.
iii. Attitudes: To help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection.
iv. Skills: To help social groups and individuals acquire the skills for identifying and solving environmental problems,
v. Participation: To provide social groups and individuals with an opportunity to be actively involved at all levels in working towards the resolution of environmental problems.

The aforementioned objectives indicate that the ultimate goal of environmental education is to provide individuals with the opportunity to explore environmental issues, engage in problem solving and take action to improve the environment. This goal in UNEP and IEEP documents is to be achieved through formal, informal and non-formal education.

The propagation of environmental education which started in Nigeria as far back as the 1950s with the introduction of environmental contents into the curriculum at all levels of educational sectors has however had little or no impact in the country. A cursory look at the Nigerian environment shows high level of degradation in all areas of the environment. The introduction of environmental education into the nation's educational curriculum is yet to materialize into anything concrete (Anijah-Obi *et al*., 2013). Although Adedoyin (1988) linked the ineffectiveness of environmental education in the country to the integrated approach being adopted in its teaching, Norris (2016) noticed that the strategy conforms to the interdisciplinary approach emphasized by the Belgrade Charter.

The failure of environmental education in achieving effective result in Nigeria may not be unconnected with the exclusion of moral philosophy in the curriculum of instruction. It is the need of the hour to carry out environmental education with the essential element of moral philosophy. This is because the conventional educational methods are no longer adequate for the real needs of tomorrow (Govindaswamy, 2006). Although some of the efforts used in curbing environmental problems can be said to be effective in tackling some environmental challenges, new problems are daily emanating because the root cause of the problem is yet to be addressed. Thathong (2012) observed that most strategies used in addressing environmental challenges only focus on the

'end of the pipe' control and treatment rather than prevention; according to him, this is the reason why desired results have not been achieved. According to Norris (2016), the sources of environmental challenges lie in the knowledge, attitude and behavior of the people towards nature. Therefore, to tackle the problem, special attention of the authorities concerned should be directed at increasing the knowledge of the people on issues related to the environment. This action will no doubt create positive attitude and behavior towards those matters that concern the environment.

Attitude refers to a set of emotions, beliefs and behavior towards a particular thing, it is a settled way of thinking or feeling about something. Attitudes are often the result of experience or upbringing, and they can have powerful influence over behavior. Once an attitude is developed on a particular issue, changing behavior towards that matter becomes extremely difficult. Behavior change according to Thompson and Hoffman (2003) is difficult to achieve in the world today, because the acceptance of the gap between values and behavior has reached epidemic proportions.

The fact that attitude once developed is difficult to change, especially in adults, makes this research work to suggest to the authorities concerned, the need to focus more attention on environmental education with essential elements of moral philosophy at elementary levels. This in fact is the need of the hour, not only in Nigeria, but throughout the developing countries. This approach is expected to produce better result in the area of environmental education. According to Landrigan *et al.* (2002), children ingest greater quantities of toxins because they breathe twice as much air, consume three to four times as much food, and drink two to seven times as much water relative to their body weight than an adult; and because they are particularly more vulnerable to problems induced by unwholesome environment. Once children are equipped with the right training in the area of environmental education, they are likely to grow up acquiring more knowledge and skills on how to tackle environmental challenges in their different areas of specialization.

The teaching of environmental education at elementary level as being canvassed in this write up will not only promote the children's awareness of their environmental conditions, but will also aid in their age long active participation in solving local problems. According to Radeiski (2009), providing environmental education to children very early in life will equip them with basic skills which are prerequisite for future political influence in the environmental decision process. Teaching of environmental education at elementary level should however not be limited to just natural science; ethical and social aspects of environmental education should also be focused.

Conclusion

Raising awareness of the people through environmental education, particularly at elementary level on issues concerning groundwater pollution is of great importance. This is borne out of the fact that groundwater which is fast becoming a key resource that is supporting human well-being and economic development in different parts of the world is fast depreciating in quality. Attention is thus needed in different parts of the world to put a stop to this degradation process of groundwater. This is important because once an aquifer is polluted, it may remain polluted indefinitely even if the source of pollution is removed. Attempts to prevent this problem from happening thus call for environmental education of the people, especially at the elementary level. This is germane because once a good environmental attitude is cultivated in children, changing behavior negatively towards matters concerning the environment will become extremely difficult.

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THE EVOLUTION OF THE AREA BETWEEN VALEA CHINTĂULUI AND VALEA CALDĂ FOLLOWING THE WORKS MITIGATING SOIL EROSION

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ABSTRACT. - The Evolution of the Area between Valea Chintăului and Valea Caldă Following the Works Mitigating Soil Erosion. The study area is located on the left slope of the Someşul Mic River, in the northern part of Cluj-Napoca and is bounded on the north and east by the watershed that separates it from the Valea Caldă River basin, south of the agricultural road that separates the slope from Someşul Mic floodplain and west of the orchard border. The area is called Sfântu Gheorghe Hill, the homonymous peak bordering it to the west, and Ţigla Hill to the east. In 1986, the Institute for Studies and Design for Land Improvements implemented a plan to mitigate soil erosion on an area of 600 hectares within the mentioned limits. Of these, 300 hectares represented the arrangement of terraces, 200 hectares the arrangement of landslides and 100 hectares of drainage on slopes. The execution of the works mitigating soil erosion aimed at reducing the annual soil losses, the possibility of applying appropriate agrotechniques in the fruit plantations to be established. The arrangement of the slippery surfaces was done by modeling, eliminating the excess moisture, terracing, grassing or planting and had the purpose of bringing significant areas of land back in the economic circuit. Elimination of excessive water through drains was made for the proper development of future tree plantations. The purpose of this study is to analyze the temporal evolution, over a period of 30 years, of the efficiency of the arrangement works on the slope performed in 1986, first of all. The estimation of the effectiveness of the works executed at that moment was made by the comparative morphometric and morphological analysis of the landslides and the forms of deep erosion on the slopes. Second, the study examines the vulnerability of landslide risk factors in this area, in particular residential and public buildings, road infrastructure and agricultural land. The study starts from the following premises: the geomorphology of the southern slope of Sfântu Gheorghe Hill has been studied over time, as attested by bibliographical sources; 30 years ago, the destination of the lands related to the area was mainly agricultural, and the land use plans included mainly measures for agricultural development; in recent years, there

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has been an accelerated expansion of Cluj-Napoca, including on the northern slope of Someşul Mic, both from the base of the slope to the watershed, and along the base of the slope, to the eastern outskirts of the city. The questions that arise are: how did the landslides evolve and how did the slope evolve after the development carried out in 1986? How many of the built elements are located in areas with acceptable risk and how many are located in areas with high risk in terms of slope stability?

Keywords*: landscaping, soil erosion, landslides, torrents, terraces, modeling, vulnerability.*

Introduction

The tendency of a significant part of the population in Cluj-Napoca is to build a house as spacious as possible, in a short time, to take advantage of the current development opportunities. There are many examples, especially events after 1990, which show that haste does not lead to the best results. On the contrary, it can be the cause of unpleasant events, resulting in property damage and / or loss of life. The most relevant examples are the constructions located in areas susceptible to landslides. The northern slope of Someşul Mic River near Cluj-Napoca falls into the category of land that was built long after 1990. The study aims to analyze whether land improvements, built 30 years ago, are still able to stop the evolution of the landslides or if landslides have reactivated. A qualitative assessment of the vulnerability of elements at risk of landslides is also sought.

1. The study area

Sfântu Gheorghe Hill delineates to the north-east the municipality of Cluj-Napoca, between the Chintău Valley, to the west, and the Hot Valley (Valea Caldă), to the east. It is a cuesta, whose front is oriented to the south and south-east, and the reverse to the north, towards Valea Caldă. The southern face of the hill measures 846 hectares. Its altitudes are around 500 m (513 m at the top of Fânaţele Satului and 478 m at the top of La Pipă). In the twentieth century, at the base of the slope, the industrial area of the city developed progressively. The artery connecting the area with the center was generically called Labour Boulevard (Bulevardul Muncii). A number of industrial enterprises were closed after 1990, such as the C.U.G. and Therapy. Other

constructions have kept their destination and functionality today, such as the Faculty of Mechanics within the Technical University. Private homes and new commercial spaces have emerged, such as Auchan. The buildings of the old factories are currently occupied by the headquarters of new institutions (A.P.I.A., etc.). Some of the constructions occupy slope sectors where the geomorphological risk is considerable.

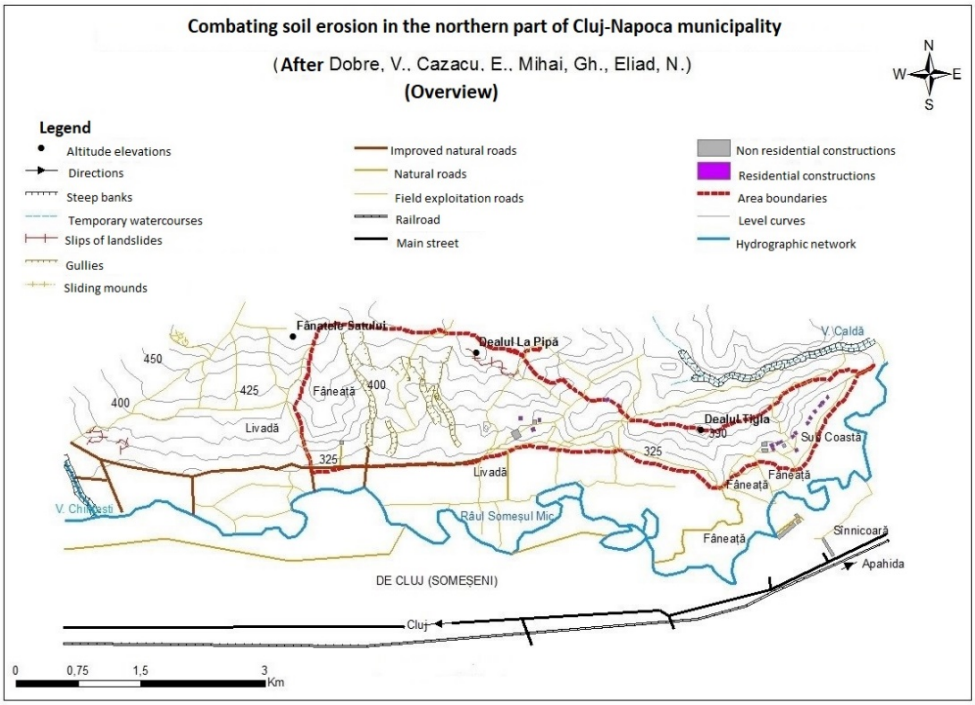

Fig. 1. ISPIF project 6855/1986.
Source: Dobre, V., Cazacu, E., Mihai, Gh., Eliad, N. (1986)

2. Research methodology

2.1. Data used

The following sources were used: a) topographic map, scale 1: 25.000; b) geological map of Romania, scale 1: 200,000; c) The General Urbanism Plan, 2012, regarding the land arrangement; d) APIA, data regarding the land use; e) ISPIF 6855 project from 1986 on mitigating soil erosion; f) field observations and measurements, in 2015 and 2017; g) The land elevation model.

2.2. Specific methodology

In order to determine the susceptibility of the area to landslides, the method of statistical analysis of the landslide frequency rate on five control factors (hypsometry, slope, slope orientation, geology, land use) was used. The method is often found in the studies of authors such as Irimuș and Surdeanu (2003), Goțiu (2007), Bilașco *et al*. (2009).

a. **Landslides** were delimited on the topographic map and on orthophotoplans, then they were identified on the ground. They were located accurately and their area was measured using the GPS application Essentials 4.4.22. The data was exported to Google Earth Pro and then to ArcGIS 10.1.
b. **The digital terrain elevation model** was used in the construction of the following maps: **slope and slope orientation.**
c. **The geological map** was built, and then **the land use map** according to CLC.
d. Each control factor was classified into five susceptibility classes. The area for each susceptibility interval was calculated, as well as the area covered by landslides in each of these intervals. The size of the factor "i" was calculated for all susceptibility ranges, using the formula of Yin and Yan (1988):

Ii = log (Si / Ni) / (S / N), where
Ii = statistical value of the factor "i"
Si = landslide surface over the susceptibility range of the control factor
Ni = area of the susceptibility range of the control factor
S = total landslide area of the study area
N = surface of the study area.

The total susceptibility to landslides was obtained by summing the rasters (grids) obtained on each control factor.

3. Results

3.1. Landslide map

The field measurements show the reduction of landslide areas, from 200 ha in 1986 to 61 ha in 2017. As a result of modeling, leveling, terracing, planting with fruit trees of the terraces, as well as acacia plantations on the mass-supplying areas of landslides, they have been stabilized. Four areas with deep landslides have been found, as well as reactivated landslides in each area (in 10 locations).

Two of the reactivated landslides are around the top of the Fânaţele Satului Peak, in the mass-supplying area, and the third, in the frontal area of the landslide. The immediate risk is lower, in this case, because not many houses have been built in this sector yet.

The second massive landslide is located in the northern and northeastern part of the Auchan shopping center. It has two reactivated sectors. There is a lake behind the wall that delimits the store, as well as cracks in the wall, which demonstrate the movement of materials on the slope. In this case, the risk is high even now, given the considerable number of people in the supermarket every day.

The third deep slip sector, with two reactivated sectors, is located on the line of the watershed between the Fânaţele Satului Peak and La Pipă Peak.

The fourth sector with landslides is located north-east of the former CUG plant. New lenticular landslides have developed over the main body of the landslide, especially those affecting Voroneţ Street.

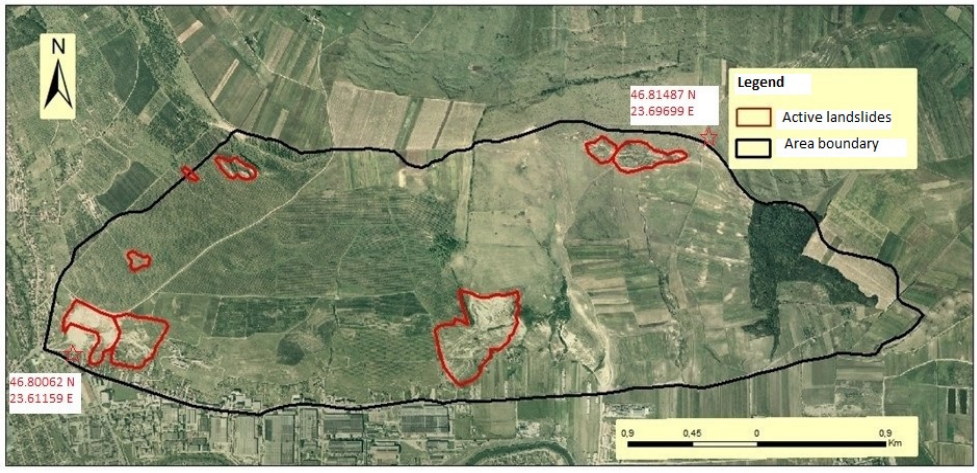

Fig. 2. Landslides on the southern slope of Sfântu Gheorghe Hill.
Source: the authors

3.2. Digital terrain elevation model

Examination of the terrain elevation model reveals that 52.7% of the slippery surfaces are on the level below 400 m altitude, 46.6% are between 400-500 m altitude and 0.7% are at heights of over 500 m (fig. 2).

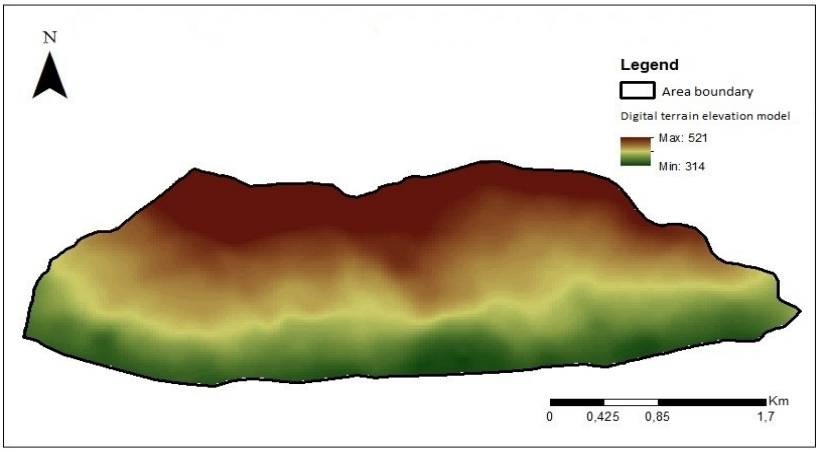

Fig. 3. Digital terrain elevation model.
Source: the authors

3.3. Slope map

After the construction in DEM, the slope map was reclassified, choosing the following classes: 0-2º, 2-6º, 6-17º, 17-32º and over 32º (fig. 4). Most landslides are in the range of 6.1-17º, i.e. 72.29%. The following by weight are the slopes between 17.1 and 32 º, 13.92% of landslides are located here. Lands with a slope of 2.1-6º have 11.35% of landslides. On the quasi-horizontal lands there are 2.37% of the slippery surfaces. On those that exceed the slope of 32º, the percentage is insignificant, 0.07%.

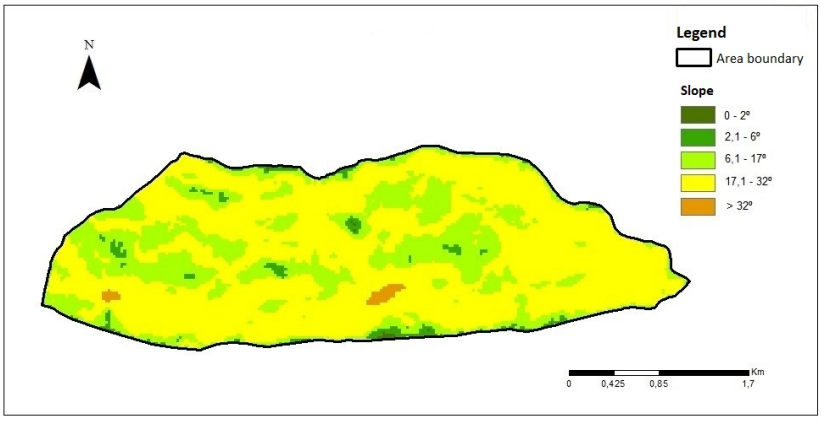

Fig. 4. Slope map.
Source: the authors

3.4. Slope aspect map

The mechanisms of the weathering process take place faster on sunny slopes than on shady ones. As it benefits from a longer duration of insolation, on the southern and south-eastern slopes the disintegration is accelerated, as well as the chemical alteration. The superficial deposits formed are exposed in advance to mass movements on these slopes, rather than on the shaded ones. Therefore, 64.21% of the landslides on the southern facade of Sfântu Gheorghe Hill are found on the southern and south-eastern slopes. On the western and south-western semi-sunny slopes, 23.09% of the existing landslides were identified. In contrast, few landslides were identified on the shady, northern and north-eastern slopes (2.64%) and on the semi-shady, eastern and north-western slopes (4.25%). On the other hand, on the shaded and semi-shaded slopes, where the water stagnates for a longer time, landslides are replaced by creep, compaction and suffusion processes, and linear erosion respectively (fig. 5).

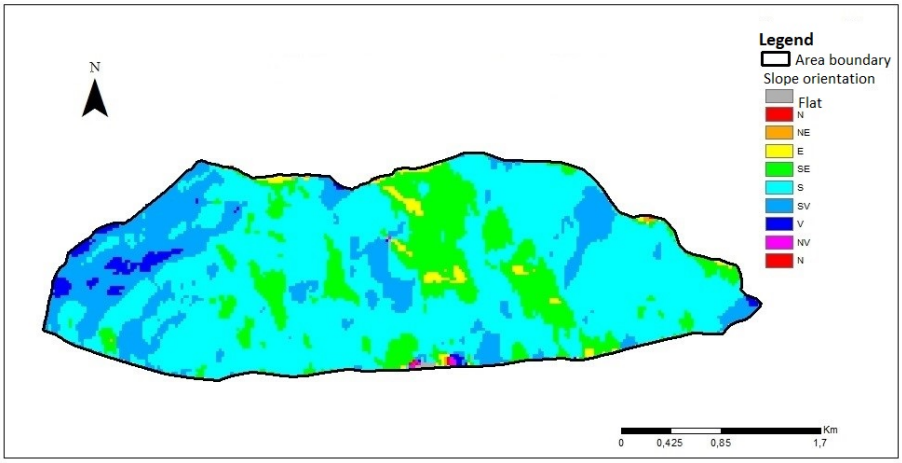

Fig. 5. Slope aspect map.
Source: the authors

3.5 Geology

The analysis of the geological map (fig. 6) reveals the dominance of the Miocene lithological formations. Marl and tuff formations support 77.25% of landslides. 17.03% of landslides lie on the clay deposits alternating with coal sandstones, marls, marly shales and tuffs. These soils are highly susceptible to landslides due to the alternation of layers of clay or marl with layers of crumbly rocks, with high porosity and low internal cohesion. A share of 3.75%

of the landslides are found on the Quaternary gravel deposits, located on the watershed of Sfântu Gheorghe Hill (Pleistocene deposits). These are the mass-supplying areas of the landslides that occurred in this area. On Holocene sands there are 1.97% of the landslides, located in the west of the area, on the eastern slope of Chintău River. In this case, the front parts of some slippery lands parasitize the area that consists of sands.

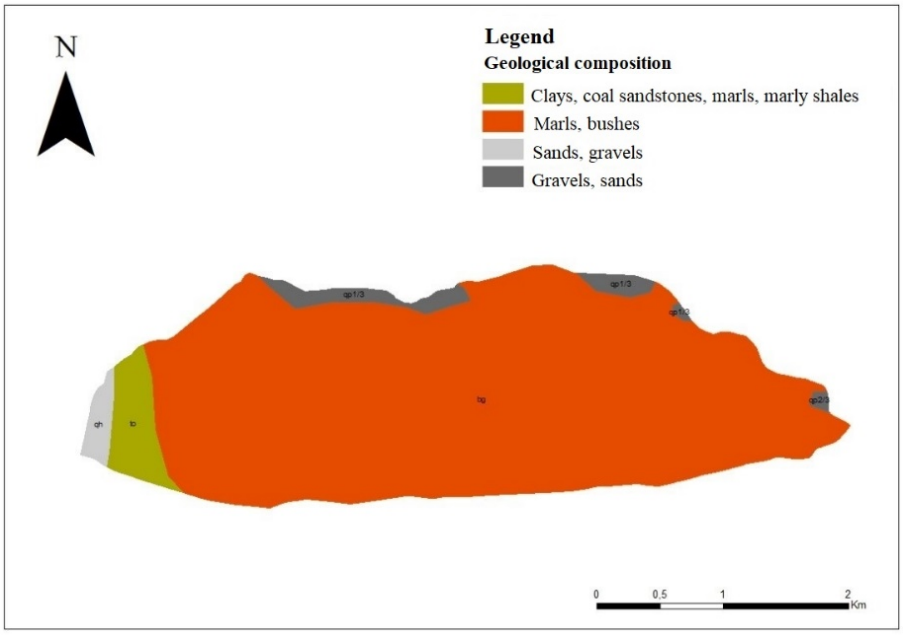

Fig. 6. Geological map.
Source: the authors

3.6. Land use

There are several interesting aspects regarding land use. First of all, the landslides stabilized on the lands with orchards of fruit trees. The transfer of individual ownership of these lands after 1990, determined their subdivision into smaller lots and the cutting of the orchard on many terraces. On some of the cleared terraces, the landslides have reactivated. Then, the undermining of the base of the slope by excavating the land for the Auchan supermarket, determined the reactivation of the landslide in that sector, until then stabilized. Another situation of activation of a deep landslide was on arable land located immediately below the watershed. Finally, the fastest evolution has been shown by the recent landslides on Voroneț Street and in its vicinity (fig. 6).

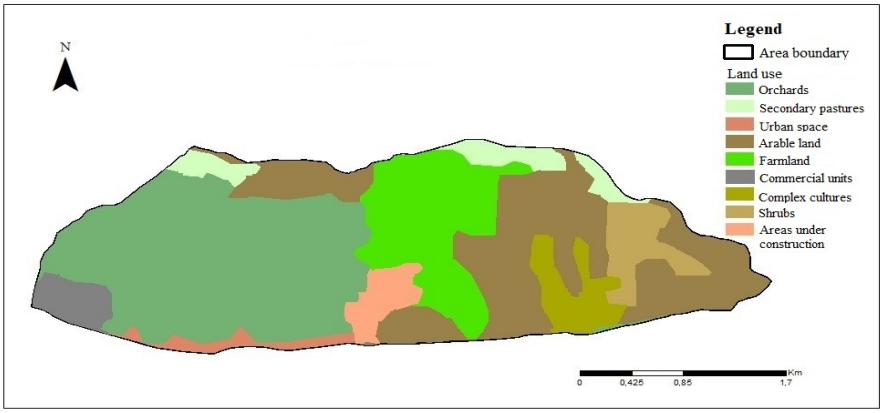

Fig. 7. Land use map.
Source: the authors

3.7. Landslide susceptibility map

The analysis of the landslide susceptibility map reveals the following aspects. First, lands with high susceptibility (16.38%) and very high (6.96%) are those located in the sector U2, distribution, U5, the middle part of the slope and U6, the accumulation area of floods and colluviums (Dalrymple *et al*., 1968). Then, most of the southern slope of Sfântu Gheorghe Hill (39.98%) has an average susceptibility to landslides. The lands with low (28.19%) and very low (8.49%) susceptibility are especially in the "free face" sector of the slope (Dalrymple et al., 1968), on the watersheds, but also in the glacis that connects the slope with the Someşul Mic floodplain.

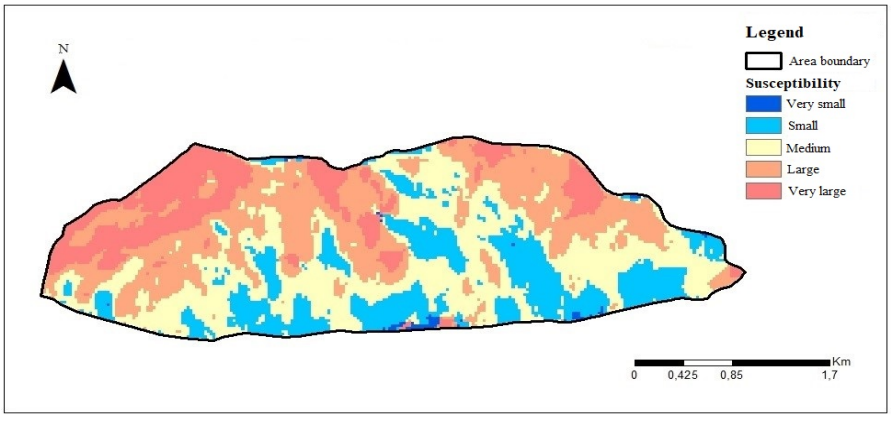

Fig. 8. Landslide susceptibility map.
Source: the authors

4. Vulnerability to landslides

Based on the data from the 2010 orthophotoplan, by digitizing the buildings and streets in the study area, we calculated the existence of a number of 358 residential and non-residential buildings, as well as 66 streets in this sector. Of these, 172 buildings are located less than 200 meters from landslides, 51 buildings at a distance of 200-300 m, and 41 buildings at distances between 300-400 m from landslides. They have a high degree of vulnerability. The most exposed are the Auchan supermarket, being located exactly at the base of one of the reactivated landslides and the private homes on Voroneț Street, as these are right in the perimeter of the active landslide. Assessing the number of people at risk was not possible due to lack of data.

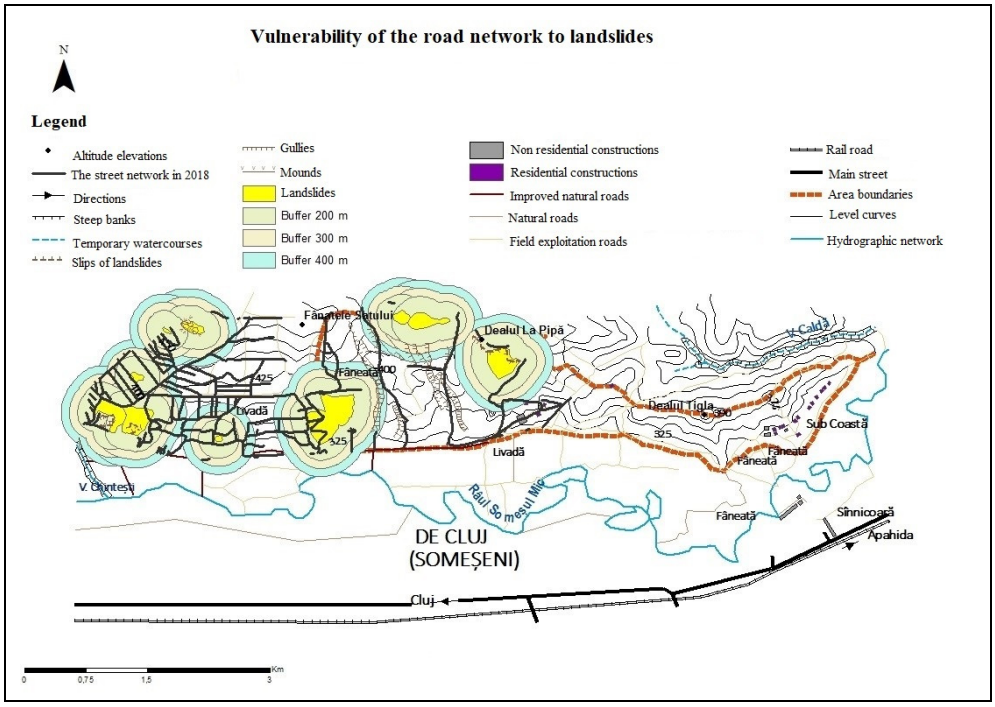

Fig. 9. Vulnerability of the road network to landslides.
Source: the authors

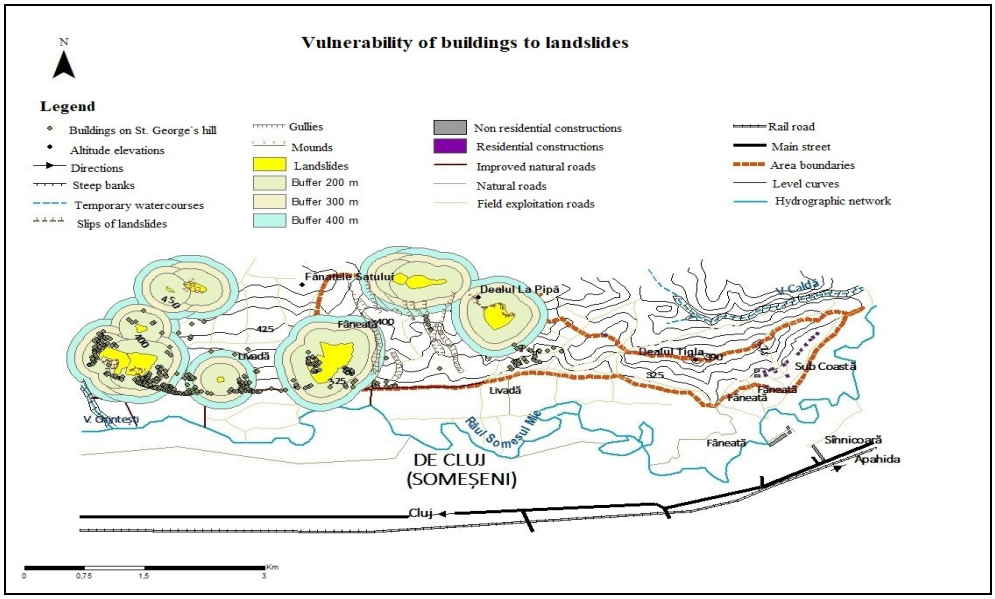

Fig. 10. Vulnerability of buildings to landslides.
Source: the authors

5. Discussions

The residential area to the north of Labour (Muncii) Boulevard, on the southern slope of Sfântu Gheorghe Hill, is expanding more and more. The action is justified on the one hand, taking into account that the flat areas of the floodplain and on the terraces of Someșul Mic River are already occupied by buildings. The attractiveness of this area is given by the predominantly southern exposure of the slope, the relatively short distance from the city center, resulting in a short time to travel to / from the city, and the prospect of living in a more spacious neighbourhood. Aspects that have received insufficient attention relate to the layout of the road network and the construction of more than half of the buildings in areas at high risk of landslides.

6. Conclusions

Compared to the existing situation in 1986, the southern slope of Sfântu Gheorghe Hill has evolved. The slippery land areas were reduced from 200 ha to 61 ha. The executed land improvement works were efficient as long as the maintenance of the terraces cultivated with fruit trees and of the drainage systems of the excess humidity was carried out. After 1990, the surface of the

slope was divided into individual properties, thus interrupting the unitary monitoring of the functionality of the land arrangements. Numerous sectors of the agricultural terraces were cleared, on which superficial erosion, ditches, gullies, ravines, torrents and landslides settled in a short time. Some of the stabilized landslides have been reactivated following a change in land use. New streets were laid out and new buildings built, most of them family homes. Most of the houses are at critical distances from landslides in different stages of evolution.

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SYSTEMES D'INFORMATION GEOGRAPHIQUE (SIG), DÉVELOPPEMENT ET COMPÉTITIVITÉ TERRITORIALE : QUELLE ARTICULATION ? - CAS DE LA VILLE DE MARRAKECH -

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ABSTRACT. – Geographical Information Systems (GIS), Development and Territorial Competitiveness: What Connection? The Case of the City of Marrakech. Marrakech is a city in search of an urban balance in social, economic and environmental terms. This balance traces the reflection of a political and economic ideal of a new and smart city, which essentially instrumentalizes a well-studied basic urban policy, inspiring confidence. The birth of a new urban concept for Marrakech is initiated by an urban will, as part of a vision of sustainable and equitable territorial development.

The GIS, as a means of territorial management and decision-making in terms of spatial planning and control, has emerged in urban management strategies, following the evolution of the territory and the changes that occurred, in addition to the current circumstances regarding climate change, urban transformations and globalization. GIS is therefore a consequence of this evolution, which is also experienced by the city of Marrakech. The connection between GIS and territory leads to relevant results for spatial organization, given the ingrained adoption of information techniques at the level of municipalities and between municipalities.

In this context, this paper approaches the insertion of new technologies to assist the decision-making process by territorial actors and the digitization of spatial data for a rational urban planning.

Keywords: *GIS, territorial management, smart city, digitization of data.*

I. Introduction

La production d'une connaissance, partagée entre territoires, représente un enjeu stratégique pour prendre des décisions négociées, concertées, transparentes et efficaces, de la part des acteurs et des décideurs. Cette production est véhiculée

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par les termes de communication et d'information, qui sont demandés au niveau de la gestion urbaine. Le territoire, dans ce sens, exige l'articulation entre les techniques de gouvernance. Le SIG se place comme un des instruments et des outils employés dans des politiques territoriales et de gestion, afin d'activer le processus de mise en cohérence de plusieurs logiques institutionnelles unissant des acteurs du territoire.

Le développement du territoire s'impose par la réalisation d'un projet local, et déroulant de l'espace lui-même. Ce processus de développement insiste fondamentalement, pour sa pérennité dans de bonnes conditions, sur l'idée de l'employabilité des outils techniques et digitaux, l'articulation des composantes du territoire, afin d'assurer une compétitivité, un développement sous l'angle d'un SIG est une dynamique institutionnelle collective, réunissant différentes logiques d'acteurs se confrontant et/ou coopérant sur un territoire.

Les perspectives du territoire tournent autour de la création d'une compétitivité territoriale correcte et formelle pour la ville de Marrakech, fondée sur une base communicationnelle et informationnelle inter-acteurs territoriaux, sous la supervision d'une intelligence territoriale développée et collective. Le pilotage des communes urbaines de Marrakech s'est développé au cours de ces dernières années, grâce à une gestion intégrée de la ville et un renouvellement de ses infrastructures, à l'aide de processus d'innovation et de développement.

Plusieurs contraintes se sont opposé au développement de la ville et à l'intégration des nouvelles technologies, dans sa mise en œuvre et ses processus de gestion urbaine. Marrakech a mis en place une stratégie, pour devenir une ville intelligente, durable et de haut niveau touristique à l'exemple des villes internationales. Dans ce chapitre, nous allons exposer l'intérêt que le SIG apporte à la ville de Marrakech et ce que l'intelligence territoriale peut ajouter à la gestion de la ville, en réinventant le rôle majeur des communes urbaines.

Dans le contexte de ces différents concepts, nous exposons notre problématique comme suit :

Dans quelle mesure les nouvelles approches d'intelligence territoriales, notamment le SIG peuvent-elles contribuer au lancement d'un développement durable capable de doter la région de Marrakech d'une compétitivité territoriale efficace ?

Nous visons d'après cette étude de montrer comment l'intelligence territoriale (SIG), en tant que processus informationnel et communicationnel, permet aux acteurs locaux de s'approprier les ressources territoriales et patrimoniales, en mobilisant et en transformant les capacités territoriales en capacités en termes de projets.

II. Localisation de la zone d'étude :

Nous avons choisi la ville de Marrakech comme terrain de notre recherche. Cette ville historique caractérisée par son tissu urbain hétérogène, constitué de différents types d'habitat, à savoir : la médina à l'habitat vétuste et délabré, la nouvelle ville (Guéliz), l'Hivernage et la Palmeraie, les quartiers récent (auto-construction, recasement, opération privée de standing supérieur), et enfin les douars, situés à la périphérie.

La structure du réseau de transport est différente selon le tissu urbain des quartiers bien structurés dans les quartiers modernes (Guéliz), les axes sont plus étroits et rares dans les quartiers anciens (médina) et ils sont presque inexistants dans les nouveaux quartiers tels que Sidi Youssef Ben Ali.

La présence d'un réseau viaire non hiérarchisé et le passage du trafic de transit par le centre-ville, provoquent la concentration de tous les flux sur les mêmes voies, à l'intérieur de la zone urbanisée et les embouteillages imposent l'écoulement des trafics de transit.

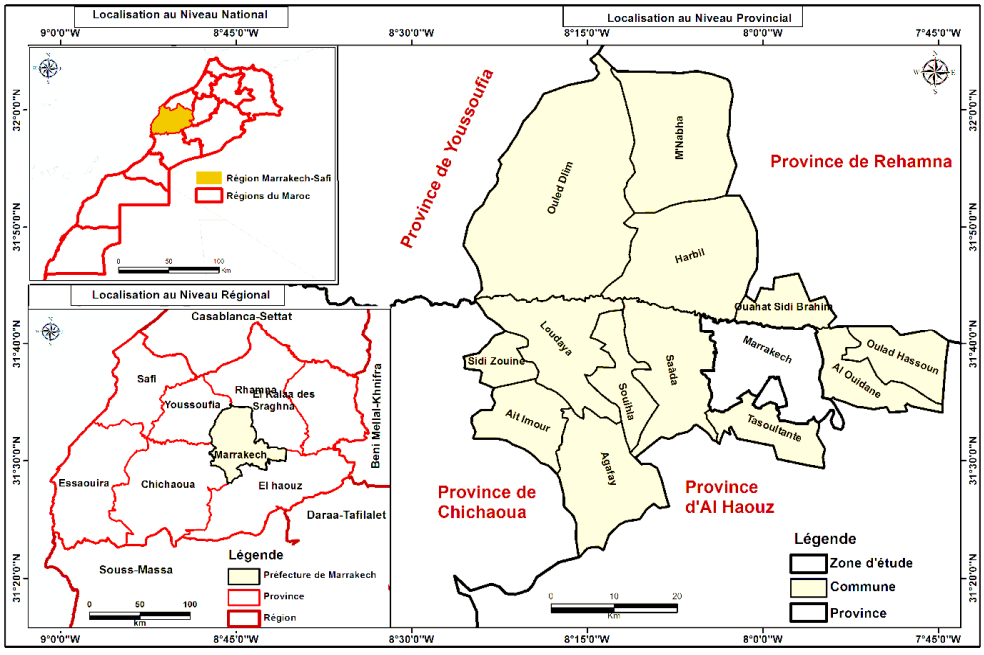


Fig. 1. Carte de terrain d'étude.
Source : Données cartographiques, HCP, 2017

1. Population cible :

Dans cette recherche, la population cible est celle des communes urbaines de la ville de Marrakech. Cela se justifie par leur importance dans l'organisation et la gestion du territoire de Marrakech. Grâce à la décentralisation, ces communes ont connu un développement de leurs domaines d'intervention par l'introduction des technologies de l'information pour bien maîtriser les différentes dynamiques et changements spatiaux. Les communes urbaines sont une population d'une grande importance au sein du territoire urbain, toute décision de reconstructions de l'espace par ces organismes pour une meilleure prise en conscience de l'état d'évolution de la ville de Marrakech. Dans les communes nous avons enquêté auprès des acteurs jouant des rôles dans ces communes et la population locale de chaque commune choisie. Aussi notre échantillon de travail se limite à la Ménara, Gueliz, Marrakech-Médina, Annakhil, Sidi Youssef Ben Ali, Méchouar-Kasba.

En ce qui concerne les acteurs, le graphe (Figure N° 2) montre en termes de pourcentages le nombre de personnes interrogés. Les acteurs sont au nombre de 60, appartenant à différents organismes. Nous nous sommes également intéressés, via un guide d'entretien, aux décideurs qui sont à la tête de projets réalisés au sein de la ville. Ils sont au nombre de 5 acteurs appartenant à des organismes.

La Commune d'activité ?	Nb. cit.	Fréq.
Menara	13	21,7%
Guéliz	15	25,0%
Marrakech-Medina	14	23,3%
Annakhil	9	15,0%
Sidi Youssef Ben Ali	5	8,3%
Mechouar-Kasba	4	6,7%
TOTAL OBS.	**60**	**100%**

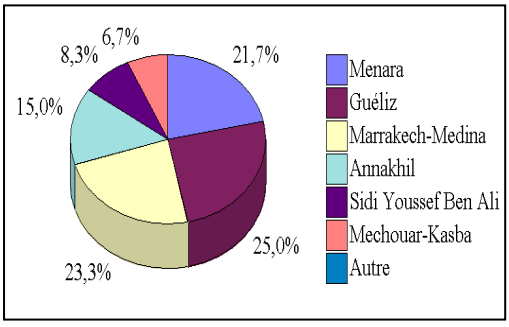


Fig. 1. Pourcentage d'acteurs interrogés par commune.
Source : Enquête personnelle, 2017- acteurs -

Selon l'enquête réalisée (Benichou, 2019), les acteurs interrogés diffèrent d'une commune à une autre. La concentration de notre échantillon d'acteurs se voit clairement dans les communes centrales du milieu urbain de Marrakech. Aussi, le nombre d'acteurs est plus ou moins important selon l'importance de chaque commune. En tête, nous trouvons la commune de

SYBA, avec un taux de 25%, suivie de la commune de la Medina avec 23.3% et celle de la Ménara avec 21.7%. Cette répartition reflète la taille de notre échantillon concernant les acteurs que nous jugeons représentatifs. Aussi, nous espérons que la contribution de ces différents acteurs permettra de cerner le plus possible les différentes questions que nous nous posons.

III. Les systèmes d'information géographique

Les SIG sont un ensemble puissant d'outils pour saisir, conserver, extraire, transmettre et afficher les données spatiales décrivant le monde réel. Ils comportent cinq types de composantes : (1) le matériel, (2) le logiciel, (3) les données, (4) les applications et enfin (5) les utilisateurs. Mais les logiciels relient ces différentes composantes et rendent le fonctionnement du système possible (Lévy et Lussault, 2013). La multiplication et la diversification des besoins envers la connaissance du territoire ont rendu un peu désuètes les méthodes cartographiques traditionnelles.

Les SIG sont le produit de la fusion d'une carte géographique numérique et d'une base de données géographique. Chaque objet graphique de la carte est donc caractérisé par un ensemble d'informations descriptives. L'assemblage d'un fond de carte et d'une base de données confère aux SIG des capacités analytiques et descriptives que la carte conventionnelle (ou la simple carte numérique) ne possède pas. Par ailleurs, les SIG permettent de structurer et d'organiser les données à partir de leur localisation sur le territoire (Sanders, 2006). Les SIG constituent un ensemble de compétences, de procédures et de méthodes pour traiter ces informations. Au-delà de la simple gestion, les SIG permettent de résoudre des problèmes complexes d'aménagement et de gestion (Lévy et Lussault, 2013). Ils permettent le traitement d'informations très diverses (cartes, images, statistiques, textes), la gestion quotidienne du territoire, il aide à la décision, et à la communication, en particulier au moyen de la production de cartes ou de plans thématiques, l'analyse spatiale, la modélisation et la simulation (Laaribi, 2000). Les SIG se caractérisent par leur approche multicouche et multiscalaire permettant le croisement de plusieurs informations géographiques.

Dans ce contexte, les SIG représentent la synthèse des progrès réalisés dans le traitement numérique de l'information géographique, puisqu'ils permettent de replacer dans un cadre cohérent les données géoréférencées acquises par différentes méthodes géomatiques, de les analyser et de les cartographier (Denègre et Salgé, 2004).

Nous retenons aussi, comme définition scientifique, « qu'un SIG est toujours un outil technologique et informationnel, visant à donner des éléments de réponse à un problème ayant une dimension spatiale dans un contexte organisationnel précis» (Balzarini, 2013). Cette définition se prête assez bien au rôle attribué à cet outil dans notre recherche, conduisant au traitement des deux composantes essentielles du SIG : (1) la carte géographique qui constitue le support référentiel de l'information et (2) l'information géographique qui décrit les objets et les phénomènes spatiaux localisés.

1. Les systèmes d'information géographique : fonctions et utilisations

S'interroger sur le faible recours aux outils de SIG devient donc primordial. Comme indiqué dans l'ensemble des réponses obtenues lors de nos entretiens (2017), avec les acteurs dans le domaine de la gestion urbaine, les causes sont d'ordre institutionnel, méthodologique et technique. Outre le besoin en compétences pour la réalisation des bases de données géographiques, les difficultés seraient issues de problèmes externes à l'outil proprement dit. La première cause est d'ordre institutionnel car le partage des responsabilités agirait à l'encontre d'une approche intégrée de gestion de territoire. La prise en compte par les collectivités relève en effet de paramètres différents qui peuvent entraver le développement des systèmes de gestion.

Il semble donc que les méthodes géographiques ne soient pas utilisées, pour développer des outils cartographiques capables de gérer l'information localisée. De même, on relève des difficultés à élaborer la base de données urbaines. Cette dernière cause, d'ordre technique, exprime non seulement un manque de connaissance des outils et de leurs méthodes de construction, mais aussi un manque de préoccupation quant à la spatialisation des données.

Il existe donc différentes options devant des agences urbaines pour la gestion de la ville à travers l'utilisation des SIG. Ces options expriment des stratégies d'intégration différentes, d'ordre fonctionnel, instrumental ou thématique. Plus simplement, il apparaît que les agences urbaines souhaitent développer des outils de gestion variés, en termes de performances et d'objectifs. Ainsi, on peut trouver des SIG très complets et orientés pour toutes les thématiques touchant à la ville, comme c'est le cas de Tanger. A Casablanca (selon le site web de l'agence urbaine de Casablanca, http ://www.auc.ma/), par exemple, c'est le résultat graphique qui prédomine avec l'édition de cartes simples ou combinant plusieurs informations, sans qu'il n'y est une exploitation des requêtes spatiales. Enfin, certaines agences urbaines, comme à Fès et à Taza

(selon le site web de l'agence urbaine de Taza : http ://www.autaza.ma/), les applications thématiques relatives aux différentes préoccupations locales ne sont pratiquement pas développées.

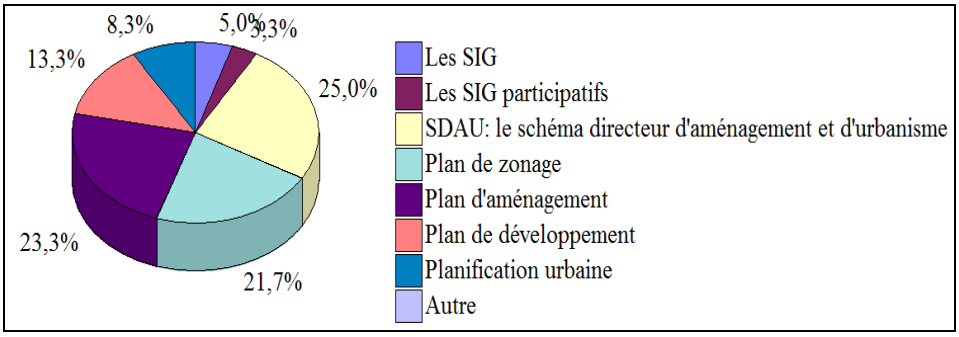


Fig. 3. Outillage de la gestion territoriale

Outillage de la gestion territoriale	Nb. cit.	Fréq.
Les SIG	3	5,0%
Les SIG participatifs	2	3,3%
SDAU: le schéma directeur d'aménagement et d'urbanisme	15	25,0%
Plan de zonage	13	21,7%
Plan d'aménagement	14	23,3%
Plan de développement	8	13,3%
Planification urbaine	5	8,3%
TOTAL OBS.	**60**	**100%**

Source : Enquête personnelle, 2017- acteurs -

Les SIG des agences urbaines affichent donc un certain nombre de missions et d'objectifs, tels que la mutualisation des ressources nécessaires à la mise à jour du SIG sur l'ensemble du territoire. Il s'agit également d'assurer une cohérence et une uniformité de l'information géographique. De plus, il est utile de rendre disponible le plus largement possible ces éléments et multiplier leurs utilisations, tout en permettant à chaque partenaire de rester maître d'ouvrage à son niveau, que ce soit au niveau de la production ou au niveau de l'utilisation des données.

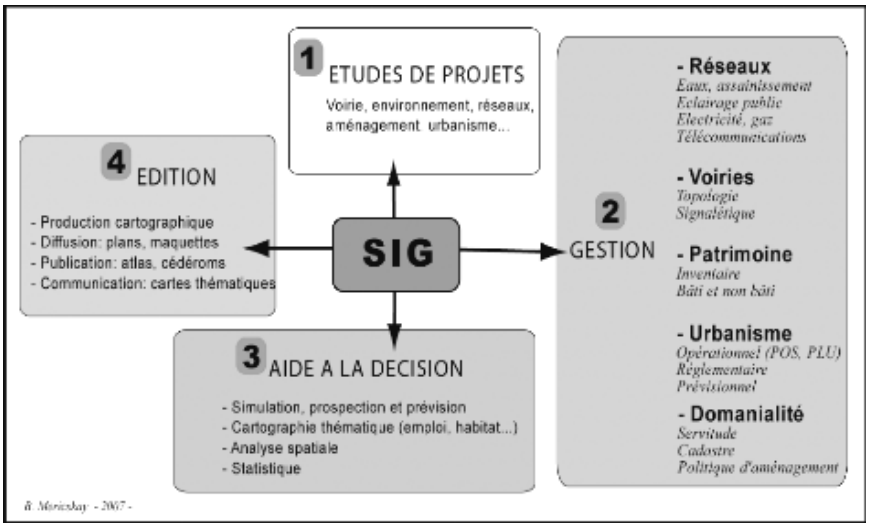


Fig. 4. Utilité des Systèmes d'Informations Géographiques (SIG).
Source : http://sigsenegal.blogspot.com/2015/02/quelques-domaines-d'application-des-sig.html - 2017 -

En guise de conclusion sur ce rapide aperçu national, il paraît souhaitable de mettre en place des systèmes d'information, liés à une thématique précise, mais capable d'être croisés avec d'autres systèmes dédiés à la gestion urbaine. En fait, l'effort principal à mener réside dans la spatialisation plus fréquente des phénomènes. Si cette démarche semble encore faible, les colloques nombreux et les recherches récentes indiquent qu'un traitement de l'information géographique notamment urbaine, devient indispensable (Colloque de l'utilisation des SIG, Fès, 2012 et colloque de Géomatique, Rabat 2013).

2. L'état des lieux d'utilisation des SIG dans les agences urbaines

Si la plupart des phénomènes peuvent être localisés dans l'espace, tous ne sont pas géographiques. Comme le souligne Bord (2007), les technologies de l'information géographique répondent surtout à deux questions : où et quoi ? « Ces deux premiers éléments rappellent la mesure d'avant, même si aujourd'hui deux autres mots ont pris le pas : géoréférencement et géolocalisation ». Les technologies géographiques ont cependant plus de difficultés à répondre aux questions : comment et pourquoi ? L'analyse des territoires nécessite pourtant d'être capable d'expliquer la répartition et les relations entre les objets, de conceptualiser également des modèles spatiaux, de dégager des règles et des tendances.

Actuellement au Maroc, une culture relative aux SIG est ainsi présente, notamment chez certains acteurs politiques au sein du "Ministère de l'Habitat, de l'Urbanisme et de la Politique de la ville". Certaines agences urbaines souhaitent s'équiper en matière de SIG. Les attentes sont notamment de mutualiser les ressources, d'assurer la cohérence des données et de diffuser l'information géographique.

Comme on le constate, les exemples d'utilisation des SIG en milieu urbain sont rares. Au Maroc, la masse de données urbaines disponibles n'est pas encore suffisamment importante et renouvelée, pour mettre les SIG au centre des préoccupations des professionnels de la ville. Si, dans le domaine environnemental, il existe des moyens de produire une information intermédiaire, susceptible d'être enrichie et traitée dans un SIG, en milieu urbain l'urgence se situe dans la production et la capitalisation des données au niveau de la précision fine. On est encore loin d'une approche SIG dans la gestion urbaine même si certains domaines propres aux problématiques urbaines, font l'objet de plus en plus de projets d'informatisation, comme dans le domaine de foncier ou celui des documents d'urbanisme.

En définitive, les SIG, au Maroc, apparaissent moins utilisés, compte tenu de la culture encore très graphique des services techniques urbains (utilisation plutôt des logiciels de dessin assisté par ordinateur). On peut ainsi faire le constat que les documents d'urbanisme sont trop souvent considérés comme figés sur papier alors qu'ils devraient être des instruments interactifs de la construction et suivis d'une politique effective de la ville.

Comme nous l'avons vu au début de ce chapitre, les SIG constituent des outils utiles permettant une gestion des donnés à référence spatiale, et d'assurer leur traitement dans le but de produire de nouvelles connaissances géographiques, pour enfin alimenter le processus de prise de décisions (Mullon et Boursier, 1992).

« En tant que systèmes informatiques, les SIG sont évidemment adaptés aux fonctions de gestion de l'information. Ils suppléent la mémoire du décideur par leurs capacités de stockage, d'interrogation, et de manipulation des données (fusion, agrégation, désagrégation etc.). Ils prennent en charge aussi les tâches de représentation de cette information, en particulier dans leur dimension spatiale. Pour les autres fonctions d'aide à la décision, outre la fourniture des données et du cadre spatial, les logiciels SIG assument au minimum les tâches élémentaires » (Joliveau, 2004).

Les SIG consistent à gérer l'information géographique d'une organisation. Celle-ci est alors traduite et conservée sous forme de bases de données à référence spatiale. Leur gestion englobe diverses opérations, dont l'enregistrement de l'information, la conservation et l'archivage, le repérage et la consultation, puis enfin l'illustration sur une carte géographique (Denègre et Salgé, 1996).

Les SIG jouent principalement ici le rôle d'une vaste mémoire d'information, dont les différents processeurs permettent d'en exploiter le contenu à des fins de renseignement ou de documentation. L'automatisation de la conservation, de la recherche et de l'utilisation de l'information doit néanmoins être intégrée dans un processus organisationnel uniformisé et structuré. C'est pourquoi l'information doit aussi être arrangée, codée, validée et généralement quantifiée dans des catégories de données bien définies et uniformes, afin de permettre sa manipulation par ordinateur. L'organisation aboutit à l'obtention d'une information structurée et uniformisée, mais dont le contenu sémantique est réduit, du fait de la codification et de la classification (Sanders, 2006).

Une des particularités des SIG est de permettre la recherche d'informations spécifiques à partir de la carte géographique. La carte, dans ce cas, joue le rôle d'interface entre l'utilisateur du SIG et la base de données. D'une part, la carte permet l'accès à des catégories de données spécifiques du SIG et, d'autre part, elle est la base géographique sur laquelle les données trouvées sont reproduites. Ceci modifie considérablement la nature de la carte, qui n'est alors plus un document final et complet en lui-même ; mais joue le rôle d'un outil de repérage de l'information contenue dans le SIG, et de consultation en servant de base spatiale à son illustration cartographique. Ainsi l'utilisation d'un SIG n'est plus limitée uniquement à la gestion des bases de données localisées ; elle s'étend aussi à la gestion de tout document qui peut être rattaché au territoire (Joliveau, 2004).

Par exemple, les agences urbaines utilisent les SIG, pour gérer la réglementation de zonage en vigueur sur le territoire urbain, mais aussi celle qui a fait force de loi par le passé. Cette gestion documentaire est en quelque sorte une gestion liée à l'historique d'un territoire. Les SIG deviennent alors un outil d'information beaucoup plus polyvalent, flexible et diversifié. L'usager y trouvera une source d'information géographique de premier ordre : des documents spatiaux, tels que des cartes géographiques, des plans, des photographies aériennes ou des images satellitaires, mais aussi des documents non spatiaux qui contiennent une information descriptive du territoire, tels que des recensements de la population, des règlements d'urbanisme etc.

Il semble très important, dans le contexte de la gestion urbaine, de ne pas confondre la gestion de l'information géographique avec la gestion du territoire. Ces deux opérations sont de nature et d'effets très différents. La gestion de l'information est une tâche strictement administrative, complémentaire à d'autres activités, alors que la gestion du territoire concerne la planification et le contrôle de l'utilisation du sol et des interventions sur le terrain. La confusion vient du fait que la gestion de l'information supporte très étroitement la gestion du territoire. Mais l'amélioration de la première ne signifie pas automatiquement une amélioration de la seconde (Weber, 1991).

3. Le traitement des données à référence spatiale

« Une fois les données collectées, le chercheur s'engage dans l'organisation, le traitement et l'analyse des résultats issus de leur collecte » (Bord, 2012). Le traitement de données est échafaudé sur l'idée de valeur ajoutée à l'information. On vise ainsi un usage optimal des données à référence spatiale du SIG, en les recoupant et en les reproduisant sous des formes nouvelles, et à différentes échelles, dans le but d'en tirer des représentations originales du territoire. C'est en fait le problème de l'agrégation de l'information géographique qui est posé à nouveau, mais sous un éclairage différent de celui de la cartographie traditionnelle. La principale contribution des SIG, en cette matière, est de rendre techniquement opérationnel les méthodes d'analyse spatiale, telles que l'interpolation, l'extrapolation, la théorie des graphes, la topologie et le recouvrement cartographique (Laurini et Milleret-Raffort, 1993).

Ces méthodes consistent en général à analyser, de façon quantitative, des phénomènes sur la base de leur localisation et de leur étendue, dans le but d'établir leurs interrelations dans l'espace. Elles sont très utiles, entre autres, pour déterminer différentes facettes des relations spatiales de l'homme avec son milieu, comme par exemple le taux de pollution d'une ville ou l'indice de santé de la population d'une région. Leur emploi généralisé favorise la confection de modèles algorithmiques, ordonnés et cohérents du territoire. Ce qui indique aussi une théorisation mathématique croissante de l'espace (Ciceri et al. 1977).

Dans un contexte technologique favorable aux méthodes d'analyses quantitatives, il ne faut pas occulter une des caractéristiques fondamentales du concept d'information géographique : celle de sa représentation graphique (Durand, 1983). L'expression cartographique de l'information géographique permet d'en accroître le « contenu informatif » (Bertin, 1977).

L'utilisation des SIG à des fins de traitement et d'analyse de données a surtout généré des résultats dans le domaine scientifique, où des applications spécifiques ont été développées afin de répondre à des questions de recherches précises, et ce, à l'intérieur de cadres méthodologiques rigoureux. Mais en pratique, l'utilisation des SIG n'a pas permis de renouveler les méthodes de traitement des données à référence spatiale. Leur apport s'est limité à améliorer l'exécution technique des méthodes existantes et à accroître la rapidité du calcul (Claval, 1977 ; Joly, 1994). Une telle affirmation ne signifie pas que les SIG n'affectent en rien les méthodes de la géographie, mais plutôt que ces outils ne sont pas encore pleinement maîtrisés et que leur utilisation n'a pas produit tous les résultats escomptés par la théorie de la géomatique.

4. L'aide à la prise de décisions

Avant toute décision, les outils de l'analyse spatiale peuvent être utilisés pour aider à la réalisation du diagnostic territorial, à la production de connaissances et à la compréhension des enjeux ; ils peuvent l'être également pour mettre en évidence les attentes et les besoins des habitants et contribuer au partage de l'information entre acteurs du territoire (Masson-Vincent et al, 2011). Les SIG sont en grande partie fondés sur celles des systèmes d'information d'aide à la décision et identifiés comme l'une des finalités de ce type d'outil (Joliveau, 2004). La notion d'aide à la décision est développée à partir du fait que dans les organisations humaines, il existe un manque d'information qui empêche les gestionnaires et les dirigeants de prendre des décisions optimales. Pour combler ce manque, on assiste à une théorisation de l'organisation où les différents processus d'information et de décision de l'organisation peuvent être intégrés à l'intérieur d'un double processus vertical qui relie les niveaux d'activités opérationnels, administratifs et stratégiques, tels qu'illustrés à la figure 2. Ainsi, toutes les données contenues dans les SIG sont traitées et reproduites dans des formes toujours plus globales d'information, de façon à combler utilement et effectivement les besoins informationnels des décideurs.

On découvre de la sorte le caractère multifonctionnel des SIG, que constituent des outils de gestion aussi bien pour le technicien que pour le décideur. L'information contenue dans les SIG doit donc être utilisable de façon optimale par tous les membres de l'organisation.

La géomatique abonde dans le même sens, disant qu'une meilleure information est à la base de la prise de meilleures décisions. D'ailleurs, la carte géographique est d'ordinaire utilisée afin d'aider son lecteur à prendre des décisions concernant la réalisation de multiples actions dans l'espace (Brunet, 1987).

Cependant, Mullon et Boursier (1992) rappellent que l'articulation et l'intégration des fonctions de gestion de données et d'aide à la décision, au sein d'un SIG, posent des difficultés empiriques sérieuses.

Il semble que dans le cadre théorique de l'aide à la décision, les problèmes de l'organisation sont ici trop facilement associés à un manque d'information. Pourtant, ce n'est pas tant la carence en informations qui est problématique, mais bien la disponibilité d'une information utile et pertinente. C'est aussi en cherchant à programmer sur ordinateur les informations nécessaires à la prise de décision que l'on élimine le doute, le débat et la considération envers les problèmes à résoudre, et que l'on en réduit la portée. On cherche ainsi à donner à la décision une homogénéité et une certitude qu'elle ne possède pas. Dans le

contexte des nouvelles technologies, il semble être plus important de prendre la décision et surtout de gérer son application, que de la préparer en identifiant clairement le problème à résoudre, en le documentant et en identifiant une solution et ses alternatives.

Mais les SIG peuvent être utilisés afin de préparer des décisions ; c'est d'ailleurs l'objectif des fonctions de modélisation cartographique de l'espace et de simulation par scénarios d'intervention sur le territoire (Laurini et Milleret-Raffort, 1993). Il faut cependant bien préciser qu'il ne s'agit pas ici de modéliser une base de données à référence spatiale, mais bien de modéliser l'espace et ses diverses composantes, ce qui peut s'avérer être deux opérations très différentes.

Les SIG permettront à leurs usagers d'analyser et d'évaluer les répercussions dans l'espace de différents scénarios d'interventions, tels que le tracé d'une route, le détournement d'une rivière ou la construction d'un nouveau secteur résidentiel. La modélisation du territoire sera alors au cœur de cette fonction d'aide à la décision ; ce n'est pas tant le modèle qui prime ici, que le processus de modélisation par lequel plusieurs groupes d'acteurs définissent de concert leurs rapports à l'espace et se mettent d'accord sur l'utilisation de représentations communes du territoire. Mais, le modèle ne doit pas se substituer au territoire lui-même : la décision peut être réalisée à l'aide de modèles cartographiques mais les planificateurs, les gestionnaires et les professionnels du territoire doivent toujours garder à l'esprit que la finalité de l'exercice est de transformer le monde réel. Malgré ce genre de préparation, la décision conserve une plus ou moins grande part d'incertitude quant à son résultat concret, une fois appliquée sur le territoire.

Le concept d'aide à la décision a été présenté, selon deux approches : (1) celle des systèmes d'information organisationnelle, où l'on cherche à programmer l'utilisation de l'information et prévoir à l'avance les types de décisions possibles selon les tâches et les niveaux hiérarchiques, afin de contrôler le fonctionnement de l'organisation. (2) celle de l'analyse des politiques de planification et d'intervention sur le territoire où l'on cherche à préparer la décision et à en assurer le suivi, afin d'atteindre l'objectif sous-jacent à la décision. Dans ces deux cas, l'objet de la modélisation est complètement différent : dans le premier, on modélise une organisation tandis que dans le second, on modélise l'espace. Ainsi, le rôle du SIG pour la prise de décision n'est pas alors de baliser le fonctionnement de l'organisation dans laquelle il est implanté en imposant des contrôles administratifs et automatisés, mais bien de faciliter la spécification et l'illustration des rapports évolutifs établis par une société avec le territoire qu'elle occupe.

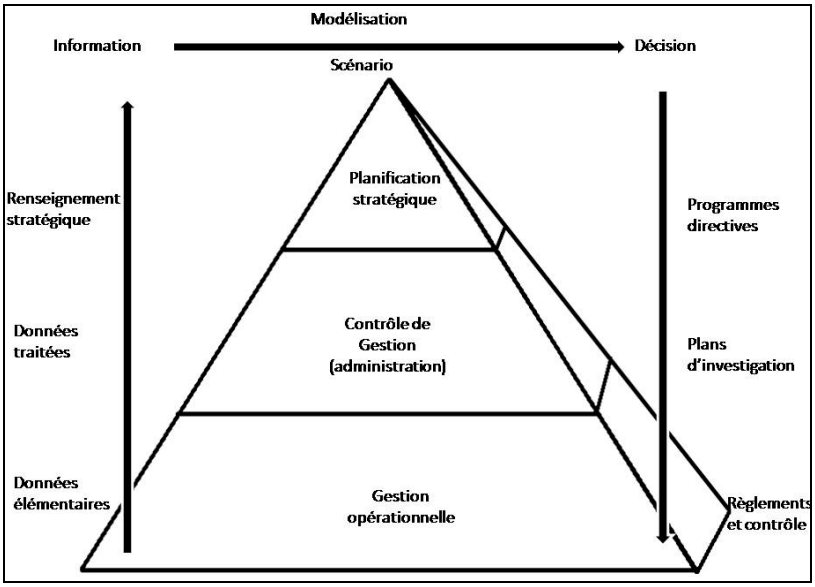


Fig. 5. Articulation et intégration des fonctions de gestion de données et d'aide à la décision au sein d'un SIG.
Source : Mullon et Boursier (1992)

L'apport du SIG découle de ses possibilités techniques pour la modélisation cartographique du territoire, et la visualisation graphique des effets produits par différentes interventions (Prélaz-Droux, 1995). Dans ce cadre d'utilisation bien précis, les SIG constituent un outil prospectif pour la gestion urbaine. Mais la mise en œuvre de cette fonction d'aide à la décision et l'utilisation du SIG comme outil d'analyse des politiques spatiales demeurent à ce jour des objectifs à atteindre et non des réalisations concrètes.

Dans la figure 3, trois grandes fonctions techniques du SIG sont illustrées comme autant d'étapes d'un processus d'information. Nous remarquons toutefois que plus ce processus progresse et débouche sur des formes élaborées et complexes d'information, moins il est possible de l'automatiser.

Ainsi, nous sommes d'avis que le concept de SIG doit intégrer les acteurs humains et les structures organisationnelles, et ne pas se limiter aux appareils informatiques. Comme tels, les SIG permettent de gérer des ensembles de données descriptives précises, complètes et uniformes qui soutiennent la confection de représentations diversifiées de l'espace. Celles-ci permettent ensuite de guider l'action des acteurs humains lors de l'élaboration de stratégies d'interventions sur le territoire.

Jusqu'à maintenant, les SIG ont surtout été utilisés à des fins de gestion des données à référence spatiale. Leurs capacités analytiques n'ont pas encore généré les résultats escomptés, en ce qui concerne la conception de nouvelles cartes du territoire (Merlin et Choay, 1996). L'utilisation optimale d'un SIG dans l'organisation humaine n'est donc pas une action spontanée, mais plutôt un processus graduel. Il est alors indispensable de maîtriser les opérations de base reliées à la gestion de données avant de traiter l'information géographique, de modéliser le territoire et « d'expérimenter » différents scénarios. Ainsi, le développement par étapes des SIG semble être de loin préférable, en débutant par la cartographie numérique et la gestion des données à référence spatiale, et non par la mise en place instantanée de SIG complexes et multifonctionnels dont l'objectif est de produire de nouvelles formes d'information et d'aider à la prise de décision.

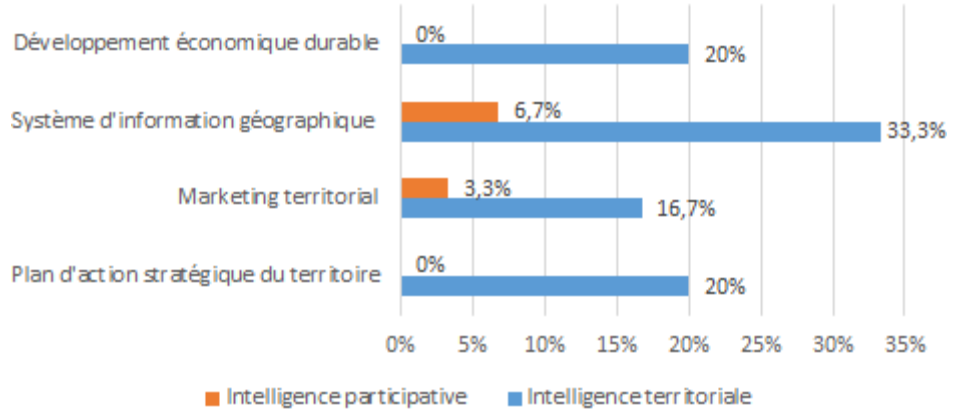
IV. Les nouvelles orientations, pour un développement territorial urbain

Assurer une bonne gestion de la multiplicité des informations permet aux systèmes de faciliter la prise de décision aux administrateurs des territoires et permet ainsi, d'une part, d'améliorer les services existants et, d'autre part, de rendre de nouveaux services à la collectivité. Ceci étant que les opérateurs de la gestion urbaine ont lancés une véritable mission de planification, les urbanistes, mais aussi et surtout pour les collectivités territoriales : les technologies devront être associées à des choix judicieux, en matière de gouvernance afin d'arriver à un développement territorial urbain de bonne qualité et de se permettre de nouveaux défis de développement pour la ville.

Le plus grand défi, c'est de prendre une ville et améliorer son état, plutôt que de partir de zéro. Dans le cas de Marrakech, sa conception comme ville intelligente doit apporter une réponse coordonnée aux problèmes d'aménagement et d'organisation de l'espace et des ressources si on veut préserver sa durabilité. Ces perspectives s'articulent par la mise en place d'un développement territorial urbain cohérent et adapté aux nouvelles circonstances de la ville ocre, suivant une typologie d'intelligence différente.

L'intelligence pour un territoire se conjugue selon des méthodes et des typologies différentes, en fonction du besoin et de l'actualité dans le monde entier. Nous avons pu rencontrer avec les acteurs nous avons pu faire face à plusieurs types d'intelligence, capables de transférer le territoire d'une situation de fragilité vers une situation de force. L'intelligence territoriale se traduit clairement à 33.3% dans l'utilisation des systèmes d'information géographique, et à 20% dans le développement économique durable et dans

les plans d'actions stratégiques du territoire. Alors que seulement 16.7% de cette intelligence territoriale est basique pour le marketing du territoire. Dans un autre contexte, l'intelligence participative persiste comme étant importante dans l'aménagement et le contrôle du territoire mais reste restreinte en réalité, puisqu'elle représente seulement 6.7% pour le SIG et 3.3% pour le marketing territorial.



Type d'intelligence à mobiliser	Plan d'action stratégique du territoire	Marketing territorial	Système d'information géographique	Développement économique durable
Intelligence territoriale	20%	16,7%	33,3%	20%
Intelligence participative	0%	3,3%	6,7%	0%

Fig. 6. Typologie d'intelligence pour les éléments de gestion.
Source : Enquête personnelle, 2017

1. Intelligence territoriale et SIG à Marrakech : comment envisager un avenir meilleur ?

Marrakech est une ville en perpétuel développement dans tous les secteurs et joue un rôle pionnier dans le secteur touristique par rapport aux autres villes du royaume. Mais cela ne semble pas être suffisant car la ville souffre d'un dysfonctionnement au niveau du partage d'informations spatiales et du manque de moyens techniques pour aboutir à ces informations par

n'importe quel autre acteur du territoire. La population qui y vit ne dispose pas de base de données, pour connaître les nouvelles dynamiques de leur ville et pour savoir les pratiques modernes qu'elle doit appliquer, vis à vis des mutations observées sur l'espace et les acteurs. La figure suivante expose les résultats de l'enquête du terrain, concernant la perception de la population concernant les sources d'information.

Perception de la population locale par rapport aux sources d'information						
	Positive	Plutôt Positive	Mitigée	Plutôt négative	Négative	Indifférente
Administrations	60	90	196	120	0	14
Journaux	0	0	0	0	59	31
Internet	0	0	14	0	1	15
Total	60	90	210	120	60	60

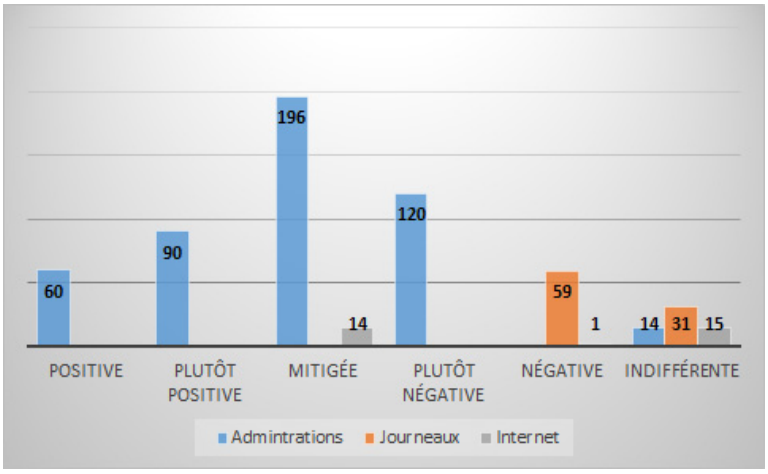


Fig. 7. Perception de la population par rapport aux sources d'informations.
Source : Enquête personnelle, 2017 – population locale –

Cependant, en raison du manque de sources d'information, la population (120 enquêtés sur 600) figure n°3 exprime un sentiment de négativité, puisqu'elle ne peut avoir les informations, concernant sa commune ou une autre commune voisine auprès de l'administration concernée. Alors que les journaux ils prennent la deuxième place, dans les sources des données, même si la population éprouve un sentiment mitigé (196 enquêtés sur 600) pour cette source, qui est classée comme modeste et pas trop consultée par tout le

monde. L'internet est censé être à la tête des sources, mais n'est pas considéré ainsi, puisque les administrations ne font pas une actualisation de leurs données sur les sites et les réseaux pour plus de visibilité aux usagers. Ainsi, la population reste indifférente à ce moyen (29 enquêtés sur 600) ce qui montre la négligence des collectivités territoriales de cet outil performant pour le développement de leurs services.

2. Perspectives pour une intelligence territoriale mature

Etant donné que, la solidarité agissante et l'intelligence territoriale sont des domaines de recherche complexes, où interviennent plusieurs ressources (humaines, financières, naturelles, etc.), une diversité d'acteurs (économiques, politiques, scientifiques et socio-culturels) et plusieurs logiques (privées, sociales et publiques). Le recours à l'informatique décisionnelle, s'avère être aussi utile qu'indispensable pour, à la fois, la modélisation à base d'une multitude de variables, l'aide à la prise de décision par les acteurs et la conception de base de données avancées aboutissant à des entrepôts de données.

En effet, la recherche d'une maturité au sein de tout espace urbain exprime un besoin intense, pour l'informatique décisionnelle (Business Intelligence) qui regroupe l'ensemble des technologies, permettant de collecter, organiser, modéliser et consolider l'ensemble des données d'une entreprise à des fins d'analyse et d'aide à la prise de décision stratégique.

Cette recherche en faveur d'un développement d`une intelligence territoriale fait appel à des attentes diversifiées, qui paraissent comme des perspectives pour l'aboutissement à une maturité territoriale et une durabilité des ressources dont nous pouvons citer :

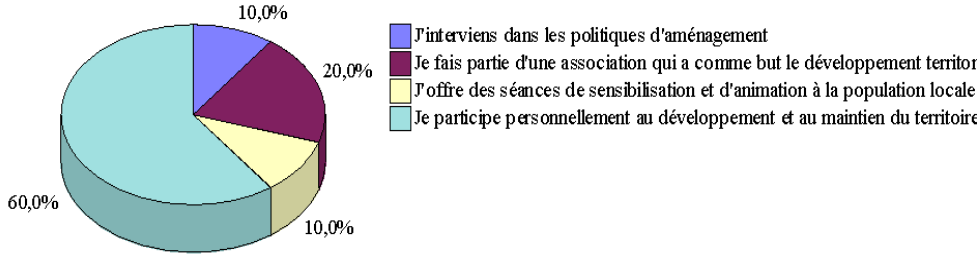
- L`implication d`acteurs appartenant à plusieurs sphères (économique, politique, sociale, etc.), afin d'assurer la coordination nécessaire de ces acteurs ;
- L`informatique décisionnelle qui semble être un outil pertinent et très efficace pour le développement urbain ;
- L'encouragement de la recherche-action consistant à construire de multiples systèmes intelligents devant assurer l'échange de données entre les différents acteurs et des bases de données avancées pour faciliter la prise de décisions individuelles ou collectives.

Etant donné que la maturité territoriale se base sur le développement par l'économie solidaire en impliquant les acteurs territoriaux, à réaliser leur « idéal-possible d'être » (Zoreli, 2010) et que l'intelligence territoriale est le résultat d'un « apprentissage qui permet au réseau d'acteurs de se configurer et s'équilibrer

d'une manière propre au territoire » (Marcon et Moinet, 2006). La réussite et l'épanouissement des territoires dépendent d'un travail de construction solidaire et collective d'une intelligence territoriale. Au niveau du territoire de Marrakech, par exemple, il s'agit de réaliser au préalable un travail d'exploration et d'investigations territoriales, en vue de ressortir sous forme de données ce qui y existe comme ressources, compétences et volontés prédisposantes.

3. Mettre en place des outils nécessaires et efficaces à une bonne gouvernance et des pratiques durables

Après une longue période de scepticisme ou d'indifférence, le concept de "développement durable" commence aujourd'hui à susciter une certaine curiosité bienveillante, et à influencer, de manière plus ou moins concrète, les pratiques des territoires et des institutions publiques. C'est en particulier le cas dans les domaines de l'aménagement du territoire et des politiques urbaines et locales où les préoccupations pour le développement durable et la bonne gouvernance se sont progressivement intégrées dans les politiques publiques des villes sous la pression des réalités de terrain ou des évènements. Dans ce sens, des pratiques territoriales se sont enrichies par des nouvelles facettes d'actions humaines et de pratiques que la population utilise sur son territoire.



Méthodes d'adhésion dans les politiques publiques	Nb. cit.	Fréq.
J'interviens dans les politiques d'aménagement	60	10,00%
Je fais partie d'une association qui a comme but le développement territorial	120	20,00%
J'offre des séances de sensibilisation et d'animation à la population locale	60	10,00%
Je participe personnellement au développement et au maintien du territoire	360	60,00%
TOTAL OBS.	600	100%

Fig. 8. Méthodes d'adhésion dans les politiques publiques.
Source : Enquête personnelle, 2017

Selon la figure précédente, les interventions et les pratiques de la population envers leur territoire ont pris beaucoup plus de dimension. La population est de plus en plus impliquée dans les dispositifs de leur territoire, sous forme d'adhésion aux politiques publiques locales. Selon l'enquête réalisée auprès de la population locale, de la ville de Marrakech environ 60% ont répondu qu'ils peuvent participer directement dans le développement et le maintien territorial des ressources. Un pourcentage de 20% de la population est adhéré à des associations ayant comme but le développement territorial de leur espace, tandis que seulement 10% offrent des séances de sensibilisation et d'animation à la population locale et un autre pourcentage de 10% intervient dans les politiques d'aménagement de leur ville.

L'utilisation des nouvelles technologies efficaces et formelles exprime une volonté d'innovation, qui coexiste avec le souci quasi obsessionnel de renforcer les modes d'intervention des acteurs territoriaux, pour la bonne gouvernance de la ville et ses ressources. L'appel à une mise en place des outils de la gouvernance et de durabilité du développement tire sa force des opportunités d'innovation territoriale qui s'offrent aux acteurs et qui sont incontestablement ouvertes par la gouvernance participative.

4. Redéfinir les politiques publiques à court, à moyen et à long terme

Actuellement, redéfinir des politiques publiques de la gouvernance urbaine n'est pas toujours chose aisée. Les politiques publiques, en matière de la gestion urbaine, sont amenées à jongler avec des intérêts parfois contradictoires : par exemple, le choix des implantations dans le territoire, la typologie des projets à construire et l'aménagement des espaces choisis. Par ailleurs, les freins à la mise en œuvre de politiques alternatives restent encore très puissants. Pour répondre à l'ensemble des enjeux de la gouvernance urbaine, il est nécessaire de les intégrer dans une évaluation socio-économique des politiques publiques, à court et à long terme. A court terme, l'évolution des pratiques peut concerner la mise en place d'un nouveau système collectif d'aide à la décision inter-commune. Sur le long terme, il peut s'agir d'anticiper l'évolution démographique de la population et de prévoir l'attractivité économique, sociale, culturelle et environnementale d'un territoire (Subra, 2018).

Il s'agit de mesurer l'impact et le rôle joués par l'accroissement de la fluidité de la gestion et la gouvernance urbaine et d'en évaluer les retombées économiques par rapport à l'investissement initial effectué par les collectivités et les partenaires privés. Quant à la rentabilité des moyens techniques utilisés

pour se disposer d'une bonne gouvernance, elle peut se mesurer par les taux d'échange entre les communes urbaines, la fréquence des projets territoriaux et mais aussi par le taux de satisfaction des habitants et des utilisateurs des services publics mise à leur disposition.

Pour développer ces politiques publiques, il s'agit de penser la gouvernance urbaine en interaction avec les domaines économique, social et environnemental. L'offre proposée sera ainsi plus adaptée aux usagers et à la façon dont ils vivent leur ville, pour une organisation urbaine. Cette corrélation de la nouvelle gouvernance urbaine des politiques avec d'autres domaines permet un enrichissement dans la façon de penser la ville. Organiser et améliorer la fréquence, le mode et la rapidité des interventions publiques tout en répondant aux besoins des usagers sont des éléments qui donnent naissance à une meilleure gestion des espaces urbains. Pour garantir une politique de gestion des infrastructures, des projets, et l'extension de la ville de façon pérenne, rentable, sécuritaire et durable, plusieurs éléments entrent en jeu.

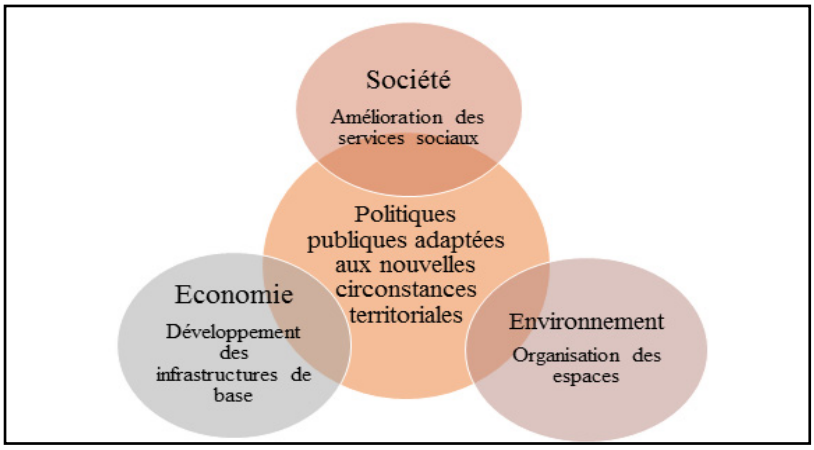


Fig. 9. Adaptation des politiques publiques au milieu urbain.
Source : Estimation personnelle, 2018

Pour qu'elle soit pérenne, cette politique doit répondre aux attentes et aux modes de vie des usagers ainsi que satisfaire leurs besoins en gestion et gouvernance. Il est également préférable qu'elle corresponde et réponde aux objectifs que les collectivités territoriales se fixent pour la ville : devenir une ville de haute technologie, une ville sportive, une ville culturelle etc (Nakhli, 2015). Cette politique doit permettre l'information spatiale et statistique pour tous et en favoriser l'accessibilité et la fréquence. Marrakech à son tour à exprimer à plusieurs reprises sa volonté de mettre en place des réseaux

informatiques et technologiques en commun, efficaces et adaptés aux comportements des habitants et à l'accroissement continu de la ville. Cette volonté traduit l'ambition des collectivités d'investir et participer à un projet de territoire cohérent et bien pensé. Leur ambition concerne également la volonté de redynamiser la ville, d'en améliorer le confort et la qualité de vie par le drainage d'une nouvelle vision adaptable et surtout cohérente avec les perspectives énormes au présent et au futur de la ville.

La redéfinition des politiques publiques de la ville de Marrakech ne peut qu'améliorer le développement d'une nouvelle façon de penser, de voir et d'appréhender les enjeux de la gestion urbaine de cette ville. Ceci ne peut être que favorable à une ville, qui souhaite améliorer la qualité de vie de ses habitants, de ses services et de ses politiques d'aménagement. Ces politiques ont également des objectifs sur le territoire, elles visent à faire partager cette préoccupation d'aménagement de l'espace à des acteurs centraux et intermédiaires, par la mise en place de plans de gestion urbaine et gouvernance spatiale des ressources territoriales et des projets territoriaux (Damay, 2013).

5. Développer une planification urbaine globale et transversale

Une nouvelle stratégie de planification implique d'agir en amont sur les critères d'aménagement et de gouvernance, afin d'assurer la réussite de l'ambition territoriale de Marrakech. En effet, le domaine de la gestion est l'élément clef de toute politique d'aménagement ou de développement. Afin de créer un territoire, au service du développement durable, de l'équité sociale et spatiale, il est important de créer de nouveaux modes d'action, pour intégrer de nouvelles dimensions dans la gestion des sols et de l'innovation. Cette innovation concerne la régulation des espaces, la gouvernance collective, la réversibilité des usages et les partenariats entre acteurs publics et privés.

Le dictionnaire de la géographie et l'espace des sociétés (2013) définit la planification comme un « dispositif politique ayant pour objectif la prédiction du contexte et la mise en cohérence des actions, publiques et privées, dans un domaine et/ou sur un espace, pour une durée et à une échéance déterminées » (Devisme, 2013). Les techniques de planification actuelles de Marrakech sont surannées. Elles ne correspondent pas aux réalités urbaines de la ville, qui cherche à mettre en place stratégique moderne de répondre à des enjeux économiques, sociaux et environnementaux. Favoriser la création de nouvelles techniques de gestion, pour privilégier les actions de développement et assurer une technicité de partage entre acteurs sont des réponses aux enjeux d'amélioration de la ville.

Pour cela, une planification stratégique et cohérente est nécessaire. Face à l'accroissement démographique des villes, celles-ci ont choisi d'anticiper le futur. La plupart développent les énergies vertes. Le développement durable constitue d'ailleurs l'un des axes majeurs des politiques d'aménagement du territoire. Développer une offre de services urbains durables requiert une planification des structures urbaines, la construction et l'entretien des infrastructures ainsi que l'organisation des services des administrations communales. En pratique, la planification doit prendre appui sur des stratégies participatives et s'aligner sur les budgets locaux et nationaux.

Avec des années de théories et de pratiques, la planification urbaine est pensée de façon transversale et non plus de manière fonctionnelle. Elle répond à plusieurs enjeux : l'habitat, l'éducation, la culture, les transports, les loisirs. Cette approche transversale permet ainsi de créer une cohérence dans les réponses, aux enjeux économiques, sociaux et environnementaux auxquels une ville peut être confrontée (Haëntjens, 2010).

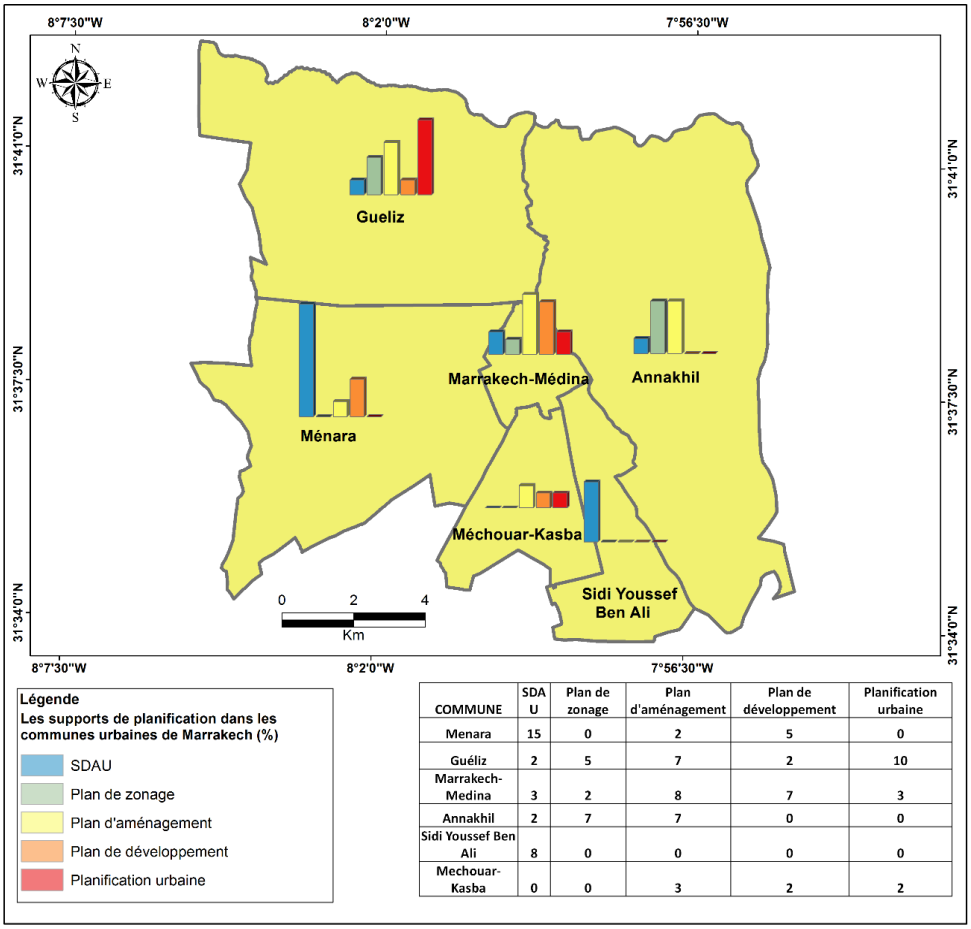
Penser le territoire par une approche globale et transversale est l'une des clés d'un aménagement territorial réussi. Appliquer les actions d'aménagement collectives nécessite d'avoir des réserves budgétaires, mais aussi des capacités et des compétences techniques qui impliquent la maîtrise et le développement d'une cohérence spatiale.

Marrakech essaye, à travers ses collectivités, à développer une planification urbaine nouvelle, favorisant la proximité des services et des équipements dans tous les quartiers. Cette tendance réduirait beaucoup de charges pour la ville et allégera le travail des administrations locales, et développait des planifications urbaines dans le cadre d'une politique de gouvernance pérenne, rentable et durable. Ceci en s'appuyant toujours sur des stratégies de communication, de marketing institutionnel et d'intelligence territoriale collective. Une stratégie de communication inter-acteurs s'affirme et donne à la ville une identité spatiale configurée par une identité numérique, pour le maintien des projets de territoire. Ainsi la ville connaît la configuration de plusieurs supports de planification territoriale à l'intérieur de ses communes urbaines.

Marrakech connaît autant d'événements, souvent médiatisés dans une approche globale et transversale de la planification urbaine, misant sur le fait de redonner une qualité de vie à l'espace public, redynamiser des quartiers et améliorer leur image institutionnelle et montrer l'effort exercé par les communes et les administrations locales pour le développement de la ville.

Une bonne stratégie de communication globale est également essentielle, pour attirer des investisseurs, développer l'économie d'un territoire et créer des partenariats publics-privés plus rapidement. Cet intérêt pour la planification urbaine

est pour imposer une attractivité au territoire, développer une communication pérenne et valorisante de manière efficiente les pensées d'aménagement, contribuer à la réalisation d'une gouvernance propre à la ville.



COMMUNE	SDAU	Plan de zonage	Plan d'aménagement	Plan de développement	Planification urbaine
Menara	15	0	2	5	0
Guéliz	2	5	7	2	10
Marrakech-Medina	3	2	8	7	3
Annakhil	2	7	7	0	0
Sidi Youssef Ben Ali	8	0	0	0	0
Mechouar-Kasba	0	0	3	2	2

Fig. 10. Les supports de planification dans les communes urbaines de Marrakech.
Source : Personnelle. Données : Enquête personnelle, 2017

6. Investir : un partenariat entre Etat et les collectivités

Le financement d'une politique de gestion urbaine, par l'intelligence territoriale et l'intégration des SIG, reste un problème. Les ressources propres mobilisées par les pouvoirs publics locaux à Marrakech sont modestes, et proviennent principalement des taxes sur les commerces et les entreprises.

Les partenariats public-privé permettent aux collectivités de répartir les charges financières à supporter tout en répondant aux attentes de l'aménagement et de l'organisation de la ville.

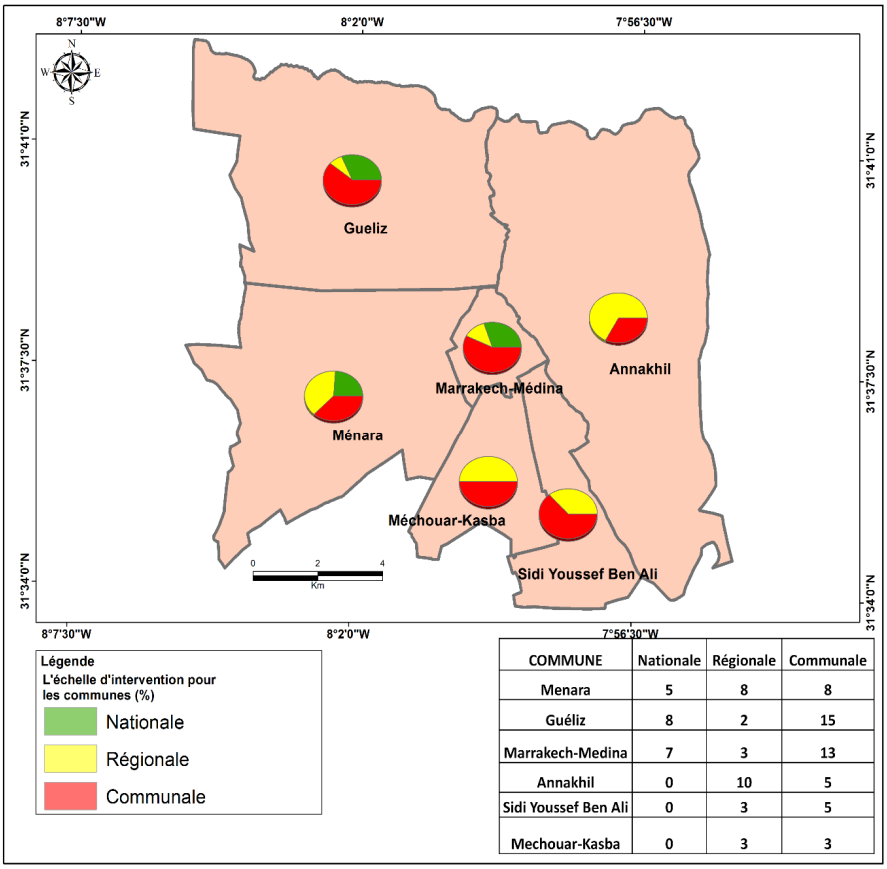
Le partenariat est une alternative, pour faire face au défi de la disponibilité des ressources financières. Par ailleurs, la recherche de financement conduit à réfléchir sur la mise en commun des moyens, pouvant être mobilisée par l'Etat, les collectivités locales et d'autres intervenants, pour la réalisation de projets d'infrastructures et de gestion territoriale.

Le recours au partenariat, par le biais d'une participation active des autres intervenants, s'avère nécessaire et peut jouer un rôle très important dans la dynamisation des investissements, dans le secteur et les mobilisations en synergie des potentialités humaines, matérielles et financières, tout en assurant la garantie, la pérennité de service et la durabilité des infrastructures.

L'opération d'investissement entre l'Etat et les collectivités territoriales, en matière de gestion territoriale, s'avère une méthode très efficace et qui peut être chapeautée par la force majeure au sein du territoire. Ce partenariat exige la réalisation d'une convention et d'un cahier de charges, définissant les objectifs escomptés, les modalités et les moyens de mise en œuvre du programme à faire réaliser et les droits et obligations de chaque partie. Cette forme de partenariat revêt aussi la forme d'une mission d'assistance technique, impliquant, pour l'opérateur public, l'obligation d'apporter son savoir- faire à la gestion et à la bonne gouvernance.

La discussion autour de cette possibilité de conclure un contrat d'investissement dans le domaine de la gestion entre l'Etat et les collectivités, se montre comme une méthode de gestion fiable et forte, qui peut facilement dépasser les contraintes territoriales s'opposant à n'importe quelle action de gestion du territoire. Le partenariat entre ses deux acteurs permettra à la ville de Marrakech de se faire des réflexions futures et bien étudiée, sur la meilleure façon de gérer l'espace public et d'adopter les moyens techniques comme le SIG et l'intelligence territoriale, pour des bons retombés de la gouvernance territoriale participative.

Selon l'échelle d'intervention des communes urbaines dans la ville de Marrakech, l'Etat doit interagir dans ce processus de gestion et de gouvernance, pour établir une atmosphère cohérente entre les communes et les autres collectivités territoriales. Aussi, l'Etat peut partager les expériences des communes urbaines, au niveau national et pas seulement au niveau régional. La carte suivante présente les échelles d'intervention des communes dans les politiques publiques de la ville et dans la traçabilité de ses plans d'actions.



COMMUNE	Nationale	Régionale	Communale
Menara	5	8	8
Guéliz	8	2	15
Marrakech-Medina	7	3	13
Annakhil	0	10	5
Sidi Youssef Ben Ali	0	3	5
Mechouar-Kasba	0	3	3

Fig. 11. L'échelle d'intervention des communes urbaines à Marrakech.
Source : Personnelle. Données : Enquête personnelle, 2017

Les communes urbaines de Marrakech diffèrent dans leur technicité à contrôler, gérer et organiser la ville. Selon la carte précédente, il existe trois niveaux ou échelles d'intervention des communes dans leurs villes :

- Le niveau national : Ce niveau d'intervention concerne plus particulièrement les communes comme le Gueliz, la Médina et la Ménara vue leur importance dans le plan de zonage de la ville, surtout que ces communes contiennent les potentialités touristiques, historiques et culturelles de la ville, ce qui justifie cette prise en considération à ce niveau élevé afin de donner l'exemple aux autres villes ayant les mêmes caractéristiques.

- Le niveau régional : Sur cette échelle, toutes les communes urbaines sans exception bénéficient des interventions à ce niveau, suite à l'importance donnée à la régionalisation avancée qui a permis une certaine égalité, en termes de gestion et de prise de décision dans la construction territoriale de cette ville.
- Le niveau communal : les communes entre elles possèdent en quelques sorte des mécanismes de partage et interviennent toutes de manière incessante dans l'organisation spatiale de la ville et dans le partage des expériences de gestion et de digitalisation des informations territoriales.

7. Organiser le pilotage stratégique de la gouvernance territoriale grâce au SIG et l'intelligence territoriale

Actuellement, les territoires acquièrent des thématiques du développement durable et de l'intelligence territoriale, susceptibles de se rejoindre et de se compléter dans le cadre de projets locaux des observatoires socio-économiques et environnementaux. Cette nouvelle organisation et dynamique de développement nécessite toutefois une mutualisation de l'information, couplée à une démarche de confiance, de participation, de communication et de concertation territoriales. Aussi, l'application d'un processus d'intelligence territoriale adapté (PITA) s'inscrit dans une prospective d'intégration de nouvelles attitudes, susceptibles d'être à la base fondement d'un nouveau rapport de gouvernance urbaine et de politique intelligente.

Cependant, la réorganisation spatiale suivant une nouvelle stratégie de gouvernance territoriale, paraît très nécessaire et indispensable, dans la maîtrise des évolutions et des mutations du territoire. L'application, de nos jours, d'une gouvernance fiable et solvable des problèmes territoriaux demande le couplage avec les nouvelles technologies de gestion, qui sont devenues irréprochables pour la gestion territoriale à l'exemple du SIG et de l'intelligence territoriale. Le pilotage commence ainsi par la mise en contexte du processus de gouvernance, en montrant l'intérêt stratégique et opérationnel de ce processus dans l'organisation spatiale.

Les techniques de la gestion sont les nouveaux outils et les bases informatiques et communicationnelles qui peuvent interagir de manière fiable, pour le devenir de la ville. Ainsi les acteurs territoriaux sont amenés à se concentrer sur ce détail technique, qui leur facilite la prise de décision au niveau de l'urbain. L'action de gouvernance devient à un niveau l'affaire tous. Dès lors, une meilleure concertation face aux défis nécessite une communication et un échange entre les acteurs, concernés par l'adoption des moyens techniques et opérationnels et par le partage des données, par le biais des systèmes d'information géographique et le processus d'intelligence territoriale.

La gouvernance se base maintenant sur la contribution des acteurs, sous le label d'un réseau digital, où ils peuvent échanger entre eux de manière souple et efficace, en créant ce qu'on appelle le portail territorial. Ce dernier permet la prise de conscience, envers les problématiques d'aménagement de la ville, et offre aux acteurs des domaines vastes d'intervention, suivant la logique d'une bonne gouvernance territoriale. Les moyens technologiques se dévoilent, dans ce sens comme des mécanismes de gestion pour les acteurs et pour le territoire permettant de faciliter son adaptation aux changements et l'amélioration des services offerts à la population locale et aux autres acteurs comme les porteurs de projets territoriaux.

8. Enseignement pour une compétitivité et une attractivité territoriales

L'importance de la gestion et la coordination inter-communes est de créer une attractivité et une compétitivité territoriales entre les communes elles même et entre les autres villes avoisinantes. Pour ce faire, nous nous intéressons à la projection de la notion d'enseignement, qui est devenue un critère essentiel dans l'organisation des connaissances des acteurs territoriaux et la création d'un savoir-faire, pour s'adapter aux nouveaux aléas du territoire.

L'origine de ce processus d'enseignement, pour la compétitivité et l'attractivité de la ville de Marrakech comme exemple, réside dans le fait d'étudier les facteurs d'attraction des populations en milieu urbain et ce que le territoire dégage comme potentialités pour l'engendrement d'une compétitivité urbaine. Il faut, pour cela, se former et privilégier le savoir pour ces nouveaux concepts de rayonnement territorial, s'intéresser aux profils des acteurs et les aider à mieux connaître les besoins généraux et spécifiques de leur milieu, en termes d'aménagement, de gestion et de management.

L'utilité de l'enseignement, dans ce sens, est de voir de plus près et d'analyser la gestion politique de la ville, qui se doit d'être tolérante et privilégiant la diversité afin de maximiser le potentiel créatif de sa population. L'application de l'enseignement, dans le cadre de politiques de développement urbain, va permettre de favoriser la compétitivité des villes, et le développement de l'administration publique, sous la supervision de l'innovation comme nouveau processus d'aide au contrôle du territoire.

La connaissance de la compétitivité des territoires est importante pour le devenir de tout espace et attire l'attention sur les enjeux majeurs existants ; la mobilisation et synergie d'acteurs, activation des ressources et solvabilité des problèmes de gestion et d'aménagement. Cette connaissance ouvre des

perspectives pour les acteurs pour mieux s'armer pour la gestion de leur espace, dans un objectif de créer la compétitivité et l'attractivité nécessaires pour la ville pour bénéficier du bon positionnement à l'égard des autres villes ayant les mêmes caractéristiques urbaines.

9. Compétitivité territoriale : une expérience à se faire

Le territoire est aujourd'hui perçu, comme une construction des acteurs qui s'entrecroisent, dans un cadre géographiquement et historiquement circonscrit, des relations à la fois économiques, sociales, culturelles, politiques et symboliques. Le niveau local apparaît donc comme une échelle d'action efficace, pour résoudre les problèmes socio-économiques. C'est à ce niveau, qu'il est possible de mettre en œuvre des solutions globales, intersectorielles et participatives.

L'innovation territoriale à côté de la compétitivité territoriale sont les nouveaux enjeux pour le développement de la ville de Marrakech. Il s'agit ici de tester la capacité d'un territoire à se construire une force compétitive à l'exemple des villes intelligentes, durables et modernes. Cette démarche de compétitivité permet à Marrakech d'imposer la singularité de son identité et de ses valeurs, car une ville doit savoir communiquer et vendre l'attractivité de son territoire, à travers une bonne communication pérenne et valorisée par une forte compétitivité.

Par ailleurs, bien que chaque ville ait sa gouvernance propre, il n'est plus à démontrer que se concerter sur plusieurs projets urbains s'avère être une méthode efficace, pour créer une compétitivité territoriale. Marrakech doit avoir le mérite de renforcer l'attractivité et la compétitivité de son espace, face aux autres territoires qui ont les mêmes orientations. La compétitivité se base essentiellement sur le processus de l'innovation qui se montre comme un déterminant incontournable pour les territoires. Cette compétitivité est en rapport étroit avec l'apprentissage et le développement de la créativité, qui constituent en même temps son maillon faible.

Plusieurs villes dans le monde ont lancé des nouvelles stratégies appelées « pôles de compétitivité » (Marcon, 2008). Ces derniers ont pour vocation, par la coopération des acteurs économiques, scientifiques et académiques autour de projets innovants, de favoriser l'émergence d'activités à forte visibilité internationale dans des secteurs stratégiques. Intégrer la ville de Marrakech dans cette optique de développement, par le biais de la compétitivité, sera une bonne et belle expérience pour cette ville aux ressources multiples et dont les activités ne manquent pas.

V. Le fait urbain à Marrakech : l'ouverture vers des communes expérimentées et compétitives

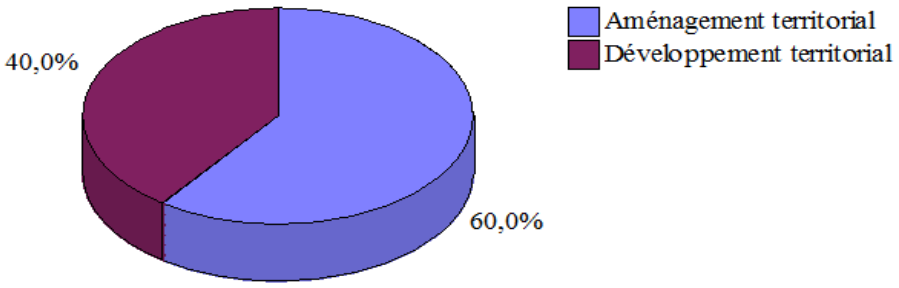
Le défi pour l'amélioration des communes se multiplient avec le temps, et le développement de la ville exige de transformer les communes urbaines du contexte classique vers un autre contexte, plus adapté aux nouveaux changements. Les perspectives de développement de ces institutions dépendent de l'insertion ou non des moyens techniques et innovants, pour développer les communes au sein de la ville.

Les communes sont face aujourd'hui à des compétitions majeures déterminantes du leadership local, de la commune la plus rentable présentant une certaine compétitivité et une attractivité pour l'ensemble de la ville de Marrakech. Celles-ci, connaît une grande tension, due au positionnement de la ville comme première destination touristique au Maroc. Son choix pour la durabilité et le respect de l'environnement en tant que des labels qui lui sont attribués, des éléments qui donnent un caractère particulier et exigent à ses institutions, y compris les communes de s'expérimenter et d'acquérir un maximum de savoir-faire et d'opter pour une ouverture sur les nouvelles expériences mondiales et techniques afin de façonner sa force compétitive.

1. Pilotage des communes par un SIG performant

La gestion collective d'un territoire est considérée comme le pouvoir de pilotage et de décision chez l'acteur-décideur, la mise à disposition de connaissances pour tout acteur cherchant une information spatiale. Ce pilotage, guidé par les communes, constitue une pierre angulaire pour le développement de la ville et de ses activités, la création d'une dynamique territoriale. Dans ce sens, les communes urbaines nécessitent l'intégration des SIG ou d'autres moyens techniques pour ressortir le territoire de toute situation de crise. La performance dans cette technique de pilotage, se base sur la performance du SIG, étant donné que c'est le moyen le plus utilisé par les autres communes des autres pays, car c'est un outil qui a montré sa fiabilité dans l'activation des bonnes procédures d'aménagement du territoire. Aussi plusieurs dynamiques ont pris de l'ampleur, avec l'utilisation du SIG.

Il apparait que le SIG se positionne comme un moyen technique fiable pour le travail des communes enquêtées et pour leur développement. Les dynamiques, engendrées et créés au sein des communes et leur territoire d'exercice, montrent que le SIG a participé à 60% dans l'aménagement territorial de l'espace de travail des communes et à 40% dans la contribution du le développement de la ville



la nature de la dynamique	Nb. cit.	Fréq.
Aménagement territorial	36	60,0%
Développement territorial	24	40,0%
TOTAL OBS.	**60**	**100%**

Fig. 12. Les dynamiques de l'utilisation d'un SIG
Source : Enquête personnelle, 2017

Ces constatations ne manquent pas de donner de l'importance aux moyens TIC qui ont montré leur efficacité dans les territoires urbains. Ainsi, le SIG par sa performance permet de planifier, à l'échelle de plusieurs communes, l'évolution et l'organisation du territoire ainsi que le développement économique, urbain et social, tout en préservant l'équilibre entre les zones urbaines, industrielles, agricoles, touristiques ou naturelles.

VI. CONCLUSION

Dans cette étude, nous avons traité la possibilité de l'existence d'une véritable articulation entre les SIG, l'intelligence territoriale, le développement et la compétitivité territoriale. Cette articulation permet la création d'une dynamique de développement territorial global et durable par et pour les acteurs locaux et ce, par l'apprentissage et l'enseignement des nouvelles technologies d'information et de communication.

Nous pouvons dire que Marrakech peut améliorer ses stratégies de développement urbain, à travers deux axes : d'une part, en réaménageant la ville et d'autre part, en redéfinissant une politique territoriale de gestion, basée sur de nouvelles technologies de communication et d'information. Le développement de Marrakech dépend actuellement d'une bonne gouvernance territoriale et d'un bonne prise en compte du processus d'intelligence territoriale et des SIG, comme étant les nouveaux paradigmes de l'aménagement d'un territoire surtout urbain.

La ville est à la recherche de nouvelles pistes de réflexion, pour assurer un développement territorial durable et pérenne, suivant de nouvelles logiques de planification informatique digitale et une synergie d'acteurs communaux autour des défis et des contraintes affaiblissant la rentabilité du territoire. Les communes urbaines doivent s'adapter aux exigences actuelles et aux attentes de l'ensemble des acteurs, à travers une transformation vers l'expérimentation et l'intelligence collective. De nouveaux concepts et thèmes s'opposent pour les villes. Nous parlons de durabilité et de ville intelligente devenus nécessaires pour appuyer la compétitivité et l'attractivité de la ville et de ses communes.

Marrakech doit réinventer une nouvelle politique territoriale, pour la sauvegarde des ressources et la création d'une compétitivité. Elle doit prendre en considération les pratiques des acteurs sur son territoire, afin de limiter les dégâts néfastes sur son développement et réfléchir sur des scénarios d'émergence de la ville sur tous les plans. La cité du renouveau permanent n'est que le début d'une stratégie réussie pour la rénovation de la ville. Mais l'accompagnement technique se projette comme une nécessité, pour bien accomplir les missions d'un bon développement territorial, compétitif et concurrentiel, par rapport aux territoires ayant la même vocation et les mêmes ressources.

Aussi, nous pouvons dire que Marrakech peut améliorer la qualité de vie à travers deux axes : le réaménagement efficace et bien réfléchi de la ville et d'autre part, la redéfinition basique de la politique territoriale, en termes de gestion et d'organisation spatiale.

Tout d'abord, il s'agit de considérer deux éléments d'importance : le premier s'attache à considérer la bonne gouvernance et le bon aménagement comme la base de l'activité économique et sociale de la ville et la raison de son niveau de compétitivité; le second part du postulat que la croissance urbaine se fait de manière très contrôlée et planifiée dans un souci de préservation de la qualité de vie et de la qualité d'aménagement de la ville et de ses espaces.

La mise en œuvre des systèmes d'information géographique est une des attentes des territoires urbains, pour marquer un développement territorial moderne, durable et rentable aux habitants et aux autres acteurs. Étant donné que les communes urbaines sont les acteurs les plus rapprochés et les plus

concernés par cette mise en œuvre des outils technologiques, leur intervention dans les processus de gestion devient un nécessité voire même une obligation, pour une planification et une gouvernance pensée de façon globale et transversale.

Il s'agit de construire une ville développée et de cohérence spatiale entre les différents éléments du tissu urbain. Partant du principe que la gestion via l'intelligence territoriale et les SIG est l'élément clef de toute politique d'aménagement et de développement, l'attractivité de la ville ocre sera en fonction des évolutions techniques, informatiques et communicationnelles qu'elle va adopter et utiliser comme base pour tout projet de territoire ou pour toute décision territoriale. Il est important de revenir sur les enjeux territoriaux de Marrakech afin de pouvoir dresser un état des lieux de l'évolution de la ville et d'envisager à la suite de nouveaux mécanismes de développement, tout en contrôlant l'extension urbaine de la ville.

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SHOULD ROMANIANS BE CONCERNED WITH THE ASBESTOS BURDEN? RESEARCH OVERVIEW AND CONTEXT

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ABSTRACT. – Should Romanians Be Concerned with the Asbestos Burden? Research Overview and Context. Although the negative effects of airborne asbestos fibers upon human health had been known for a long time, asbestos was widely used all over the world. Between 1980 and 2010, many countries have banned asbestos production and trade; among them, Romania banned asbestos in 2007. Romania did not extract massive amounts of asbestos; however, the country's imports before the ban included large quantities of raw asbestos, which were later used for a wide variety of products. We have identified two peaks in the trend of raw asbestos imports, in the 1970s and the 1990s, which can be correlated to the socio-economic conditions in Romania. Lack of data availability is a real impediment to a complete estimation of the quantities of asbestos-containing products that have been used in the country. The 2007 asbestos ban did not imply the disposal of already installed such materials that could remain in place until the end of their service life. However, once removal and disposal of asbestos-containing products are needed, they come with great risks for the workers involved and the surrounding environment.

Keywords: *asbestos, asbestos-containing materials, health, ban, imports, production.*

1. INTRODUCTION

Asbestos is a term that refers to six fibrous minerals, namely: chrysotile - the "white asbestos", amosite, crocidolite, tremolite, actinolite and anthrophyllite. The most frequently used type was chrysotile, accounting for 90–95% of used asbestos in the world (Stayner *et al*, 2013; Frank, 2020). Asbestos was mainly used in constructions, in the making of asbestos-cement, insulation materials, pipes, flat and corrugated roofing sheets, elements and

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insulation for ships, accessories and parts of motor vehicles, textiles, ropes etc., having roughly over 3000 registered uses. Some of these uses are most unexpected, like filters for wine or beer, or small household appliances like hairdryers and toasters (Frank and Joshi, 2014).

Asbestos was so widely used due to its important qualities: strength, durability, resistance, insulation and fire protection properties, flexibility, capacity of being easily incorporated into composed materials (Virta, 2006; IARC, 2012) and its relatively low commercial price (Frank and Joshi, 2014).

However, its negative impacts upon health were beginning to be signaled as early as the 1920s, as some authors mention (Henderson and Leigh, 2011; Baur, 2017; Frank, 2020, etc). The International Agency for Research on Cancer (IARC) has classified asbestos as a human carcinogen since 1973 (WHO, 2012). Countless epidemiological studies have demonstrated the causality between exposure to airborne asbestos fibers and several types of cancer and other diseases (the most common ones being lung cancer, mesothelioma and asbestosis, but many other types being connected: laryngeal, ovarian, gastric cancer etc), and countless studies have shown the past and present incidence of such diseases in different countries around the globe (Lemen *et al,* 1980; Albin *et al,* 1999; Nishikawa *et al*, 2008; Olsen *et al,* 2011; Stayner *et al*, 2013; Baur, 2017, etc).

Every year, there are around 107,000 deaths by cancers caused by asbestos exposure (WHO, 2012). In Europe alone, there were 106,180 deaths caused by mesothelioma and asbestosis between 1994 and 2010 (Kameda *et al*, 2014).

The risk is present even for exposures to low doses (Nishikawa *et al*, 2008; Frank and Joshi, 2014), over brief periods of time (Frank, 2020) and for all types of asbestos (IARC, 2012). Although the incidence of diseases related to asbestos was typically higher among workers that handled asbestos fibers, the risks for people working with asbestos-containing materials (in shipbuilding, in constructions, in DIY renovation projects) and even for families of workers are very well documented in the medical literature (Lemen *et al*, 1980; Frank and Joshi, 2014; Frank, 2020, etc). And so are the many cases of environmental exposure, in villages or towns located near asbestos mining or production facilities. Some well-known and long studied cases are: Balangero, located near a mine in Piedmont, Italy, and Casale Monferrato, where the largest factory in Europe functioned and that was later part of the *Processo Eternit,* widely covered by the international media.

The specific feature of the diseases caused by asbestos exposure is represented by the very long time until they occur, of typically minimum 10 years, with a most prevalent period of 35-45 years since the exposure (Frank, 2020).

Therefore, the impacts of this asbestos epidemic are still to be shown in many parts of the world. In fact, more recent studies indicate larger figures, Furuya *et al* (2018) estimating 255,000 annual deaths by asbestos-related diseases.

Starting from these grim premises, the purpose of the present study is to look into and analyze some features of the past trends of import and consumption of asbestos in Romania, as a basis for further studies regarding the current and future challenges facing the (so far underestimated) national asbestos legacy.

2. MATERIALS AND METHODS

While documenting the present study, we have consulted a large number of publications regarding the spatial extent of asbestos use and bans, while also trying to identify a chronology of the measures taken in different countries, focusing then on Romania. In order to achieve that, we have consulted legislations, proposals and reports that we found for Romania and the European Union mainly; official released documents from the World Health Organization were also consulted, as well as several studies concerning the asbestos burden in different countries.

We have used two main data sources in the preparing of the graphic concerning the imports of asbestos to Romania: the United States Bureau of Mines and the British Geological Survey (BGS). We have used the indicated sources because in the annual statistics publications of Romania the trades are not broken down by specific materials, being recorded by general classes of products. However, both the United States Bureau of Mines and the British Geological Survey provide estimated data based on other countries' registries of trade. Thus, for the years 1961 to 1975 we have used data from the "United States Bureau of Mines (1963-1993) Minerals Yearbook Series", while for the 1976-2006 period, data from the "World mineral statistics data" of the BGS. Data regarding imports that can be retrieved from the United States Bureau of Mines stops at 1986 (we could only find production data up to 1993, which was not the case anyhow for asbestos), while data from the BGS is only available starting from 1970, and that is why we needed to use both data sets. For the years in which both data sets were available (between 1970 and 1986) we noticed that the figures are the same in some years, while in others they may differ, but we must mention that 1) in the United States Bureau of Mines' estimates, the imports from Russia are missing at that point, and therefore we preferred to use the British data, and 2) the differences are seldom high, while the overall trend is maintained, and therefore, it can serve our purpose of showing an evolution of quantities of raw asbestos brought into Romania.

3. RESULTS AND DISCUSSION

3.1. International context - Asbestos use and bans

Asbestos-containing materials were very popular, at different times, in different countries, with an asynchrony between the more economically developed countries, where the peak of consumption and the following bans came sooner, and the less developed countries where asbestos reached the peak of consumption later on, or where it is still being used (Frank and Joshi, 2014; Stayner *et al*, 2013 etc.). However, the highest peak of global asbestos production was reached in 1975, when 5.09 million metric tons were produced around the world (IARC, 2012).

After the carcinogenic nature of asbestos became a known fact, its use did begin to decline (Frank, 2014). However, the delay between the recognition and understanding of the hazard it represented and the taking of actual measures is omnipresent. Still, bans began to be put in place; some countries began by only banning some types of asbestos, but not chrysotile (for example, the UK, which banned the use of crocidolite and amosite in 1986 and of chrysotile in 1999, or Hungary that first banned the non-chrysotile asbestos and only later chrysotile), others only banned certain asbestos uses at first (like Denmark, that banned uses of asbestos except asbestos-cement roofing in 1980, to later ban that as well, in the late 1980s), while other countries banned all forms of asbestos at once (Iceland, Norway, Sweden – which banned all asbestos in the 1980s).

In Europe, the most important action was taken by The Commission Directive 1999/77/EC, when the use of asbestos was banned in the European Union, as of 1st of January, 2005. The directive prohibited the selling and use of raw asbestos and asbestos-containing materials. However, the asbestos-containing products that were already in use at that time could be used until safe disposal or until they reached the end of their product life circle.

Table 1. Countries in Europe and bans on asbestos-containing products

Asbestos status	European countries
Banned before 2000	Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Israel, Italy, Netherlands, Norway, Poland, Slovenia, Sweden, Switzerland, United Kingdom.
Banned after 2000	Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Luxemburg, Malta, Portugal, Romania, Serbia, Slovakia, Spain, Turkey.
No ban in place	Albania, Andorra, Belarus, Bosnia and Herzegovina, Montenegro, Moldova, Russia, San Marino, Ukraine.

Source: author's own compilation

Even now, asbestos is still used in many countries on the globe, the majority of the world population living in a country that has not yet banned asbestos use. In general, the main importers of such materials are countries of low and middle income, developing countries, which lack in laws and regulations for population health, workers' safety and environmental protection (Frank and Joshi, 2014; Henderson and Leigh, 2011).

International calls for a global ban of asbestos continue, while scientists proceed in providing proofs that a total ban is the viable solution for reducing the number of asbestos-related disease cases (Nishikawa *et al*, 2008; Stayner *et al*, 2013; Frank and Joshi, 2014; Frank, 2020).

3.2. Asbestos use in Romania and the 2007 ban

Asbestos had been mined in Romania, but the country was not among the relevant producers of Europe. However, data regarding the resulting quantities is scarce; we did not find available data, neither in Romanian sources, nor in available documents from the United States Bureau of Mines or the British Geological Survey (although an observation that Romania produced asbestos appears in these documents). The only reference we have found on the matter is provided by Albin et al (1999) that mention an estimated production of 4,600 tons for the year 1989. It is a figure that roughly matched the imports of that precise year, but no further specifications can be made based on it.

In what regards the mining locations, Jakab and Peti (2018) mention the Eibenthal asbestos mining site opened in 1948, from where asbestos was transported firstly to the crushing facility in Dubova, and later to Orşova town. This mine continued its functions and was later shut down, in 1994. Two other former exploitation sites in Almăj Mountains (Caraş-Severin County) and along Crişul Alb Valley (Arad County) are mentioned by Balzamo *et al* (2007).

However, large quantities of asbestos were imported to Romania, mainly from Russia and from Canada (after 1969), and smaller quantities from West Germany, United States, Italy and Yugoslavia. Since import records could not be found in sources from the Romanian authorities, data is scarce and only available from sources which have compiled available data from countries that had exported asbestos to Romania, thus having a certain dose of inconclusiveness. As stated before, the main data sources are reports from the United States Bureau of Mines and the British Geological Survey. We must also note that data was not available in any consulted sources for the period before 1961 (with the exception of few years presented below), thus, we cannot reasonably estimate a total quantity that has been imported to Romania.

Looking at the statistics presented by Virta (2006) we can note that asbestos was not very popular in Romania before the Second World War. In 1920, while Western European countries imported rather large quantities (21,291 tons imported by the UK, 6,828 tons by Germany, 3,966 tons by Italy), Romania imported only 14 tones. A similar situation was recorded in 1930, when Romania was importing 68 tons, while the UK was bringing in 23,938 tons, Belgium and Luxemburg 19,050 tons, Germany 14,107 tons, and in 1940, with Romania importing 61 tons, while in the West, the UK was reaching over 95,392 tons, and France and Germany over 10,000 tons each.

After the Second World War, the global asbestos industry took off towards a historical peak reached in the 1970s. In Romania, the asbestos situation followed the same trend, imports started to rise and by 1970, Romania was importing 19,287 tons of raw asbestos. 84.5% of imported asbestos came from the Soviet Union and the rest from Canada. Imported quantities would then grow continuously until the 1973 peak, of 46,600 metric tons (fig. 1).

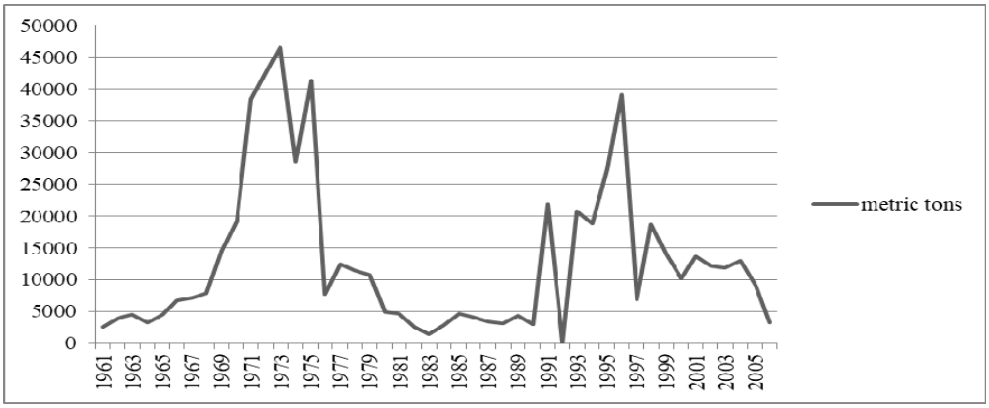

Fig. 1. Variation of asbestos imports to Romania.
Data source: United States Bureau of Mines and the British Geological Survey

However, after 1975, asbestos quantities imported by Romania registered a steep decline, until reaching 3,000 tons in 1990. The 1980s were, in many ways, a period of restraint in Romania, determined by the central authorities' struggle to attenuate Romania's foreign debt. Romanian economy had yearly ups and downs, but generally failed to meet the yearly targets, industry advancement was severely hindered and all exports were somewhat limited.

In Romania, this was a period in which all industry sectors were blooming, large cement factories were being built or extended and new asbestos-cement production lines were being opened in small towns like Aleşd, Fieni, Medgidia or Bicaz.

By 1975, quantities imported by European countries had increased tremendously. Romania was still importing over 40,000 tons (after a lower level in 1974) while the other countries in the area were also registering high values: Hungary registered 32,604 tons, Bulgaria 28,812 tons, Czechoslovakia 43,494 tons, Poland 94,412 tons, while hundreds of thousands of tons were imported in the western countries - the U.K., France, Spain and West Germany being the main importers (on a side note, 1975 was also the year in which the Soviet Union exported 1.9 million tons of asbestos).

After the fall of the communist regime and when entering the transition period, the trajectory began to change again. As described by a 2001 Economic Commission for Europe report, the housing market in Romania began to develop after 1990 and construction of new homes was very frequent in the rural areas (where individual homes represented 98.5% of housing options). This created an expanding market for cheap products like asbestos-containing roofing sheets, especially since the generally high prices of construction materials were among the main factors influencing the affordability calculations (as it appears in the same report). In that period, asbestos imports began to rise again.

Thus, by 1995, Romania was again bringing in 27,425 tons of raw asbestos and thereafter reached a second peak in 1996, of 39,130 imported tons of raw asbestos. In that year, Romania actually had the highest figures for asbestos imports among the European and former Soviet Union states. It was followed by Russia with 31,366 tones, Spain with 27,030 tons, France with 20,576 tones etc. After an abrupt fall the following year, asbestos imports had some yearly fluctuations but generally decreased starting from 1998, while still remaining above 10,000 tons.

This was a period in which, in Western Europe, asbestos imports dropped abruptly also due to the fact that more and more countries were beginning to ban asbestos use. Therefore, in 2003, Romania remained among the leading consumers of asbestos in Europe, after Ukraine. In 2004 Romania was also the second importer among the new members and candidate countries to the European Union. Only Turkey had higher imports (13,509 tons), while the next countries had much lower quantities: Croatia and the Czech Republic having around 3,000 tons, and Bulgaria importing 196 tons.

It was only in 2005 that asbestos imports decreased to less than 10,000 tons (9,077 tons) and continued to drop in 2006 (3,272 tons). But these are still substantial quantities considering that the Treaty of Accession of Romania and Bulgaria to the European Union had been signed earlier, in April 2005, and Romania was going to join the EU starting from the 1st of January 2007, at which point, Romania had to align and ban the trade and use of asbestos and asbestos-containing materials.

In some years, Romania also seems to have exported asbestos, but in very modest quantities, generally below 100 tons/year, with one year standing out, 1984, when Romania exported 646 tons of crude asbestos (mentioned in the Minerals Yearbook, Vol. 3, 1986). However, when related to the amounts of imported asbestos, one can note that the overall "apparent" consumption in Romania had been rather high.

This is just the situation of the raw/crude asbestos trade, but trade with prefabricated asbestos-containing products was also present. Due to the lack of available data, at this point we are unable to provide a complete analysis of the matter. We could only find sparse data that can offer more of a preview of such trades. Mateș (2012) mentions the import of 104,813 tons of corrugated asbestos-cement sheets in 2002 and of 107,880 tons in 2004. A similar value appears for the year 2005 when there were 104,580 tons of imported asbestos-containing products reported in a document referring to the "National situation of asbestos-containing products and waste" (available at the National Environment Protection Agency). 99.47% of these products were asbestos-cement sheets. Such values are easily comparable to the national production figures; Mateș (2012) also refers to the production of 87,621 tons of corrugated asbestos-cement sheets in 2001 and 97,000 tons in 2004.

The construction industry was the main recipient of raw asbestos imported to Romania. There were eight main factories in Romania that produced asbestos-containing materials: FIBROCIM Aleșd and CONGIPS Oradea in Bihor County, MOLDETERNIT Bicaz in Neamț County, AZBOCIM Fieni in Dâmbovița County, ETERMED Medgidia in Constanța County, FERMIT Râmnicu Sărat in Buzău County, FIBROCIM Târgu-Jiu in Gorj County, and IZOLATORUL in Bucharest.

According to documents from the National Environment Protection Agency, while the factories in Bicaz, Râmnicu Sărat, Medgidia and Bucharest were technologically upgraded to produce non-asbestos-containing materials, the factories in Aleșd and Fieni had a profile conversion (although in 2005 AZBOCIM Fieni was asking for clearance for closing, and was later becoming an area of waste disposal), and the factories in Oradea and Târgu-Jiu were closed by the 1st of January 2007.

When the ban on asbestos went into effect, the list of asbestos-containing products was long and worrisome, containing many different products alongside the omnipresent asbestos cement sheets and pipes: toys, smoking gadgets, asbestos sprays for coating, paint, construction and finishing materials for buildings (from insulation materials to decorative wall panels and flooring etc), filters, textiles, etc (Annex 2 of the HG 124/2003). There were 136 companies that were using or trading these asbestos-containing products in Romania before the 2007 ban on asbestos (Mateș, 2012).

The same fluctuations shown for the imports of raw materials can be observed for the internal use of asbestos. Between 1920 and 1970, the average asbestos use in Romania was 0.62 kg/capita/year (Kameda *et al*, 2014), a figure that was lower than those indicated by the same authors for Western European countries (Belgium, for example, having 3.08 kg/capita/year, Austria 1.17 kg/capita/year, Denmark 2.16 kg/capita/year), but still higher than other neighboring countries (Bulgaria having 0.14 kg/capita/year and Serbia 0.25 kg/capita/year).

In their analysis of trends in the use for asbestos, Nishikawa *et al* (2008) noticed an overall decline in the use of asbestos in Romania between the 1970s, when the use of asbestos in kg/capita/year was 1.08, and the 1980s when it was 0.19. In the same study, we observe that asbestos use in Romania grew again in the 1990s, to 0.52 kg/capita/year and 0.55 kg/capita/year in the 2000s (however, when looking at the value for the 2000s, one must keep in mind the accentuated demographic decline that Romania experienced after 1989).

It is important to have estimates of these data because, as Nishikawa *et al* (2008) pointed out, the per capita asbestos use is a useful tool in the estimation of health impacts of asbestos use.

4. CONCLUSIONS

Considering the high amounts of consumed asbestos and asbestos-containing products all over the world, bans are only the first, but essential step. Countries that have banned asbestos use are currently dealing with the high burden of asbestos products that are still in place in many parts of the world. The health effects of past exposures are showing even now, while new exposures are still happening due to products still being in place, not just in industrial settings, but in residential or other public buildings as well. For example, in Italy, Marsili *et al* (2017) showed that 75% of asbestos that had been used until the 1992 national ban on asbestos is yet to be recovered and removed.

Romania has had its ups and downs in terms of asbestos imports and consumption; there were large quantities of raw asbestos brought into the country, mostly in the 1970s and 1990s. There were many products manufactured in Romania in which asbestos was used, and many other asbestos-containing products that were imported as such (for which we still do not have a clear situation). Many of those products can still be seen around, the asbestos-cement roofing (with flat and corrugated sheets) being among the most visible such legacy. When the ban went into effect, such roofs were everywhere from public buildings (even hospitals) to blocks of flats, individual houses, factories, farms, etc.

The more degraded the material of such roofs, the higher the risk of airborne fibers and the more dangerous it is. Asbestos-containing materials represent a hazard when disturbed for repairs, renovations or demolitions. The risks extend from removal workers to encapsulation workers, to waste disposal workers or drivers evacuating the materials, and even to unaware DIY-ers. Therefore, information and awareness campaigns are still important, as well as the enforcement of the law in terms of workers' safety (Directive 2009/148/EC).

Enforcement of regulations regarding the correct disposal of asbestos-containing wastes is also crucial, since such materials represent a hazard for human health and a lasting environmental burden.

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DEMOGRAPHIC RISKS IN MOŢILOR LAND

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ABSTRACT. - Demographic Risks in "Moţilor Land". The scientific study at hand takes a look at the changes in demography over the last 30 years in the ethnographic region of "Moţilor Land" trying to establish if a balance has been reached. There are several important demographic risks that affect this region. First, there is the rapid depopulation of the area that was triggered by three factors: by the isolation of the people in the "Moţilor Land" which was amplified during the 1990s after the destruction of the railway that connected Câmpeni with the periphery of the mountain zone, by the economic crisis experienced by the region due to the collapse of the mining activities and not the least by the lack in many localities of minimal utilities like schools, commercial units, electricity, telephone lines, fact due especially to the numerous settlements per commune and to the difficult mountainous terrain. Other important risk factors are the demographic aging and the feminization of the population. These are the result of the continuous reduction of birth rate over a long period of time and of the previous migrations, especially after the 1966 when numerous people, especially young males, left the mountain villages for the cities where jobs became available due to the intense industrial development during the 1970s and 1980s in Romania.

Keywords: *"Moţilor Land", demographic risks, depopulation, feminisation, ageing, birth rate, mortality.*

1. INTRODUCTION

What are the demographic risks?

Law no. 575/2001 on PATN defines risk as "a mathematical estimate of the probability of human and material losses over a future reference period and in a given area for a certain type of disaster" (J. Benedek, E. Schulz, 2003).

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Generally speaking, the notion of risk "implies a reference to the negative consequence of an action or a behaviour, individually and collectively" (T. Rotariu, 2004). According to J. Benedek, risk is presented in two ways: it expresses both the likelihood of harm and the specific human behaviours related to risk prevention and harm management.

Demographic risks refer to those events that take place over long periods of time and can endanger both the existence of smaller groups of people (family, population of a village, city, region) and society as a whole.

In what regards the demographic risks in Moţilor Land, they are typical for isolated mountain regions, poorly developed from an economic point of view: mass migration, especially of youth, aging population, degradation of social relations through feminization of the population, singularity, divorce, etc. the increase in illiteracy due to the reduction of the number of schools, especially those in small and isolated villages, etc.

The region that is the object of this work extends in the central area of the Apuseni Mountains and includes the network of rural settlements located in the upper basin of the Arieş from Bistra upstream.

The first to correctly delimit the area of Moţilor Land was the well-known ethnographer Tache Papahagi, who states that "The Land of Moţi starts from Abrud, from Cărpiniş above, and from towards Ofenbaia (today Baia de Arieş) from Bistra", so including in Moţilor Land the mining area of Abrud. Basically, he argues ethnographically in his work "Research in the Apuseni Mountains" that Moţi "can be subdivided into two classes: the "real" Moţi, who deal more with the wood industry, and "Băieşi", the miners, in the immediate vicinity of Abrud".

The studied region comprises 322 settlements and covers the whole north-west part of the Alba County, over 1068.89 km^2 with a population of 38397 inhabitants (2020).

Câmpeni with 7375 inhabitants and Abrud with 5248 are the only towns in the region. The rural settlements with a population of 25774 people, are comprised in 14 communes[2]: Albac, Arieşeni, Avram Iancu, Bistra, Bucium, Ciuruleasa, Gârda de Sus, Horea, Poiana Vadului, Roşia Montană, Scărişoara, Sohodol, Vadu Moţilor and Vidra. Demographically, the region has been plagued by continuous depopulation throughout the last fifty years which has led to the aging and feminization of the population and to a high dependency rate.

[2] *Commune = the smallest administrative unit in Romania, usually comprising several villages.*

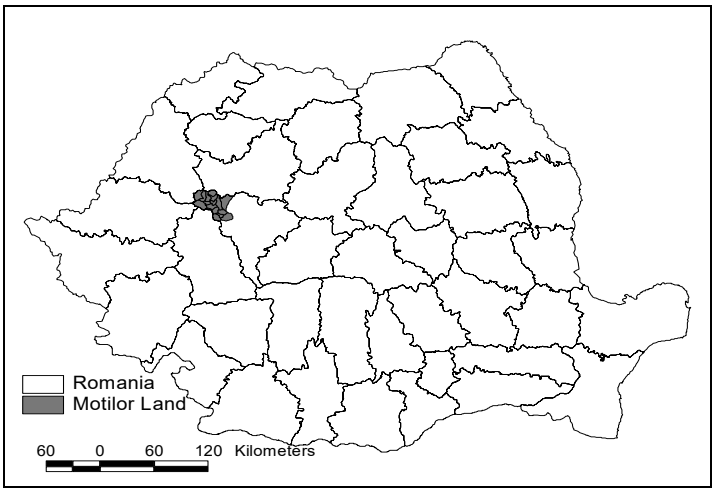


Fig. 1. The Location of "Moţilor Land" within the National Territory

2. MATERIALS AND METHODS

This paper was elaborated following the information gathered from the censuses of 1900, 1910, 1930, 1941, 1956, 1966, 1977, 1992, 2002, and 2011, and for 2020 from the documents of the Alba statistical service, from the documents of the town halls, from the bibliographic sources and from the questionnaires applied in the field and aims to issue a diagnosis that reproduces as accurately as possible the current state of the human component and habitat elements in the Moţilor Land. A wide range of methods specific to both human geography, sociology and mapping were used in the processing of the collected data. The analysis was performed mostly at the level of territorial administrative units, respectively of the 14 communes and 2 cities, and for detailing, where required, the analysis was performed at locality level (322 in total).

Any indicator that deviates from the rule of "normality" signals in specific forms the imminence of the appearance or existence of a state of risk. In the case of our study, the following indicators were taken into account:

1. Birth rate
2. Mortality
3. Migration
4. Feminization index (number of women per 100 men).
5. The share of the aging population
6. Demographic aging index
7. The share of the young population in the total population
8. The dependency rate

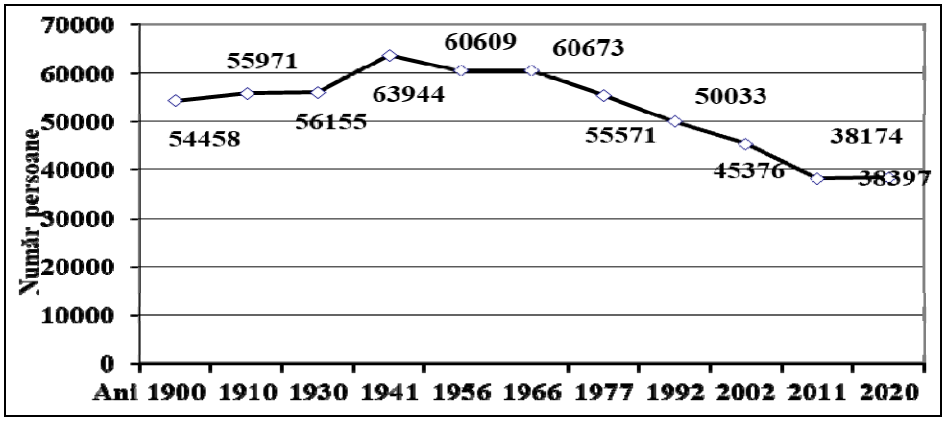
3. RESULTS AND DISCUSSIONS

3.1. General aspects of demography and settlements in the Land of the Moţi

The demographic behaviour of the population of Moţilor Land changed significantly during the 20th century depending on a series of events of national or international importance. In chronological order they would be: between 1914 and 1919, the First World War, in 1918 the Great Union, between 1941 and 1944 the Second World War, 1947-1989 the communist regime, 1968 the prohibition of abortions, since 1990 the liberalization of abortions, the restoration of democracy, economic restructuring with the closure of many factories and mines, the opening of borders to the west, and more recently, in 2007, the elimination of visas for Romanian citizens with Romania's accession to the European Union.

Studying the evolution of the population between 1900 and 2020, it can be divided into two periods with different demographic behaviour: the period before 1941, when the region's population was on an upward trend reaching a maximum of 63944 in 1941 (exception is the period of World War I, when the region has significant population reductions, about 9092 people) and the period 1941-2020 when the area has entered a sharp downward trend reaching 38397 people in 2020, which is well below the level of the beginning of the century, of 54458 people in 1900.

Table 1. The demographic evolution in Moţilor Land from 1900 to 2020



Data source: The National Institute of Statistics

Overall, the demographic potential of a settlement in this area is of 119.24 inhabitants / settlement, but if we disregard the two cities and their localities, the potential decreases to 87.7 inhabitants / settlement and 1841 inhabitants / commune, respectively. Taking into consideration this indicator, the villages belong mostly to the category of small villages under 500 inhabitants and less in the category of the lower middle ones of 500-1000 inhabitants (Scărişoara, Albac) and the upper middle ones of 1000-1500 inhabitants, of which only Bistra and Roşia Montană are part. There are also villages in the category of the very small ones with less than 100 inhabitants which, due to their more isolated location and the lack of minimum facilities, have given most of the emigrants in time. The very small villages are practically endangered villages because they have lost an important stock of the population, many of them housing only a few families. This is the case, among many others, of the villages of Poieni, Vâlceşti, Hărăşti, Gligoreşti, Dosu Văseşti, Bordeşti-Poieni from Vidra commune, which have a maximum of 20 people living permanently in each of them.

3.2. Demographic risks in Moţilor Land

a. Depopulation of the Moţilor Land

In the depopulation of Moţilor Land, in addition to the negative natural balance that has characterized the region in the last 30 years, the phenomenon of emigration of the population from the area to urban areas outside the Apuseni Mountains was also decisive.

The negative *natural balance* is mainly due to the decrease in birth rates as a result of the emigration of the female contingent between 15-49 years to urban areas but also as a result of the liberalization of abortion and the spread of contraceptive practices after 1990. Birth rate represents the number of live births per 1000 inhabitants during a given period of time (year, semester, month, etc.) compared to the average number of the population of a territory or locality.

If in 1977, the average birth rate was 15.1 live births per 1000 inhabitants, in 1996 it reached an average of 13.2 live births per 1000 inhabitants. Later the decrease in the birth rate has been much more drastic, reaching 6.48 ‰ in 2020 with 6.64‰ in Câmpeni and 4.1‰ in Abrud. The smallest birth rate in 2020 is in Arieşeni with 3.10‰ and the highest is in Poiana Vadului with 9,46‰.

Another particularly important indicator in terms of population evolution is *mortality*, which is defined as the number of deaths per 1000 inhabitants during a given period of time (year, semester, month, etc.) compared to the

average population of a territory or locality. The average mortality in the area in 2020 is 14.45‰, with the highest value found in Gârda de Sus 21.26‰ and Horea 20.27‰ and the lowest values in Poiana Vadului 8.51‰ and Roșia Montană 9.84‰.

Unlike births and deaths, which are both natural and social processes, *migration* is an entirely social event: its causes and consequences are both social in nature.

Among the basic causes that generated a strong emigration was in a first phase an overcrowding, due to the strong population growth until around 1956, and then, in a second phase, the industrialization of Romania since the 1970s which created a strong demand for labour outside the area. The maximum intensity of the emigration phenomenon occurred between 1973 and 1982. In 1977 a migration rate of -25.37 ‰ was registered. High values of this index record the migration from the region also immediately after 1990, so in 1992 is significantly lower (-0.05‰) due to an aging population, as it is well known that migration occurs mainly in the young population, but also due to the pandemic situation of 2020 when movement was significantly limited.

There are other causes that have generated this process of depopulation accentuated especially in the last 30 years: the weak agricultural potential of the land, harsh climatic conditions, land configuration, working methods used, poor quality of roads, all generating a low level of the living standards of the inhabitants. To these, we can add what Jonathan Power said about the causes of depopulation: "the backwardness of the village in terms of the level of civilization and culture; awareness among rural people and farmers of what the city means, of the differences between their living environment and the urban environment; accentuating the feeling of frustration as he comes in contact with the city, its living standards, etc. As long as the rural people did not move from their villages and did not know the urban life, they did not raise the issue of abandoning their places of origin. Becoming aware of the existence of another social environment and especially of the advantages it offers (economic, cultural, social affirmation, etc.), rural people become potential migrants, waiting only for the opportunity to actually migrate to other, more favourable areas" (after N. Popa, 2000). In conclusion, a great importance in initiating the migration process is due to the difficult living conditions and especially to the awareness of the urban advantages, which is achieved especially during the process of higher education of young people in urban areas.

The strong migration of the young population almost led to the disappearance of some villages. This is the case of the villages of Hărăști and Poieni in Vidra commune, which ended up having 5-6 households from 100 households in the past. Considering the typical evolution of the depopulation

of a village, we can say that the critical point of rural-urban migration is reached when there is a loss of general school and especially primary school (due to lack of teachers or even insufficient children to form classes). Thus, at the level of Sohodol commune with a population of 1687, in 2020 there are enrolled 18 children in kindergarten, 27 primary grade students and 25 in the fifth to eight grade class so a total of only 70 pupils, while in Bucium there are only 68. It is expected that their number will decrease continuously, so that in ten years the students will be too few to justify the existence of a school.

Regarding the consequences of migration on the movement of the population, they are not limited to the depopulation of the territory by leaving it and changing their home. The selective loss, through migration, in general of the young population, affects, as we have seen, the birth rate, which generates a demographic aging and an accentuated feminization, ultimately influencing mortality. Basically, the vitality of the most affected localities is reduced, eventually reaching their disappearance.

b. Aging population

We are talking about an aging population in those communities where the share of the elderly population (over 60 years) increases significantly in the age group structure of those populations.

In the case of Moţilor Land, the phenomenon of demographic aging affects all the localities in this region. The main factors that determined this process are: as we mentioned before, the decrease in births, especially in the last 30 years, the aftermath of the liberalization of abortions, the spread of contraceptive practices, the economic crisis generated by demographic transition, the migration to urban areas, especially of the young population contingent, both in the recent period and in the period of Romania's industrialization in the 1970s and 1980s and also some improvement in the area of the health system that led to the prolongation of life expectancy.

The high share of the population over 60 years old present in the age structure of the communes in Moţilor Land shows us a situation in which the in the area. The average of the region for 2020 is of 24.34%, well above the threshold. The lowest numbers we find in Bistra 20.63% while the highest is in Bucium with 31.91%. For a clearer image of the situation we can divide the administrative units in three categories: under 25% in Abrud, Câmpeni, Albac, Bistra, Horea, Poiana Vadului and Roşia Montană; between 25 and 30% in Arieşeni, Avram Iancu, Ciuruleasa, Gârda de Sus, Scărişoara, Sohodol, Bistra, Vidra and above 30% in Bucium.

The demographic aging index calculated by the formula

$$I = \frac{P \geq 60}{P \leq 14} * 100,$$

further shows the high degree of the aging of the population. The average for the area is 198.8%, while the highest is again in Bucium with 433.3% and the lowest, 143.9%, in Poiana Vadului. Very high values are also found in Sohodol 242.8% and in Arieşeni 248.5%, which indicate that the viability of these settlements is under significant threat for the next 10 years.

In contrast to the increase in the share of the elderly population, the *share of the young population* is in a continuous and accelerated decrease. In none of the administrative unit in the Moţilor Land, the share of the young population (<14 years) exceeds 25% of the total population, the average being in fact 11.9%. The situation in the area is critical in the vast majority of settlements. The share of the young population is the lowest, 7.4%, in Bucium followed close by Abrud with 9.7% and going up to 15.8% in Scărişoara, 14.1% in Albac, 14.9% in Poiana Vadului, the first presenting a better situation in the region due to the presence of Roma communities. Poiana Vadului has a more special demographic behaviour: the population remained in the area despite the isolation of the Neagra valley, due to the attachment to the village but especially because the locals did not have even the minimum resources to migrate to urban areas.

The risks induced by the aging population have an effect on both the economic and the social dimension in the area. The region's economy is affected by the reduction of the employment potential and by the accentuated increase of the *economic dependency index* calculated as a ratio between the sum of the young population under 15 years old and those over 60 years and the population between 15 and 59 years old (supposed to be active).

$$(D_r) = \frac{P \leq 14 + P \geq 60}{P(14-59 years)} * 100$$

In Moţilor Land the economic dependence reaches high values in all the communes, the average in the area being 57.3%. 7 of the 14 studied communes have values over 61%: Sohodol, Vidra, Gârda de Sus, Ciuruleasa, Avram Iancu, Bucium, and Scărişoara that has the highest dependency index of 73.6%. The lowest levels for the area are found in Abrud, 49.3%, and in Bistra with 50.3%.

c. Feminization of the population

The feminization index of the population presents the ratio between the number of women and men. Given the predominance of rural and primary sector - specific jobs, appropriate to men 's efforts, a higher number of women, compared to 100 men, usually indicates an unfavourable situation.

The phenomenon of *feminization of the population* (the number of women per 100 men) is also characterized by high values, between 100-110% in Câmpeni, Abrud, Bucium, Ciuruleasa and Gârda de Sus, while the average for the region is 97.86%. The high rates of this index are mainly due to the high share of women over 60 in the elderly population group that is 84.7% for the region. There are values of 87.4% in Avram Iancu and 76.8% in Horea which are the highest in the area while the lowest can be found in Abrud, 65.9%. The high number of elderly women is the result of two important processes: selective migration to cities, especially young men since 1967, and longer life expectancy in women due to higher mortality in the male population as a result of their hard work in this mountainous space.

4. CONCLUSIONS

In conclusion, in this study we wanted to see if the effects of changes that cause deviations from normality in the demographic structure of the population of Moţilor Land are still felt over the past 30 years, if there was any positive change since 1990 until today. The results show that the effects of rural exodus during the 1970s and 1980s years of industrialization and in the 1990s with the closing of the mines, continue to be felt strongly today in the aging of the population and in the high degree of feminization in most rural areas, in the high dependency rate, in the very low birth rates and in the increase in mortality. All these phenomena are considered demographic risks because over time they have led to a decrease in the viability of the affected settlements, many of them, especially the most isolated ones, being on the verge of extinction.

As a result, we can conclude that Moţilor Land has developed a regional dynamic typical of disadvantaged areas, which is called by Nicolae Popa "vicious circle of underdevelopment" and which affects the socio-economic and cultural aspects leading to erosion of regional identity by accelerating the exodus and increasing disorganization of communities and alienation of inhabitants. In turn, these phenomena accentuate the economic regression and cultural marginality of the area, which will eventually lead to a degradation of the cultural and ecological heritage of the Moţilor Land and even to an erosion of the vitality of the population that has not left the region. Therefore, effective measures for economic development and improvement of the communication system are an absolute necessity as means to retain population in the area.

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THE ANTHROPOGENIC HERITAGE AS A PREMISE FOR THE DEVELOPMENT OF TOURISM IN SĂLAJ COUNTY

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ABSTRACT. – The Anthropogenic Heritage as a Premise for the Development of Tourism in Sălaj County. The anthropogenic heritage represents an integral part of the primary tourism supply. Together with the natural attractions, man-made attractions represent the essential reason for the emergence and development of tourism in Sălaj County or anywhere else. The identification and structuring of the anthropogenic attractive resources in Sălaj County was adapted to the configuration and specificity of the existing heritage in the analysed space, including the following types: archaeological sites and historical monuments, museums and memorial houses, monuments, statues, cultural and artistic events, as well as the intangible heritage (traditions, customs, music, dances, crafts). The data were collected from various bibliographical and online sources, as well as directly in the field. However, except for Porolissum archaeological site and Jibou Botanical Garden, many of these attractions are virtually unknown even in Romania, and they are mostly visited by locals, and by pilgrims in the case of churches and monasteries. Therefore, there is need for the setting up of a better overall image of Sălaj County as a tourist destination.

Keywords: *Sălaj County, anthropogenic heritage, man-made attractions, tourism development, Romania.*

1. INTRODUCTION

Regardless of the territorial extension or the rank a territory has in the tourism taxonomy – either as a tourist area, zone or region, the tourist resources of a territory integrate the totality of the elements which carry

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attractive features and reveal possibilities for tourist capitalization, no matter their natural or anthropogenic origin or the relations that exist between them. These elements lay at the basis of the emergence and development of the tourism phenomenon, and they represent its "raw material". Their qualitative, quantitative and locational characteristics, corroborated with the insertion of tourism facilities which are adapted structurally, physiognomically, dimensionally and functionally (Cocean and Dezsi, 2009, Dezsi, 2006) may determine the setting up of converging tourism flows, differentiated in terms of scale, intensity and diversity, and to impose the option for the type or form of practiced tourism, and therefore the intrinsic value of the tourism consumption, and, as a result, the economic efficiency of the generated tourism act (Cocean and Dezsi, 2009; Glăvan, 2000; Glăvan, 2010; Cândea and Şimon, 2006; Muntele and Iaţu, 2003; Ielenicz and Comănescu, 2009).

Together with the natural attractions of Sălaj County (which represented the object of a previous study, Rusu *et al.*, 2020), *the anthropogenic tourism heritage* represents an integral part of the primary tourism supply. Both categories of attractions represent fundamental factors or the essential reason for the emergence and development of tourism. The anthropogenic heritage is the result of a continuous process of multiplication and diversification, a consequence of the ascending-spiralled evolution of the material civilisation and spiritual culture of the population (Cocean and Dezsi, 2005, Cocean and Dezsi, 2009).

In this context, one may consider the anthropogenic potential as the one "which stays at the basis of the functional system of tourism" (Muntele and Iaţu, 2003, p. 89, apud Cazes, 1992), integrating primary elements (the cultural and artistic heritage), those created for leisure, and the secondary elements generated by the tourism capitalization (the elements of tourism infrastructure or the technical and material basis). All these represent the decisive factor in making tourism a concrete spatial phenomenon, as the attractive components are transformed into a tourism product which may be capitalized during a sojourn that has a variable duration, and ensure the comfort needed for the tourism act to be conducted in optimal conditions (Cocean and Dezsi, 2009).

2. METHODOLOGY

The identification and structuring of the components of the anthropogenic tourism potential constituted the object of many investigations during the latest decades. Among these, one remarks the very complex classification performed by Glăvan (2000), who differentiates three categories

of anthropogenic potential: the cultural-historical one, the technical-economic one, and the socio-demographic one. They also comprise 18 subcomponents, from historical monuments and folk events, to tourist villages, economic units, social institutions and population. Another complex classification of the potential generated by the human factor was performed by Minciu (2004), who established 12 subcategories of anthropogenic attractions, included into homogeneous groups of socio-demographic potential, technical-economic potential, institutions and events, as well as cultural and artistic attractions. In contrast, Ciangă (1997 and 2007) has a different approach, strictly related to the cultural and historical features of the anthropogenic potential, whose composing elements are classified in an organised manner in categories, subcategories and elements. A less complex and therefore less relevant classification has been performed by Cândea and Șimon (2006), who assimilated the anthropogenic heritage with the set of cultural and socio-economic components of the anthropogenic environment. In their turn, Ielenicz and Comănescu (2013) group the anthropogenic attractions according to their historical character, their architectural, artistic and religious significance, their ethnical, folk, economic, artistic or commemorative nature.

A more comprehensive formula for the classification and approach of the anthropogenic attractive resources was proposed by Mac (1992) and used by Cocean and Dezsi (2009) and partially by Neguț (2003), Dezsi (2006), Răcășan (2014), Răcășan (2015), Răcășan *et al.* (2016), Moldovan *et al*. (2019), etc. The elements comprised in this classification are the historical buildings, the religious buildings, the cultural buildings, the economic buildings that have a tourism function, the human activities that have a tourism function, and the ethnographic tourism resources.

In this context, the identification and structuring of the anthropogenic attractive resources in Sălaj County was adapted to the configuration and specificity of the existing heritage in the analysed space, including the following types: archaeological sites and historical monuments, museums and memorial houses, monuments, statues, cultural and artistic events, as well as the intangible heritage (traditions, customs, music, dances, crafts).

The identification of the attractive features of the anthropogenic tourist resources in the analysed territory started from the reference works which outlined the logical succession of the stages, phases and specific activities for such an approach, focused on the geographical and tourism analysis of a territory (Cocean and Dezsi, 2005, Dezsi, 2006, Ciangă and Dezsi, 2007, Cocean and Dezsi, 2009). Apart from the theoretical and methodological studies, the authors examined the existing bibliographical references, including diverse ethnographic and folklore studies, monographies of the communes, including settlements or other areas whose territory corresponds administratively to parts of Sălaj County (Burghele, 2015-2017, Medve, Daroczi and Coste, 2011), as well

as other monographic studies or research projects focused on the entire county (Mór, 1901-1904, Morariu and Sorocovschi, 1972, Abrudan, 2007, Babih, *et al*, 1980, Cormoș, 1980, Vedinaș, 2018), a number of scientific papers (Ciangă, Dezsi and Pop, 2010, Pop, 2007, 2008a, 2009a, 2009b, 2015), plans and development strategies at county level or county seat level (Pop, 2008b, Pop 2011, PATJ, 2020-2021), tourism guides (Pop, Bălaș and Bodis, 2013), the Romanian Encyclopedia (http://enciclopediaromaniei.ro/wiki/Portul_popular_din_Transilvania), cartographic resources (Romanian Ethnographic Atlas, Ghinoiu, 2003a, b, 2005a, b, 2011), and a lot of information from online sources (by accessing the websites of specialized institutions, such as the National Institute of Heritage – https://patrimoniu.ro/images/lmi-2015/LMI-SJ.pdf, the Cultural Memory Institute – http://www.cimec.ro/Monumente/LacaseCult/default_ro.htm, Sălaj County Council – https://www.cjsj.ro/date/pdfuri/PATJ%20Salaj-%20Et.%20III/PATJ_etapa%20III_rev.pdf. All these were of course corroborated with the authors' own observations and information obtained and collected directly in the field.

3. RESULTS AND DISCUSSION

The territory of Sălaj County favoured an intense, continuous and ancient habitation, proven by prehistoric, Dacian and Roman archaeological remains, and continued in specific historical conditions during the Middle Ages and in modern times. The peculiar conditions of historical, economic, social and political development of the analysed region allowed the insertion and active adaptation of the human element, and were reflected in the culture and traditions of the inhabitants and their system of values. The social, cultural and economic peculiarities have not been lost or diluted in time, as they have been well individualized as a result of a specific centuries-old evolution, nevertheless integrated in the Transylvanian regional space.

The cultural and historical tourism heritage is represented by numerous archaeological sites and historical monuments, on one side, as well as museums, memorial houses, monuments, statues, and a series of cultural and art events, and the intangible heritage (traditions, customs, folk costumes, music, dance, traditional crafts).

Among the archaeological sites, the one near Moigrad stands out, including two Roman forts and the Roman town of **Porolissum**. It was partly built over a Dacian village and controlled the entire northern part of the Roman province of Dacia, and later it became the capital of Dacia Porolissensis province. Located on the territory of two communes (Mirșid and Creaca), the archaeological site covers a very large area (over 500 ha), on Măgura Pomăt Hill and around it (Citera Hill). In the context in which only 10% of the site was researched in detail, a series of elements are nevertheless visible and

available for visit, such as a part of the Roman town, the amphitheater, the customs, the Roman road, the basilica, a part of the neighbouring military vicus, the thermae, many other well-preserved remains from the pre-Roman and Roman antiquity, and also from the early Middle Ages.

As this is the main archaeological tourist attraction in Sălaj County, and one of the main attractions in the county on the whole, the archaeological site at Porolissum, along with the one in **Buciumi**, were the beneficiaries of works regarding conservation, consolidation, functional and volumetric rehabilitation, setting of pedestrian paths, ambient lighting, setting up of access routes, bridges, parking lots and sanitary facilities, included within the project "The itinerary of Roman forts in Sălaj County", implemented by Sălaj County Council together with the local government of Mirşid and Buciumi communes, using European funds from ROP 2007-2013.

The other Roman forts in Sălaj County, such as those at Românaşi (Largiana), Sutoru (Optatiana), Tihău, Romita (Certinae), could also be capitalized as tourist attractions if minimal planning works are executed.

Table 1. Cultural heritage values of national interest (historical monuments of exceptional national value) in Sălaj County, according to Law no. 5/2000

Monument	Type	Location	Year / century
Báthory Castle	Castle	Şimleu Silvaniei	16th century
Church of the Holy Archangels	Wooden church	Hida, Baica	1645
Church of the Holy Archangels	Wooden church	Românaşi, Ciumărna	18th century
Church of the Descent of the Holy Spirit	Wooden church	Fildu de Jos, Fildu de Sus	1727
Church of the Nativity of the Theotokos	Wooden church	Românaşi, Păuşa	1730
Church of the Holy Archangels	Wooden church	Românaşi, Poarta Sălajului	18th century
Church of Saint Mary	Wooden church	Letca	1665
Church of the Dormition of the Theotokos	Wooden church	Năpradea, Vădurele	17th century
Cave painting (Cuciulat)	Paleolithic complex	Letca, Cuciulat	Upper Paleolithic
Area of Dacian ritual graves: fortified enclosure with rampart and ditch (Măgura Hill)	Necropolises and sacred areas – the Iron Age	Mirşid, Moigrad	Iron Age
Porolissum archaeological site: two forts, Roman town of Porolissum	Forts and associated civil settlements	Mirşid, Moigrad	2nd – 4th centuries
The Roman fort at Buciumi and the military vicus	Forts and associated civil settlements	Buciumi	2nd – 3rd centuries

Source: Law no. 5/2000 regarding the approval of the National Masterplan – section III – Protected Areas

Table 2. Other historical monuments of national interest (according to the 2015 List of Historical Monuments)

Monument	Type	Location	Year / century
Roman burgus at "Fântâna Suşigului"	Archaeological	Zalău (Ortelec)	2nd – 3rd centuries
Archaeological site at Brebi, "Dealul Dungii", with stone vallum (clausura) and Roman burgus	Archaeological	Creaca, Brebi	2nd – 3rd centuries
Earth vallum, "Roata Dungii"	Archaeological	Creaca, Brebi	2nd – 3rd centuries
Archaeological site at Brusturi, "La Ruine"	Archaeological	Creaca, Brusturi	2nd – 3rd centuries
Archaeological site at Crasna, "Csereoldal" terrace	Archaeological	Crasna	Bronze Age
Archaeological site at Jac, "Pe cămin" – earth fortress, quarry and cells	Archaeological	Creaca, Jac	Hallstatt – 11th century
Archaeological site at Marca, "Cetate"	Archaeological	Marca	Latene – 11th century
Archaeological site at Moigrad-Porolissum, "Dealul Măgura", fort and sacred area	Archaeological	Mirşid, Moigrad	Latene – 14th century
Settlement, "Ţigoiul lui Benedek"	Archaeological	Nuşfalău	8th – 9th centuries
Tumular necropolis, "La Vulpişte"	Archaeological	Nuşfalău	8th – 9th centuries
Settlement, on a terrace above on old quarry	Archaeological	Ileanda, Perii Vadului	Upper Paleolithic
Roman fort and military vicus, "La Cetate"	Archaeological	Românaşi	2nd – 3rd centuries
Roman fort and military vicus, "Gura Căpuşului"	Archaeological	Zimbor, Sutoru	2nd – 3rd centuries
Necropolis, "Grădina Cetăţii" ("Várkért")	Archaeological	Şimleu Silvaniei	Bronze Age
Archaeological site at Şimleu Silvaniei, "Dealul Cetăţii" ("Várhegy") – settlement and fortification	Archaeological	Şimleu Silvaniei	Bronze Age – 15th century
Archaeological site at Şimleu Silvaniei, "Dealul Măgura – Observator" – fortified settlement	Archaeological	Şimleu Silvaniei	Iron Age – Early Middle Ages
Roman fort and military vicus, "Grădişte"	Archaeological	Surduc, Tihău	2nd – 3rd centuries
Fortified settlement, "Burzuor"	Archaeological	Zalha	2nd – 1st centuries BC, Latene
Settlement, "Temetödomb" ("Dâmbul Cimitirului")	Archaeological	Ip, Zăuan	Bronze Age
Almaşu Fortress (ruins)	Architecture	Almaşu	13th century, r. 1627
Wooden church "The Dormition of the Theotokos"	Architecture	Bălan (Cricova)	17th century
Wooden church "The Holy Virgin Mary"	Architecture	Gâlgâu, Bârsău Mare	1690

Monument	**Type**	**Location**	**Year / century**
Wooden church "Saint George"	Architecture	Someș-Odorhei, Bârsa	18th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Creaca, Borza	1758
Wooden church "The Holy Apostles Peter and Paul"	Architecture	Treznea, Bozna	17th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Creaca, Brebi	1759, r. 1853
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Creaca, Brusturi	1701
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Sălățig, Bulgari	1547
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Camăr	18th century
Wooden church "The Holy Apostles Peter and Paul"	Architecture	Șimleu Silvaniei, Cehei	18th century
Protestant Church	Architecture	Cehu Silvaniei	1519-1614
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Chieșd	18th century
The complex of the Protestant Church	Architecture	Coșeiu	15th century
Protestant Church	Architecture	Crasna	1380-1400
Wooden church "Saint Hierarch Nicholas"	Architecture	Creaca	1710
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Bobota, Derșida	1700
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Dobrin, Doba	16th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Dobrin	1720
Wooden church " The Holy Archangels Michael and Gabriel"	Architecture	Someș-Odorhei, Domnin	1753
Wooden church "Saint Basil the Great"	Architecture	Dragu	1806
The complex of Bethlen Castle	Architecture	Dragu	18th – 19th centuries
Wooden church "Saint Nicholas"	Architecture	Gâlgău, Fodora	1817
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Hida	1717
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Cehu Silvaniei, Horoatu Cehului	1749
Wooden church "The Dormition of the Theotokos"	Architecture	Ileanda	17th century
The complex of Wesselényi Castle	Architecture	Jibou	1779-1810
The complex of the Protestant Church	Architecture	Meseșenii de Jos	15th – 17th centuries
Church "The Dormition of the Theotokos"	Architecture	Meseșenii de Jos, Meseșenii de Sus	1785

Monument	Type	Location	Year / century
The complex of the Protestant Church	Architecture	Sălăţig, Mineu	1514 – 18th centuries
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Cehu Silvaniei, Nadiş	1738
Protestant Church	Architecture	Nuşfalău	1450-1480
Wooden church "The Dormition of the Theotokos" of Strâmba-Fizeş former monastery	Architecture	Hida, Păduriş	1725
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Băbeni, Poieniţa	18th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Hida, Racâş	1741
Wooden bell tower	Architecture	Vârşolţ, Recea	1754
Wooden church "Saint Nicholas"	Architecture	Românaşi, Romita	18th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Sânmihaiu Almaşului	1778-1794
Wooden church "The Holy Apostles Peter and Paul"	Architecture	Hida, Sânpetru Almaşului	17th century
Protestant Church	Architecture	Almaşu, Stana	1640, m. 1742
Roman-Catholic Church	Architecture	Şimleu Silvaniei	1532, r. 1666
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Letca, Şoimuşeni	16th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Letca, Topliţa	16th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Sâg, Tusa	18th century
Wooden church "The Nativity of the Theotokos"	Architecture	Cehu Silvaniei, Ulciug	18th century
Wooden church "The Holy Archangels Michael and Gabriel"	Architecture	Dragu, Voivodeni	1820
Wooden church "The Dormition of the Theotokos"	Architecture	Zimbor	1643
Crypt-ruins	Memorial and funeral	Jibou	1779-1810

Medieval fortresses may be interesting tourist attraction in their turn. Among them, Almaşu Fortress, Valcău Fortress, Aranyos Fortress in Cheud and Báthory Castle (or Fortress) in Şimleu Silvaniei are the best known ones. **Almaşu Fortress** was built in the 13th century, suffered many vicissitudes, and it was destroyed several times. It was rebuilt by the Csáky noble family in 1627, but then again destroyed for good and in a state of ruin ever since. It

might capitalize for tourism if the access routes and the interior are properly arranged. It is a historical monument of national importance.

Valcău Fortress, located within the territory of Valcău de Jos commune, is even less preserved. It is located near Barcău Valley, and it probably controlled the entire upper stream of Barcău. The architectural remains are simple and few. The keep, preserved only in part, belongs stylistically to the Transylvanian military architecture of the 13th – 14th century due to its rectangular shape.

Aranyos Fortress (or **Pintea's Fortress**) is located near the village of Cheud (Năpradea commune) and it has a strategic position on the right bank of Someş River, just before the entrance to the Benesat-Ţicău defile. It was a nobiliary fortress built most likely in the 13th century, and used until the 16th century. The ruins are quite impressive.

Báthory Castle (or Fortress) in Şimleu Silvaniei is even more impressive. It was built in 1532 by Stephen Báthory on the site of a previous fortress. It was the residence of the Báthory noble family, which gave numerous kings of Hungary and Poland, as well as Princes of Transylvania. It comprises a vast nobiliary domain in the central area of Şimleu Silvaniei. In the middle of this area, there was a castle built in a Renaissance style. Nowadays, only a part of it is preserved – some of the bastions, a part of the rampart wall, as well as a gate, all included as historical monuments of national importance.

Apart from Báthory Castle, there are many other castles or manors in the county. They once belonged to noble families, they were built more recently (usually during the 18th or 19th century), and some of them are classified as historical monuments of national importance.

The two castles in Jibou are among the most famous and most visited ones. **Wesselényi Castle** was built between 1779 and 1810, while **Beldy Castle** was built at the beginning of the 20th century. **The complex of Wesselényi Castle** actually includes more buildings and areas, such as: the castle itself, the park (today designed as part of **Jibou Botanical Garden**), the curia, the riding arena, the greenhouse, the stables, the barn, and the crypt, nowadays all classified as historical monuments of national importance. **"Vasile Fati" Botanical Garden** in Jibou, founded in 1968, is the main tourist attraction in the county according to the number of visitors, along with Porolissum archaeological site. It covers an area of 24 ha and has a rich dendrological fund of exotic plant species. The botanical greenhouses shelter a valuable and varied collection of tropical, subtropical and Mediterranean plants, which are grouped systematically or ecologically. The garden also includes a high pavilion for the palm tree collection, a sector for useful plants, and a very large sector for ornamental, herbarium and museum plants.

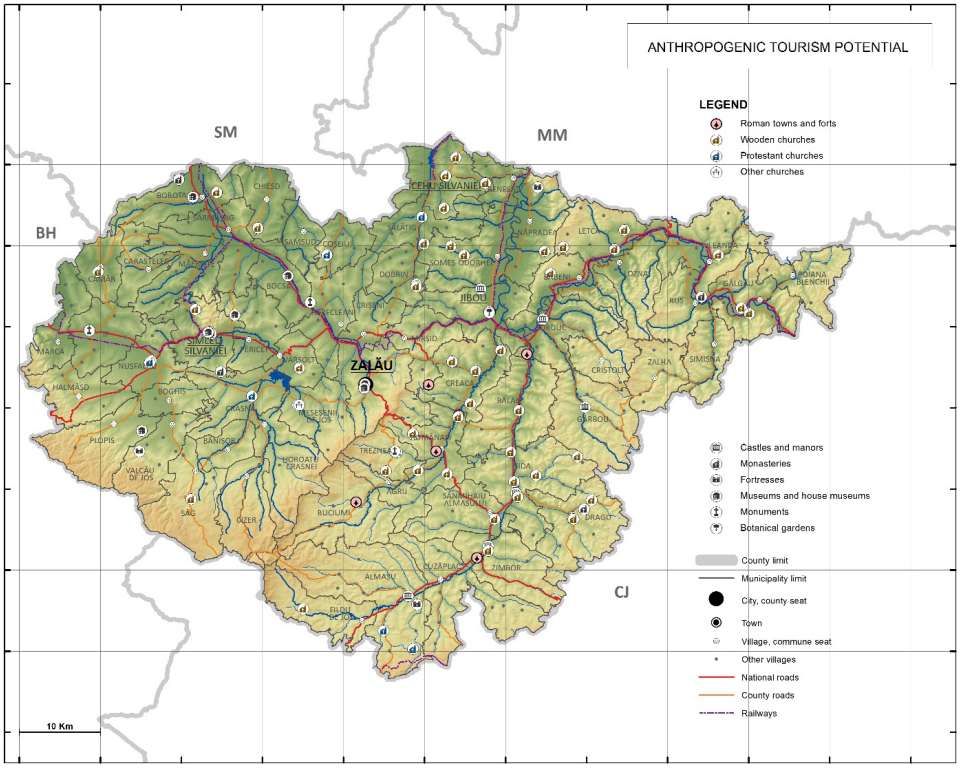

Fig. 1. The anthropogenic tourism potential of Sălaj County, Romania.
Source: the authors.

Beldy Castle was built at the beginning of the 20th century by the Beldy noble family in a beautiful oak forest. For many years, it served as a hospital for patients with neuropsychic disorders.

Fig. 2. Bay Castle in Treznea, before its collapse.
Photo by Raularian Rusu

Among the other castles and manors, one may list: **Bethlen Castle** in Dragu (historical monument of national importance), built during the 18th and 19th century, Bay Castle in Treznea (unfortunately collapsed), Csáky Castle in Almaşu (also very degraded), Zsombory Castle in Zimbor, Haller Castle in Gârbou (in ruins), Bánffy Castle in Nuşfalău, Josika Castle in Surduc, Hatfaludy manor in Hida.

A very vast category of tourist attractions in represented by **churches** and **monasteries**. From this perspective, there are many churches across the territory of Sălaj County, and especially the wooden churches are classified as historical monuments of exceptional value.

The wooden churches are very representative for Sălaj County. Their number is very high, and most of them are classified as historical monuments of national importance. In their majority, they are either Orthodox or Greek-Catholic. The wooden churches represent more than half of the objectives found on the list of historical monuments of national importance in Sălaj County.

Fig. 3. The wooden church in Racâş. *Photo by Raularian Rusu*

The wooden churches in Baica, Ciumărna, Fildu de Sus, Letca, Poarta Sălajului and Vădurele were also included on the list of cultural heritage values of national interest (historical monuments of exceptional national value) according to Law 5/2000. Others, such as those in Sânmihaiu Almaşului, Sânpetru Almaşului, Hida, Racâş, Domnin, Voivodeni, Tusa, Topliţa, Poienița, Zimbor, Creaca, Doba, Ulciug, Brebi, Brusturi, Camăr, Derşida, Cehei, Chieşd, Dobrin, Dragu, Şoimuşeni, Romita, and Bălan, are included in the list of historical monuments of national importance. Many of these churches were built between the 16th and the 19th centuries by different specialized craftsmen. They preserve original paintings on wood, wall paintings, ancient decorations and objects, and they are mostly appreciated for their unique architecture at European and global level. Some of these churches have been moved from their original site to other places, in other villages, therefore becoming "travelling churches". Even more recently, one of the wooden churches in Letca, the one named as "belonging to the nobles", has been transported and is currently

located in the courtyard of the University of Oradea. The wooden church in Cizer, built by Horea and his team of craftsmen, was moved in 1968 to the Ethnographic Museum of Transylvania in Cluj-Napoca.

A number of wooden churches in Sălaj County were integrated in the project "The itinerary of wooden churches in northern Transylvania", and were the beneficiaries of investments from the side of Sălaj County Council, which used funds from ROP 2007-2013.

Apart from the wooden churches, the regular (stone) churches have also a certain importance for tourism, especially the older ones. Therefore, one remarks the **Protestant churches** in Nuşfalău, Cehu Silvaniei, Coşeiu, Meseşenii de Jos, Mineu, Sfăraş, Crasna and Stana, built in Gothic or Renaissance style. Some of these churches have some later additions, such as the wooden bell towers, which were built separately from the main building of the church. Most of these churches are historical monuments of national importance.

Among the other stone churches that are included on the list of historical monuments of national importance, only two belong to other denomination than the Protestant one, namely the **Roman-Catholic Church of Şimleu Silvaniei**, built in a late Gothic style under the patronage of the Báthory family, with some later additions (including the Baroque tower), and the **Orthodox Church of "The Dormition of the Theotokos" in Meseşenii de Sus**.

The monasteries are in a lower number compared to those in other counties, and are less famous, as they are more recent. However, the monasteries in Bic, Bobota, Voivodeni, Rus and Strâmba attract numerous tourists, especially those focused on religious tourism. The number of tourists increases on the feast days. One remarks the **Strâmba monastic complex** that includes, apart from the wooden church, a dendrological park and a small zoological park.

The museums and memorial houses represent a special category. The **County Museum of History and Art in Zalău** stands out, as it includes sections on history and archaeology, as well as an impressive art gallery. **"Ioan Sima" Art Galleries** are also remarkable, and they comprise mainly paintings, donated by master Ioan Sima. In Şimleu Silvaniei one finds the **Northern Transylvania Holocaust Memorial Museum**, which was designed by the Jewish community within the town synagogue, a building which is a historical monument itself and has been partly restored. A smaller-sized ethnographic museum, named **"Ligia Bodea" Museum of Folk Art**, has been established in the village of Iaz (Plopiş commune), comprising three traditional peasant houses, as well as items collected from the local inhabitants. Smaller-sized school museums function in Meseşenii de Sus, Gâlgău, Agrij, Ciumărna, Şimleu Silvaniei, Buciumi. There is also a worthy proposal to establish a Natural History Museum within Jibou Botanical Garden.

Memorial houses are strictly connected to the personalities born in the county. Among these, one remarks **"Iuliu Maniu" Memorial House** in Bădăcin (Pericei), which was once in a state of degradation, but has been partly restored. Another memorial house dedicated to Iuliu Maniu exists in Şimleu Silvaniei, where the politician lived for a while, but it would need urgent repairs to become a tourist attraction once again. In Bobota, the **Cultural Complex Şincai-Coposu** has been established, in memory of the two distinguished people born there, Gheorghe Şincai and Corneliu Coposu. One should also mention **Ady Endre Memorial House** in Zalău and **"Simion Bărnuţiu" Cultural Centre** in Bocşa.

In the city of Zalău, there are many buildings of historical interest, such as the Town Hall, "Silvania" National College, the "Transylvania" building, "I.S. Bădescu" County Library, the barracks (now the County Centre for Culture and Art), "Simion Bărnuţiu" School, as well as the Orthodox Church ("The Dormition of the Theotokos"), the Roman-Catholic Church, the Protestant Church, and the Orthodox Cathedral of "The Holy Friday".

Among the monuments and statues, one remarks the monument dedicated to Michael the Brave, on the hill near Guruslău, which reminds of its victory there in 1601. The event is celebrated each year in August, when a folk party is organized, including songs and dances. The monuments in Ip and Treznea, raised in memory of the victims of Horthy's regime in World War II, are also visited.

The Centre for Culture and Art of Sălaj County organizes annually a series of events, such as: the National Culture Day, the National Day of the Union of the Principalities, "Farsang" (Hungarian cultural event), "Mărţişor" traditional fair, the Hungarians' Day, the "Măsuriş" in Pria (traditional celebration in the village of Pria), the Collectors' Fair, "Viva la Musica" National Interpretation Contest, "Transylvanian Echoes" Chorus Festival, "Sălaj Proud Song" Contest – Festival, Sălaj Minorities Festival, the National Festival of Codru Area Song and Dance, "Icon on My Soul" glass painting camp, the international folk festivals "At the Fountain of Longing", "Someş, your songs", "Meseş Echoes", "Tovishat" culture days, the Grape Feast, "Muza Fest" Art Festival, "Padif" National Theatre Contest, The Days of the City and Porolissum Roman Festival – Zalău (mainly organized by Zalău City Hall), Porolissum Fest, "Cinelatino" Film Festival, Sălaj Velo Tour, the mountain-bike marathon.

Many of these events attract a high number of participants.

The vineyard tradition in the county has a special importance, as it is able to attract interested tourists. The intangible heritage also comprises local customs and traditions, as well as traditional activities and manners of living which may be an attraction themselves for those who wish to relax, far from the urban environment.

Therefore, the analysed area has enough arguments to be integrated in the regional and national tourism flows, but also to be become involved in the international (global and European) tourism and to attract tourists from the neighbouring countries (especially Hungary) as well as from the whole world.

4. CONCLUSIONS

In a similar manner to our previous paper (Rusu *et al*, 2020), one may conclude that Sălaj County has a wide range of anthropogenic attractions, such as castles, fortresses, wooden and stone churches, monasteries, interesting archaeological sites, museums, a well-known botanical garden, and many events. Nevertheless, this potential is far from being capitalized in terms of tourism. Except for Porolissum archaeological site and Jibou Botanical Garden, many of these attractions are virtually unknown even in Romania, and they are mostly visited by locals and, in the case of churches and monasteries, by pilgrims. Urban and business tourism is not so developed because the towns are rather small, and even Zalău (the largest town) has few attractions compared to other cities in north-western Romania. Rural tourism is also underdeveloped due to competition from other more famous regions, not far away, such as Maramureş. Therefore, there is need for a better overall image of Sălaj County as a tourist destination, by setting up of a county strategy in that regard.

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SUSTAINABLE METROPOLITAN DEVELOPMENT – GOVERNANCE CHALLENGES IN CLUJ METROPOLITAN AREA

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ABSTRACT. - Sustainable Metropolitan Development – Governance Challenges in Cluj Metropolitan Area. Nowadays the success of the urban management is largely dependent on the capacity to adopt efficient instruments that are able to deal with and adjust the complexity of urban systems to the necessities demanded under the ethos of sustainable development. Despite the various difficulties caused by the urbanization processes, there is also prospect to achieve progress in the creation of sustainable regions. Notwithstanding, sustainable development is dependent on whether the right tools and methods are used in the urban management practice. Therefore, in the paper we offer a review of the development challenges in the Cluj Metropolitan Area (CMA) and establish a framework for approaching sustainable metropolitan development from an integrated governance perspective. The mechanism relies on the fact that the territorial reality of urban sustainability can only be effective if addressed from a metropolitan perspective. The approach is analysed by the use of interviews with professional experts and public officials representing the CMA. The results show that a metropolitan wide vision, cooperation, leadership and community involvement are prerequisites of metropolitan sustainability.

Keywords: *urban planning, Cluj Metropolitan Area, integrated governance, sustainable development***.**

INTRODUCTION

Sustainable development and sustainability have been defined in many ways (Winograd and Farrow, 2009). The concept and practical use of sustainable development has had many different purposes. When seeking the origin of "sustainable development", the credit is usually given to the report published by the WCED, Our Common Future: From One Earth to One World (Estes, 1993) which defines sustainable development as a process of change that allows current human needs to be satisfied, without compromising the

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possibilities of future generations (WCED, 1987). Nonetheless, the concept involves the consideration of two important dimensions – time and space – with the components of economic, social and environmental aspects and at the same time refers to a process such as development and to its condition, the sustainability (Winograd and Farrow, 2009). Nevertheless, according to Zeijl-Rozema *et al*. (2008) issues that are entirely associated with sustainable development could also be problems of the governance practice that acts for sustainable development. As a consequence, the lack of dialog among various stakeholders and the improper planning instruments used by these, can hinder the progress in implementing sustainable actions.

The specific term 'sustainable urban development' is a concept strongly related to sustainable development. However, due to the complexity of cities, sustainable urban development is much more (visibly) interrelated with other policy fields, such as housing, infrastructure, business developments. The sustainable urban development concept does not have specific indicators to make it measurable in the way that sustainable development does. Measuring the sustainability of cities and urban areas requires a set of tailormade indicators and norms yet, the lack of consensus on the selection of optimal number of indicators makes this task difficult (Tanguay *et al*., 2009). On the other hand, an urban area is enabled to achieve sustainability through good governance and integrated planning. Even so, according to Kemp and Parto (2005) much is expected from a "good governance". In the view of the European Commission the good governance is made up by openness, participation, accountability, efficiency, coherence and great attention given to the subsidiary (CEC, 2001). On the other hand, good governance is based on well-established and sophisticated public administration systems which have as their basic elements the rational specialization of tasks, transparency and accountability of instruments, highly skilled civil service and well-designed rule of law (OECD, 2002). Consequently, the answer for the current issues supported by the urban development is that the dynamics of the territorial development must be accompanied by the necessary methodological tools and new systems of decision making in order to achieve a sustainable progress.

CURRENT ISSUES IN URBAN PLANNING AND DEVELOPMENT IN ROMANIA

In Romania, after 1989 two levels of territorial planning were distinguished. The urbanism, applied to local administrative units, and spatial planning, applied to larger divisions such as counties and regions; both activities result into separate urban and spatial planning documents and regulations

(Petrișor, 2010). The new determinative factors in the intensity of territorial reorganization and urban development were the political democratization, increased globalization of the economy, privatization, European integration but also severe unemployment which led to significant transformation within the settlements and change of urban spatial structures (Benedek, 2006).

Nevertheless, the urban development in the last 30 years turned into complex territorial structures such as metropolitan areas. The EU accession brought new challenges related to the urban phenomena by turning the urban – especially, metropolitan settlements into connection points at European level through the promotion of cohesion and competitiveness for polycentric urban development (Grigorescu *et al*., 2012). Therefore, it is important to understand the role of certain key factors and instruments in the complex process of development and the main driving forces in the changes set off by economic, social and political processes. However, if we look back on the events of recent years, we witness a process of *internal transformation* of urban settlements. This consists in enlargement accompanied by phenomena such as relocation of the population from smaller cities to metropolitan settlements, large percentage of emigration to other countries. Next to this, we also witness *functional transformations* within communities caused by the need for commercial establishments, offices as well as residential flats and often times the reutilization of parks, green areas and waterways for unsustainable purposes that convert to a contradiction with the principles of a sustainable urban development. Hence, there is limited consistency in new residential developments which is defined by the absence of other legal and operational tools that should regulate land uses and enforce the creation of urban networks. Another significant issue in ensuring the consistency of urban development is connected to the setup of new forms of participation in financial contributions, an essential constituent for infrastructure and utility development (Suditu, 2012).

CHALLENGES IN URBAN PLANNING AND DEVELOPMENT IN CLUJ METROPOLITAN AREA

Territorial cohesion started to receive increasing attention in Romania, after the country's accession to the European Union. As a result, a new form of territorial governance has been introduced, the metropolitan area which aimed to enhance cooperative principles but also to facilitate better access to EU funding. Accordingly, the metropolitan areas in Romania are voluntary intercommunity associations between the urban core and the surrounding

localities situated in a 30 km distance from this. Cluj Metropolitan Area is situated in the North-West region of Romania, it covers over 1600 km^2 with a population of 441846 inhabitants (NIS, 2019) of which 74% represents the urban core. The metropolitan area consists of the urban core, Cluj-Napoca, and its 19 neighboring localities that joined together and are divided into two metropolitan rings. The first metropolitan ring consists of seven communes: Floreşti, Feleacu, Ciurila, Apahida, Chinteni, Baciu and Gilău. The second metropolitan ring is composed by: Aiton, Bonţida, Borşa, Căianu, Cojocna, Gârbău, Jucu, Petreştii de Jos, Săvădisla, Sânpaul, Tureni and Vultureni. According to the Intercommunity Development Agency for CMA, the strategic directions of the CMA revolve around five main elements. In particular, the better and more efficient infrastructure development, the increase of economic competitiveness, human resource development, improvement of environmental quality, development of rural economy and involvement of all member communes in the socio-economic development and planning process of the CMA. Nevertheless, the success of metropolitan sustainability is largely dependent on the synchronisation of the dynamic conditions existent in the urban-rural interdependency. Considering the fact that in the case of CMA the urban element of this duet is represented by Cluj-Napoca and the rural element by the 19 surrounding communes, the set-up of priorities and tailor-made initiatives that support sustainable development, presents a stern challenge.

Consequently, the territorial reality of the CMA brings various challenges in the metropolitan planning and governance process. Some of these realities evolve around the issue of residential development. After the 1990s, as a consequence of the restitution process, large agricultural areas were converted to built-up areas which led to the emergence of suburbanization. Next to this, after the regime change Cluj-Napoca experienced a transition from the production industries to the services sector which led to new developments that had significant effects on the labour market dynamics and also the population change. Furthermore, the first metropolitan ring experienced increased population growth not only because of the effects of suburbanization but also due to immigration from other counties. Nevertheless, the first metropolitan ring experienced a much higher increase in the twenty-year period (2000-2020) than the municipality (Fig. 1). The population of the first metropolitan ring grew by almost 133% whereas the municipality experienced 2.86% increase in the same period.

The greatest increase can be seen in the commune of Floreşti with 533% in the twenty-year period (2000-2020). This is followed by the communes of Apahida with an increase of 85% and Baciu with 59% (fig. 2).

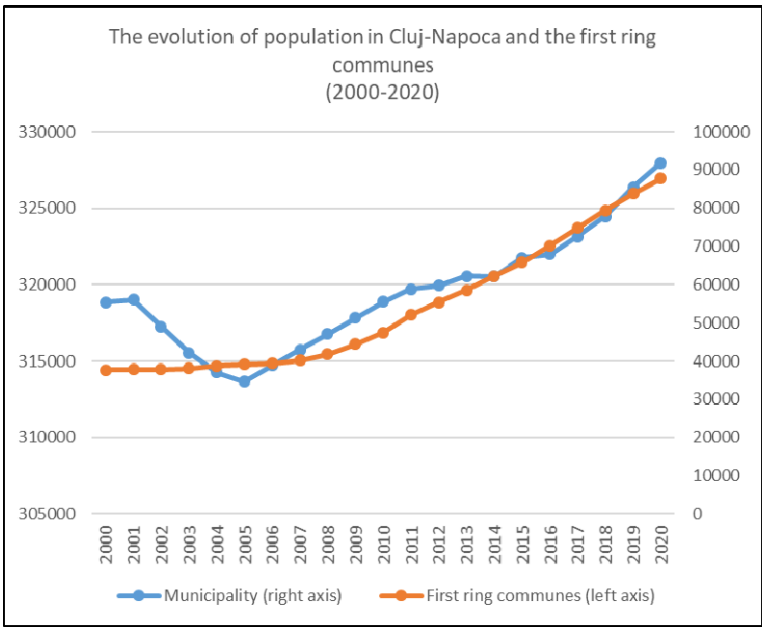

Fig. 1. The evolution of population between 2000 and 2020.
Source: NIS, 2021

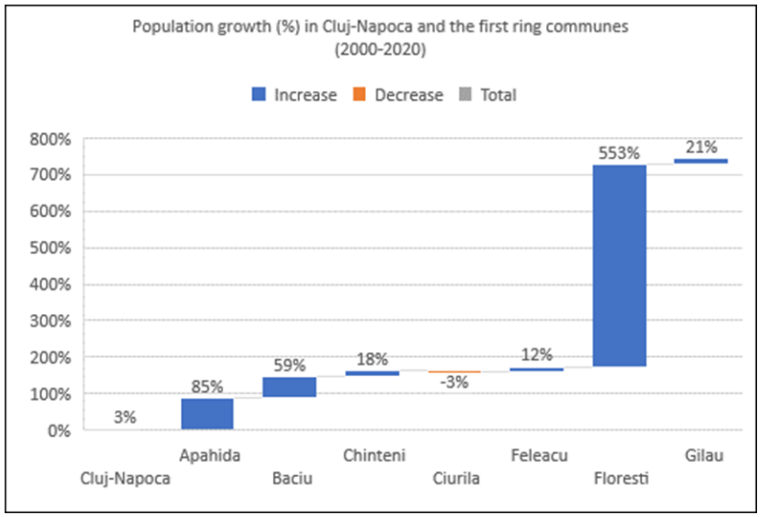

Fig. 2. Population growth in Cluj-Napoca and the first metropolitan ring (%).
Source: NIS, 2021

Further, the suburbanization prompted significant increase in the housing stock as well which manifested itself not only in the urban core but also in the neighbouring communities. Nonetheless, these rapid changes often times were taking place at the expense of the environment and brought several socio-economic implications that present a real challenge to remediate. The greatest increase of the residential housing took place in Florești with 121% in a ten-year period followed by Baciu with 63% and Chinteni with 39%. The municipality experienced a 27% increase of the residential housing stock in this ten-year time span. Chinteni is another example that experienced a spectacular increase in residential buildings as of 2010 to 2020, it achieved a 39% increase in a ten-year period (fig. 3).

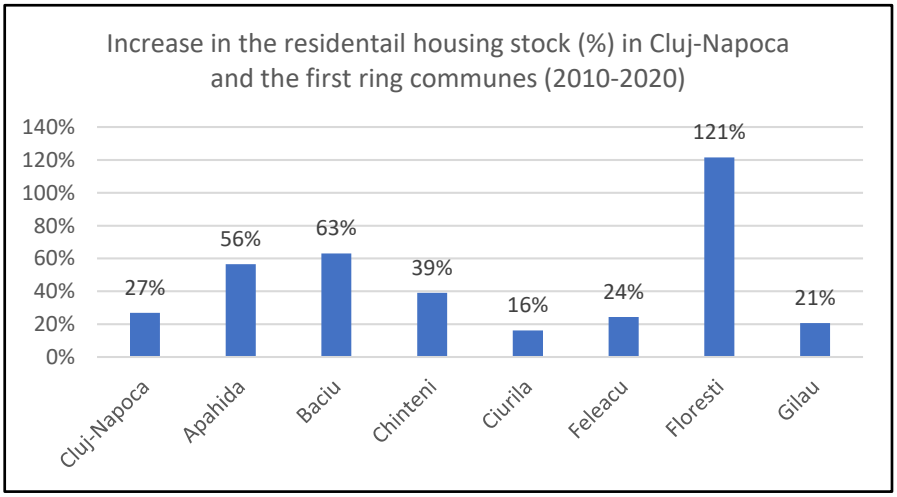

Fig. 3. Increase in the residential housing stock (%).
Source: NIS, 2021

Due to the dramatic changes with regard to demographics, the residential housing but also the composition of the population experienced by the first metropolitan ring, the face of the rural areas altered as well. New necessities arouse in terms of transport infrastructure, utility infrastructure but also in terms of healthcare, education and recreational facilities. Likewise, the negative impact of the agglomeration is even stronger in the second ring communes where deficiencies are much deeper and despite of various approaches for finding cohesive solutions, they remain peripheralized (Nagy and Benedek, 2021) in the CMA.

INTEGRATED METROPOLITAN GOVERNANCE

Over the last decades integrated governance received increasing attention in terms of bringing together different stakeholders from a fragmented environment with the aim to collectively discuss and define common objectives and take a networking approach to the public governance practice (Rydin, 2010; Le Galès and Borraz, 2010). Therefore, integrated governance became not only a new model but also a prerequisite for sustainable planning and development. Nevertheless, according to Hamilton (2014), there is a certain disconnection between governance capacity that takes place between a jurisdictional system of a metropolitan area and the governance needs that take place at the entire level of the metropolitan area. Various recurring factors have been defined in the academic discourse that improve organizational capacity and lead to effective metropolitan sustainability (Healey, 1998; Wheeler, 2000; Rydin, 2010) such as integrated territorial planning, participative planning, performance measurement, network governance, financial incentive structures, public education and learning, political organizing. Our analysis has a specific focus on several of these factors that will be discussed in the subsections below.

SUSTAINABLE METROPOLITAN GOVERNANCE – A STAKEHOLDER PERSPECTIVE

In this section we summarize the results of a series of interviews realized between April 2016 and November 2016. The interviews followed a predefined interview guide. A total of thirty interviews were connected with representatives from the civil society, representatives from the private, academic sectors as well as decision makers from most of the local authorities of Cluj Metropolitan Area. In our analysis the interviewees are grouped in two domains and therefore divided in two categories. Twelve interviewees were professional experts (PE) and eighteen were public officials (PO). In the followings we report several points about which we registered agreement and disagreement among the interviewees.

Healey (1998) claims that a strong management has the capacity to develop an integrative thinking which connects the economic, social and environmental potentials of a defined area. In support of this, Van den Berg and Braun (1999) suggest that the creation of a common vision is vital which must be translated into well-defined objectives and included into strategies and plans meant to guide the planning and development of a metropolitan area.

First, however, we must see how the idea of sustainable development is perceived by those who are active players in the everyday practice of integrated governance. Therefore, the interviewees were asked to define with their words what sustainable development means for them. Based on the answers given, we identified a total of six categories: self-sustaining projects, environmental protection, viable governance, balanced exploration of resources, community development and innovation/technology. Notwithstanding, the majority of the definitions proved the observation revealed by Basiago (1995) who indicated in his study that most professionals form an understating of sustainable development based on their professional background. Consequently, the most frequently mentioned association of sustainability was first, with self-sustaining projects, and balanced use of resources, the second.

Our actions that we take through the development projects to have a continuity, to give the possibility to be carried on even after we implement them – to follow a natural continuity (PE4).

Sustainability means the moderate exploitation of the resources at an extent that it can assure a certain degree of renewal. (PE2)

In the following section of the interview, the interviewees were asked to enumerate the most important problems and challenges at metropolitan level. After grouping the answers, the analysis shows that the most frequently mentioned problems closely correspond with the challenges discussed in the subsection above. Most of the answers reflected on subjects such as chaotic housing development and mobility, accessibility which put in the urban-rural context brought two-edged remarks. Within the urban core the issue of mobility was seen in difficulties created by traffic congestion, lack of parking spaces or bicycle lanes. In the rural context this materializes in the lack of infrastructure development as for example the road network or poor transport connection. Also, in the rural context the public utility deficiency appeared as an important issue, as one public official stated

We also need to find ways to extend the network of the water supply and there is no sewage network either. (PO30)

A principal issue that dominates over the entire metropolitan area was related to the weak governance mainly ascribed to the fact that there is no unitary and stand-alone territorial entity, a matter that deepens the fragmentation and highlights the existence of administrative boundaries. According to Wheeler (2000), this is a serious issue that undermines the capacity to create a regional thinking and demands the creation of a government structure that has jurisdiction throughout the entire metropolitan area.

One of the problems is that there is only an association on the nimbus of some administrative units and not an administrative entity that has the autonomy and the power to impose certain things in terms of development which would serve the entire metropolitan area. (PE3)

In the following section, interviewees were asked to share their views regarding the integrated planning in Cluj Metropolitan Area. With relation to the presence of integrated planning, two planning documents were mentioned as guiding principles in this perspective, the Integrated Urban Development Strategy (2014-2020-2030) and the Sustainable Urban Mobility Plan (2016-2030). Nevertheless, most interviewees from the group of professionals agreed that integrated planning is only present in a "superficial manner" and they questioned the validity of these documents.

There should be or there are some documents titled this way [integrated] yet, they do not formulate thorough actions that could lead to sustainable results. We create this documents in a formal way, in a short time-span so that we meet the delivery dates. (PE6)

Another aspect that reinforced this thinking was the disbelief that a viable metropolitan vision exists. A personal vision about the metropolitan area was only formulated by twenty interviewees yet, the ideas were fragmented and mostly concentrated on the geographic areas they live in. This leads us to think that the metropolitan thinking is endangered by the lack of mutual understanding that common strategic interests should be formulated and translated into the integrated planning documents. The formation of the common interest is indeed regarded as a key to the success of an effective metropolitan thinking.

The vision is built strategically through specific steps that need to be taken. I think that the most important would be to analyse the strategic interests of each of these twenty communities and perform a cross-sectional analysis that result in a package of common interest. This should be the first step in defining a vision. (PE10)

Beside the integrated planning practices, leadership and support for cooperation are also considered to be indispensable elements in increasing the organizing capacity to deliver effective metropolitan governance (Le Gales, 1998; van den Berg and Braun, 1999; Wheeler, 2000). Especially political leadership is considered to be essential in strengthening region-wide planning (van den Berg *et al*., 1999) as it has the ability and willpower to involve a wide range of public and private stakeholders, yet leadership is not limited to political connections (Emerson *et al*., 2011). Therefore, the interviewees were asked to give examples of actors that they consider to be most important in the promotion and development of the CMA. There was a general agreement that the most important actors in this process are the Cluj County Council and the Local Authority of Cluj-Napoca. These two entities were designated by the most public officials and professionals, nevertheless, there was a general

feeling that the political leadership is missing or weak. In contrast, the representatives of the civil society considered that businesses, the individual local authorities from the CMA but also the civil sphere are the ones able to show willingness to initiate and support cooperation and networking. Emerson *et al*. (2011) also highlights the fact that whoever actors take up the initiative for leadership, they have to be able to prioritise common solutions and have the skill to remain impartial when it comes to bringing together different preferences of various actors. Nevertheless, leadership is not a one-way exercise but rather an interactive process (Kirchner, 2014) and despite the traditional academic literature that suggests that is a direct control over others (Kouzes & Posner, 1989), it is a skill that can be improved and a necessary ability and rational conduct that must be up taken when there is determination for common direction. The main answer to this section can be summarized with the view of one interviewee from the group of professional experts who pointed that, leadership must be taken up by those "who usually give the direction and speed - the big players" (PE12) - referring here to the Cluj County Council and the Local Authority of Cluj-Napoca.

Another factor that contributes to effective integrated governance is the participative planning. At the question of whether the public is involved or not in the planning process, the answers were almost fairly divided. One part of the interviewees believed that public involvement exists, yet the other part was on the opinion that the public is not interested in such initiatives. At this point however, we could also see an urban-rural difference as most interviewees stated that in the urban core there is more openness from the public to participate in such initiatives than in the rural areas. The various tools of public involvement have also been brought to the discussion and it has been pointed out that the use of digital tools is much more efficient in the urban than in the rural context. The composition of the population was another element that was considered to define the openness to participate in such proceedings and it was a general agreement that the more dynamic a community, the better the participation is. On the other hand, it was also pointed that we also need to understand that the more diverse a community is, the more divergent the interests are. (PE3)

Nevertheless, there was a general feeling that for specific problems an increasing number of community members become more vocal and various groups are formed that support or intend to hold back specific projects. Some representatives of the civil society however, pointed that in order to gain openness for such participation, the local authorities must show determination to consider and implement "the voice of the public".

CONCLUSIONS

Due to the rapid changes experienced in the last thirty years, Cluj-Napoca became an example of a sprawling city with increased dependency on resources which make it extremely reliant on the assets of the neighboring communes. Nevertheless, this is a bilateral necessity valid also for the adjacent territories that experience various socioeconomic developments in consequence of their proximity to the rapidly developing urban core. Based on our investigation, the stakeholders' understanding of the concept of "sustainability" is largely based on their occupational background. Its definition relies mainly on the viability of projects that have the capacity to sustain themselves and it is also connected to aspects of environmental protection. In terms of metropolitan challenges that should receive immediate action, the stakeholders pointed out the question of transport infrastructure and mobility, the chaotic planning that should receive the framing of more strict regulations and rules by the planning authorities. Next to this, there was a general agreement between the interviewees especially from the second ring communes that increased investments and more integrated planning is needed in the provision of basic public utility services such as water or sewage networks but also the lack of integrated planning was seen as a major challenge. The analysis shows that one of the major dysfunctions from governance perspective is the inexistence of an entity which would have decisional power in the coordination and governance of the metropolitan area. The lack of political leadership with regard to an integrated metropolitan approach has been mentioned and the effectiveness of the partnerships has been questioned. Next to this, the two integrated plans of the region were not considered to be sufficient to achieve sustainable development. Several interviewees considered that a regional vision or thinking mentioned by Wheeler (2000) as a vital element of regional sustainability, exists in the CMA. However, many were more confident in formulating a vision for their own geographic area. As a consequence, more efforts in this perspective are needed. Additionally, more integrated territorial approaches are needed and require increased attention from practitioners. Regarding the existence of participative planning, the answers were at some level confident in this respect. Participative behavior was believed to be more visible in the urban than in the rural areas nevertheless, for networking to function such condition becomes a must. As a general conclusion we can state that based on the terms of sustainability as a concept, the governance practice should aim for a long-term view and work in a balanced and integrative manner with regard to the economic, social and environmental aspects. This can only be achieved with common vision and planning aimed at the entire metropolitan area.

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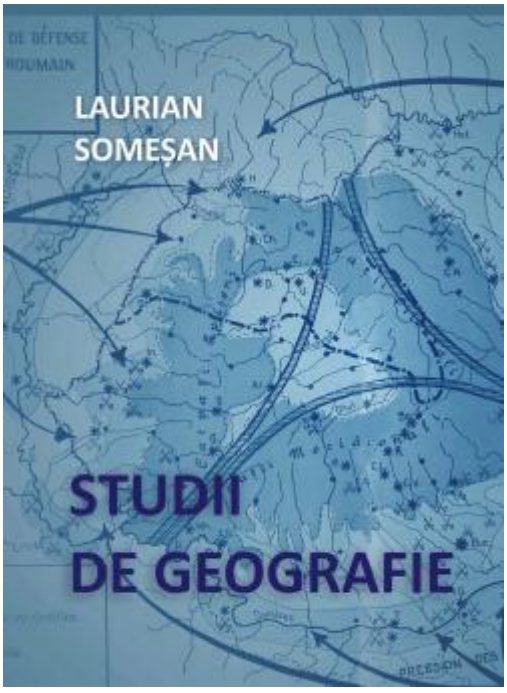
STUDIA UBB GEOGRAPHIA, LXVI, 1, 2021 (p. 127-129)
(RECOMMENDED CITATION)

BOOK REVIEW

Laurian Someșan. Studii de Geografie, 2020, Ed. Argonaut, Cluj-Napoca, editor: Alexandru Păcurar



Pe lângă activitatea didactică şi de cercetare, cu editarea unor cursuri şi articole din domeniul Geografiei turismului şi Geografiei economice (ex. *Turism Internațional*, 2018, Presa Universitară Clujeană, 464 pagini), preocupările academice ale d-lui conf. dr. Alexandru Păcurar s-au concretizat în ultimii ani într-o serie de volume care ar putea fi grupate sub tema ***restituiri***. Este vorba despre lucrări care, în urma unor minuțioase documentări în diverse biblioteci din țară, arhive personale și contacte cu personalități din diverse domenii (amintim aici spre exemplificare vizitele de documentare la Arhivele Naționale din Cluj-Napoca și București, la Biblioteca Națională, dar și comunicarea nemijlocită cu regretatul Neagu Djuvara), au adus la lumină aspecte ale evoluției și devenirii Facultății de Geografie din Cluj-Napoca ori ale Institutului de Geografie din Cluj ca parte a Almei Mater Napocensis. Se poate menționa în acest sens, impresionantul volum apărut la Centenarul Universității din Cluj - *Lucrările Institutului de Geografie al Universității din Cluj. Travaux de l'Institut de Geographie de l'Université de Cluj,* Editura Argonaut, 648 pagini; se adaugă volumele dedicate memoriei şi activității unora din personalitățile Geografiei clujene - *Profesorul Alexandru Savu (1920-1992). In memoriam*, (2017, Ed. Argonaut, 146 pagini) şi *Nicolae Dragomir. Oierii mărgineni*, (2014, Ed. Argonaut, 426 pagini).

Cea mai recentă publicație care continuă seria acestor *restituiri*, intitulată ***Laurian Someșan. Studii de Geografie*** (2020, editura Argonaut, 681 pagini, Cluj-Napoca) aduce în atenția mediului academic clujean (și nu numai!) aspecte biografice ale unei personalități academice marginalizate în anii regimului comunist, a cărei memorie a fost lăsată într-un con de umbră inerțial şi în perioada postedecembristă.

Volumul se deschide cu o selecţie de studii emblematice pentru activitatea academică a profesorului Laurian Someşan, publicate în perioada 1936-1944: Viaţa umană în regiunea Munţilor Călimani, Vechimea şi evoluţia agriculturii române*şti în Transilvania*, *Câmpia Tisei ca barieră etnică*, *Le sol roumain*. Cititorul are ocazia să (re-) descopere frumuseţea unor studii clasice de geografie, care prin tematică, terminologie şi metode de analiză sunt perfect racordate la preocupările Geografiei de la momentul respectiv, bibliografie-reper extrem de utilă pentru geografii de toate vârstele şi specializările din prezent.

Partea a 2-a a volumului, intitulată ***Geografi români transilvăneni în atenuarea „neliniştii spaţiilor": Laurian Someşan,*** reprezintă o detaliată punere în lumină a vieţii şi activităţii marelui geograf român. Migăloasa documentare realizată de către dl. conf. dr. Alexandru Păcurar are ca rezultat o lucrare biografică exhaustivă, în care sunt evidenţiate aspecte fundamentale ale personalităţii ce avea să se ridice în constelaţia unor nume precum George Vâlsan şi Vasile Meruţiu, a căror activitate ştiinţifică, didactică şi civică au fundamentat învăţământul românesc transilvănean interbelic. În volum se regăsesc capitole care abordează aspecte dedicate cadrului familial, locurilor şi timpurilor în care Laurian Someşan a crescut şi a trăit. Firul roşu al existenţei sale este creionat de nobile trăsături de caracter, de hărnicie, rigoare şi, mai presus de toate, de conştiinţa apartenenţei naţionale care avea să transpară apoi în numeroase studii realizate în timpul şi după finalizarea studiilor superioare de Geografie la Cluj, unde l-a avut ca magistru pe savantul George Vâlsan.

Sunt revelate cititorului aspecte ale evoluţiei profesionale, de la preparator (1926) la Institutul de Geografie (condus de eminentul geograf, profesorul George Vâlsan) al Universităţii "Regele Ferdinand I" din Cluj, până la poziţia de rector (1947-1948) al Academiei de Înalte Studii Comerciale şi Industriale „Regele Mihai I" din Braşov, cu recunoaşterea valorii sale profesionale până la instaurarea regimului comunist şi marginalizarea sa profesională şi socială în perioada comunistă, căreia însă i-a răzbătut prin meritocraţie până în anul 1971 (anul pensionării).

Din tot acest parcurs profesional, în volum se acordă o atenţie deosebită activităţii academice, didactice şi ştiinţifice din cadrul Institutului de Geografie al Universităţii „Regele Ferdinand I" din Cluj. Documente oficiale, fotografii dar şi analize de context a informaţiei din epocă îl aduc pe cititor în contact cu cadrul şi modul de desfăşurare a activităţii de către Laurian Someşan. De remarcat este faptul că autorul a descoperit în arhive (publice ori private) şi utilizează fotografii şi documente inedite din perioada de referinţă; se remarcă astfel fotografii-document aşa cum este cea (pag. 305) în care apar geografi francezi (ex. Emmanuel de Martonne) şi români (ex. Vasile Meruţiu) în timpul unei excursii de studii în Munţii Apuseni din anul 1936.

Se adaugă capitole care reconstituie perioada petrecută la Braşov ("între zenit şi nadir", cum o numeşte autorul) şi la Suceava, punctând şi perioada de epurare din societatea şi învăţământul românesc, bolşevizate, cu marginalizarea extremă, carcerală, a profesorului Someşan.

Demersului de reconstituire biografică atent documentată, autorul îi adaugă şi un foarte bine argumentat subcapitol care prezintă elementele definitorii ale operei ştiinţifice (capitolul II.3), în care sunt esenţializate principalele preocupări ale profesorului

Someşan; modul de realizare a studiilor, paleta vastă a preocupărilor, conturează imaginea unui geograf complet care face apel cu profesionalism desăvârşit la arsenalul teoretic şi metodologic al diferitelor subramuri ale Geografiei, rezultatul fiind constituit de studii publicate atât în limba română cât şi în limbi de largă circulaţie (franceză, germană).

Finalul volumului îl aduce pe cititor în contact cu viaţa şi activitatea profesorului Someşan prin corespondenţa acestuia cu diverse personalităţi. Aceasta deschide o cale suplimentară de înţelegere şi apreciere a geografului, a intelectualului, a dascălului şi a cetăţeanului, pentru care principiile morale şi cele academice erau de nedespărţit.

Deosebit de amplă, lucrarea înglobează în paginile ei atât informaţii de tip documentar, arhivistic şi biografic, dar şi explicaţii contextuale, concretizate în comentarii ori trimiteri pertinente la diferite aspecte istorice, sociale şi politice ale perioadei. Acestea din urmă au meritul de a clarifica cititorului mai puţin familiarizat cu perioada interbelică şi cea postbelic-comunistă aspecte necesare unei corecte înţelegeri a activităţii şi personalităţii profesorului Laurian Someşan, geograf eminent, cu verticalitate morală şi probitate profesională care însă a avut de suferit ostilitatea şi opresiunile regimului comunist. Graţie volumului editat de către dl. conf. dr. Alexandru Păcurar, readucerea în contemporaneitate a studiilor realizate de către Laurian Someşan şi valorizarea lor bibliografică de către mai tinerele generaţii sunt, cu siguranţă, modalităţi de repunere în drepturi a personalităţii academice dar şi de recalibrare a memoriei colective a breslei din care cu cinste a făcut parte.

SORIN FILIP

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