ISSN 2384-9398

GeoProgress Journal

Volume 5, Issue 1, 2018

GEOPROGRESS EDITIONS
NOVARA

Geoprogress Association

at University of Eastern Piedmont
Via Perrone 18 – 28100 Novara, Italy

For the earth's ecosystem and human communities progress

Geoprogress is not-for-profit organisation founded in 2011 by professors from several Italian universities and scientific institutions with the aim at fostering knowledge, empowering humanity, and improving the quality of human resources, territories and the Earth's ecosystem. Among the activities Geoprogress is carrying out according to its mission, (www.geoprogress.eu), there is the publication of journals, at national and international level**,** and other kinds of writings, all of which are open access.

President : Francesco Adamo,

Board of Directors: Francesco Adamo, Vittorio Amato (Vice-Presidente), Eugenio M. Braja (Treasurer), Lorenzo Gelmini, Maria Paola Pagnini

Board of Auditors: Patrizia Riva (President), Paola Vola, Chiara Morelli.

Donations to Geoprogress
for supporting its editorial and solidarity activities

Consistent with the association's aims, this and other on line publications of Geoprogress are open access but they obviously have a cost. The same is true for initiatives concerning the protection of natural environments, landscape, cultural heritage, mainly for development cooperation programs in poor countries.
For these reasons, we urge readers to make a donation to the Association and possibly join and make a personal contribution.

*You can send your **donations** through: Bank transfer to Geoprogress (Novara, via Perrone 18) at BANCA PROSSIMA, Fil. 5000, Novara (Italy)*
*c/c **16996, Abi 03359,** Cab **01600,** Cin **J***
*Code Ian: **IT22V0335901600100000001699***

ISSN 2384-9398

GeoProgress Journal

Volume 5, Issue 1, 2018

GEOPROGRESS EDITIONS

NOVARA

GeoProgress Journal

Is a serial publication of scientific papers edited by Geoprogress in line with its strategic objective to increase and disseminate knowledge in order to contribute to the progress of humanity.
In particular, it is an open access e-journal submitted to a double-blind peer review.

Via Perrone 18 - 28100 Novara, www.geoprogress.eu
E-mail: info@geoprogress.eu

Table of Contents

Editorial Note

The first two articles of this Journal issue are still papers proposed for the international conference, held in Brussels on 7 September 2017, which has been the starting event of the 2nd Geoprogress Global Forum (GGF) on 'Sustainability and Energy Issues', assuming energy the key issue for a sustainable global development. The question of how to achieve a global development which guarantees a sound, better and more equitable living environment for future generations, is not reduced to the energy issue, namely the issue of how to ensure sufficient energy and ecological security for all. Certainly, however, the energy issue is a large part of the question and is also the essential part. In this Forum, whose initiatives will continue, energy will not be considered in itself but in relation to the natural environment: to the global need to ensure a healthy environment, which is - and has to be recognized - a fundamental right of all beings. The problem is to increase energy production without increasing environment degradation, that really is dictated not only by fuels, but also by the food production itself and in particular meat. Therefore, food production that was subject of the I GGF will continue to be an important issue and the question of how to ensure sustainable energy for everyone will largely identify how to achieve sustainable world-wide development, with technologies, financial resources and cultural approaches.

Two other articles remind us of the conditions of the global financial markets with which every sustainable development project must take stock and consider some effects of the 2007 financial crisis and the long depression that followed. The third highlights that the crisis has most affected the weakest regions, accentuating the economic distance of the South from the Center-North of Italy. Considering that the financial crisis led to an emphasis on lower risk assets, real estate in particular, the fourth article seeks to understand the role of the new players in the financial system to determine the effects of their local investments and examines for this purpose the Qatar Investment Authority's acquisition of the Porta Nuova district in Milan.

The policies of various governments (regional, national and supranational) seek to respond to the center-periphery disparity, often significant even within the central regions of economic development, favouring the development of 'rural tourism', which is certainly possible and can make a significant contribution. However, investments in structures such as 'Il Ciocco' in Tuscany, which are dealt with in the fifth paper, can be understood - even if they are already an attraction in themselves and not just hotels - only in peripheral areas whose countryside are endowed with important agro-cultural landscapes and are peripheries of regions of very important tourist towns which become more and more a destination for excursions for tourists who prefer to stay in the countryside. Apart from the difficulty in most rural areas to be able to dispose of such investments, the model does not seem feasible.

Emeritus Professor Francesco Adamo, Editor in Chief.

**

Articles

INFRA-SEN: INTELLIGENT GEOGRAPHIC INFORMATION SYSTEM FOR REAL TIME MONITORING OF DISTRIBUTED INFRASTRUCTURES AND EQUIPMENTS IN RURAL AREAS

Bala Moussa Biaye*, Amadou Coulibaly, Khalifa Gaye

Abstract

The management policy of infrastructures and equipments (e.g.: hydraulic, solar, sanitary, educational, etc.) disseminated throughout the country, particularly in rural areas, generally difficult to access, is a major challenge for the technical services of the State. The Infra-SEN intelligent Geographic Information System proposed in this paper aims to offer to organizations in charge of the management of infrastructures and equipments a platform that allows them to find out in real time how the equipments work and to detect any failures. In the present study, this paper is a contribution for analyzing the conditions of remote monitoring of hydraulic equipments.

1. Introduction

As part of the development of rural areas, the State of Senegal through national agencies and helped by NGOs has launched in rural areas a vast program of equipments in various domains like hydraulic infrastructures, schools, health and energy. However, once these infrastructures and equipments are installed, unfortunately, they do not benefit from effective monitoring despite the huge budgets invested for their implementation. This paper proposes an intelligent geographic information system for remote monitoring of distributed hydraulic infrastructures and equipments. The system proposed consists of a central server for processing measures connected to an acquisition unit that monitors a set of sensors. In section 2, we make the state of the art of remote monitoring techniques and failures detection in hydraulic installations. In section 3, the paper presents the architecture of the Infra-SEN platform. In sections 4 and 5 we successively present the approach used and the implementation of the platform, as well as the results obtained. Finally, we outline some prospects for the development of the Infra-SEN project.

* Laboratory of Computer Science and Engineering for Innovation (LI3), Assane Seck University of Ziguinchor, Senegal, BP 523 Diabir Ziguinchor, balamoussabiaye@gmail.com.

2. State of the art and positioning of our contribution

2.1 Remote monitoring of hydraulic networks

We mean by remote monitoring, the monitoring via a telecommunications network (Callens, 2016). Many methods and solutions have been proposed in the literature.

Igor's thesis works (Blindu, 2014) on the development of a model of the infrastructure management assistance tool, particularly the drinking water network of the city of Chrisinau in Moldova (1200 km of pipeline). This work has two components, namely the diagnostic aspect and the decision support aspect. The methodology developed in this work uses different tools and methods: temporal databases, spatial analysis and GIS, cognitive reasoning and hydraulic modeling of flows etc.

Blaise's works (Guépié, 2013) deals with the sequential remote monitoring of the water distribution network. The objective of this work is to study the problem of the safety of drinking water by monitoring the distribution network from the water tower to the private residences. The proposed approach is based on observation of the residual chlorine concentrations provided by the sensor network. A criterion based on minimizing the probability of detection missed providing that the false alarm rate is superior, has been used in the document. A suboptimal detection algorithm has been designed. Theoretical analysis and simulation results are provided.

In order to avoid water wastage, Isenmann and al. (Isenmann et al., 2016) worked on the evaluation of the discharge from the overflow of a pumping station by the measurement of water heights. This work describes a calculation method that establishes the relationship between the water level above the base of a pump station overflow pipe and the flow discharged. The tables height/debit constructed can then be implemented in transmitters or interpolated for post processing.

Karim and al. (Karim et al., 2016) propose an approach to pre-localize physical losses on a drinking water distribution network by optimizing the hydraulic model via an evolutionary algorithm, to pre-localize areas with high leakage debit. Their approach is based on the resolution of the FAVAD (Fixed and Variable Area Discharge) equation by optimizing its parameters (coefficients and exponent of the transmitter) via the use of Genetic Algorithms (GA) coupled to an interfaced hydraulic modelling with a Geographic Information System (GIS). Cheifetz's work (Cheifetz et al., 2017) proposes a greedy algorithm for the positioning of quality sensors on a large water distribution network. This approach uses a large number of contaminations, simulated by a hydraulic modeling software and iteratively selects the best positions according to a criterion set to optimize. The method is evaluated for the deployment of multi-parameter sensors measuring chlorine, temperature, pressure and conductivity on the network of the Water Authority of Ile-France (Sedif), the largest French drinking water distribution network.

In all cases, remote monitoring is not used as a warning system but aims to adapt the treatment according to the values found on the measured parameters (Dary, 2014). It only makes it possible to detect failures without necessarily geolocating faulty equipment. Except in the case of a central system where all the equipments

is on a single site, the location of the failed equipment is already known. In our case, we are interested in equipment distributed on the territory, where the need to geolocate them with a GIS in case of occurrence of failures (multi-site remote monitoring system).

2.2 The detection of failures related to leaks

The exploitation of drinking water distribution networks around the world suffers from numerous failures that can arise in arbitrary places that are difficult to determine. In addition to the enormous economic losses bound with faults, there is also the risk of epidemics caused by leaks that constitute a great danger to public health. A study conducted by the International Association of Water Distribution (IAWD) shows that the amount of water lost through the distribution networks would be between 20% and 30% of total production. This has led network operators to think of using more efficient ways to detect these leaks in record time. In the field of leak detection, there are several methods and techniques. Currently used detectors can be classified into two main categories:

- acoustic noise-based detectors that require the operator to move to locate the exact location of these leaks and acoustic correlation based detectors that allow remote leak detection, and which give the place of escape with great precision.

- acoustic correlation detectors are used to detect leaks. Indeed, this technique is the subject of several works and implementations.

It is used for leak detection by Osama (Hunaidi, 2000). In the works of Miloud (Bentoumi et al., 2007), this same method was used to implement a leak detection algorithm in distribution networks on the TMS320C6201 processor. The National Directorate of Drinking Water and Sanitation of Haiti (Dnepa, 2013) in its document entitled “Control of water loss leak detection” has used the acoustic correlation method for precise location of leaks. In the works cited, formulas, algorithms and architecture have been proposed for the detection of leaks. But, these works apply only to metal tubes.
The method of acoustic correlation, although effective, finds its limits. The acoustic method becomes problematic in the case of plastic tubes (Hunaidi, 2012). The acoustic leak detection equipment was designed primarily for small diameter metal pipes. However, the signals emitted by the leaks in the plastic tubes have acoustic characteristics that are substantially different from those produced by leaks in metal pipes. Materials such as HDPE or PVC absorb vibrations enormously. A recent study conducted by the Canadian Institute for Research on Construction (IRC) and funded by the American Water Works Research Foundation found that leaks in plastic tubes can be detected using acoustic techniques, but that presents many difficulties.

2.3 Positioning of our contribution

However, in Senegal plastic tubes are the most used in water pipes, it would be more effective to use non-acoustic techniques for leak detection.

Leaks in plastic tubes can also be detected using non-acoustic techniques such as tracer gas, infrared imaging and radar. However, the use of these techniques is still very limited and their effectiveness is not as well established as in the case of acoustic methods (Hunaidi, 2012).

3. Infra-SEN Platform architecture

The general objective of our work is to design an Infra-SEN platform for remote monitoring of distributed infrastructures and equipments. This equipment have been instrumented with sensors capable of acquiring measurements. The sensors must deliver measurements that are recorded by an acquisition system. The installations to follow being positioned in different localities (distributed), to find the locality of the defective equipment we will exploit the spatial analysis capabilities of the ArcGIS software. Thus, maintenance teams can be informed about the locality where they will have to intervene to restore the proper functioning of the installation. Equipment likely to fail will be connected to one or more sensors that deliver information on the operation of this equipment. This information dynamically feeds the Infra-SEN database, which is linked to the ArcGis database. Using ArcGIS' spatial analyst, we can reference and map all equipment including their failures.

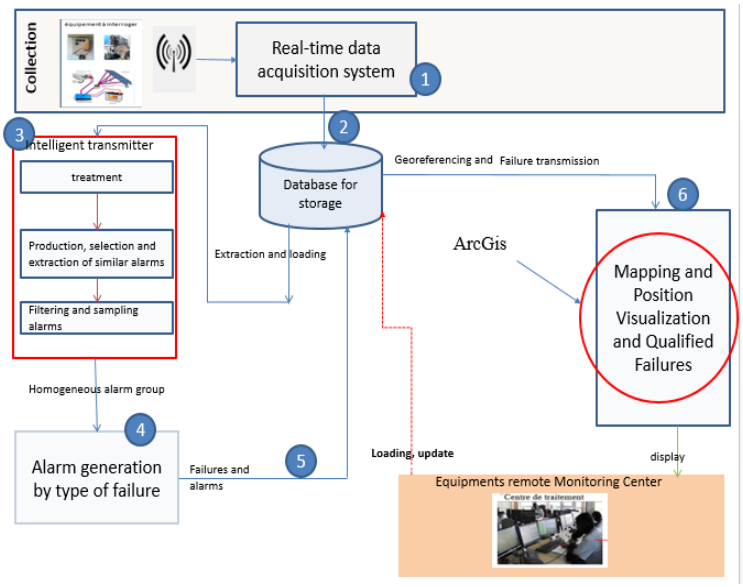

Figure 1: Core architecture of the SIGI platform

4. Description of our method for failures detection

We use the technique based on the measurement of the debit of water. In this method, we calculate the variation of the debit between two measurements and the Linear Leakage Index (LLI). A good approach to this index is obtained by measuring the minimum night debit (usually between 1 am and 4 am, after deduction of heavy nocturnal consumers (Dnepa, 2013)). It is calculated in this way.

LLI= Volume lost in distribution (m3/j)/ length of the pipeline (km) (1)

Volume lost in distribution (water lost)= volume put in distribution – volumes consumed.

We will retain as guide value:
Rural area LLI ~ =2 m3/j/km
Peri-urban area LLI ~ = 5 m3/j/km
Urban area LLI ~ = 10 m3/j/km

Areas with significant leakage can be determined by the method of test by step. This consists of subdividing the sector and then measuring the debit. Balance sheets by sector require a lot of work because they are done at night. In recent years, there has been a tendency to permanently install flow sensors connected to the system. The values of the debit thus transmitted are automatically analyzed and allow detecting the leaks.

4.1 Module Infra-SEN for failure detection related of leaks debit

This module uses the following algorithm as a technique based on the treatment of measuring the debit of water to detect leaks.
The primary state quantity, which one wishes to control the value, is the debit level. The objective is to obtain measured flow rate (M) equal to its normal debit (C). If M is not equal to C, we will have M= C- e, with e difference between measurement signal and normal debit. To establish this algorithm, we based ourselves on the method of the straight line of linearity. When two quantities are such that the variations of one are proportional to the variations of the other, then the values y of one express themselves according to the values x of the other by a relation of the type y=ax+b, where a and b are two real numbers. Given a straight line, we consider on this line a fixed point, final measurement Mf (xf, yf) and an arbitrary point Mi (xi, yi). According to the properties of similar triangles, the quotient (yf- yi)/ (xf- xi) does not depend on the point Mi chosen on the right, so this quotient is equal to a constant. This constant a is called the steering coefficient (or slope) of the line; (yf- yi)/ (xf- xi) = a.
The steering coefficient gives the direction of the right. In our practical case, the steering coefficient indicates the debit of water. In fact, in both cases, y varies by the same quantity $\Delta y = a\Delta x$. We will hold back the writing $a = \Delta y/\Delta x$. Three cases possible:
If a>0, so y increases when x increases (the function is increasing). y increases all the more rapidly as a is large. The suction cups are poorly closed and the air that enters increases the output debit.
If a<0, so y decreases when x decreases (the function decreases). y decreases all the more rapidly as the absolute value of x is large. There is a leak in the network, this justifies that the output debit is lower than the input debit.
If a=0, so y is constant, so the debit measured by the different sensors is the same.

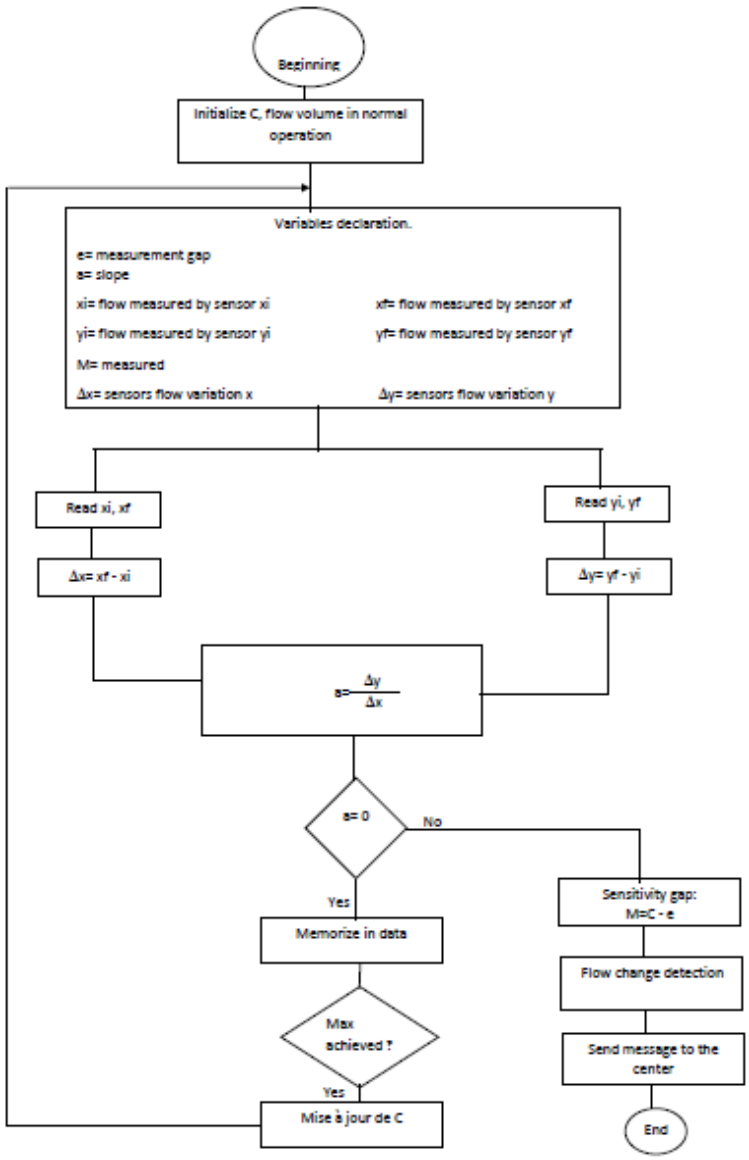

Figure 2: Algorithm of measurement processing to detect leaks

5. Implementation of the Infra SEN platform

The implementation of our platform is designed as a client-server application and it is based on the 3/3 architecture. In such architecture, the application is composed by three parts. The first third (1/3) is the application server that allows the processing of data. The application server contains our application who can write to the database, to record the measurements of different sensors to modify the elements of the table. But also the ArcGis application that includes the cartography modules, exploitation and viewing data. The second third (2/3) is the data server who allows data storage. It includes the ArcGis database and the Infra-SEN application database we have developed. The third (3/3) are the customers (Users) who will access the applications and use data. Below the operation of Infra SEN (Figure 3):

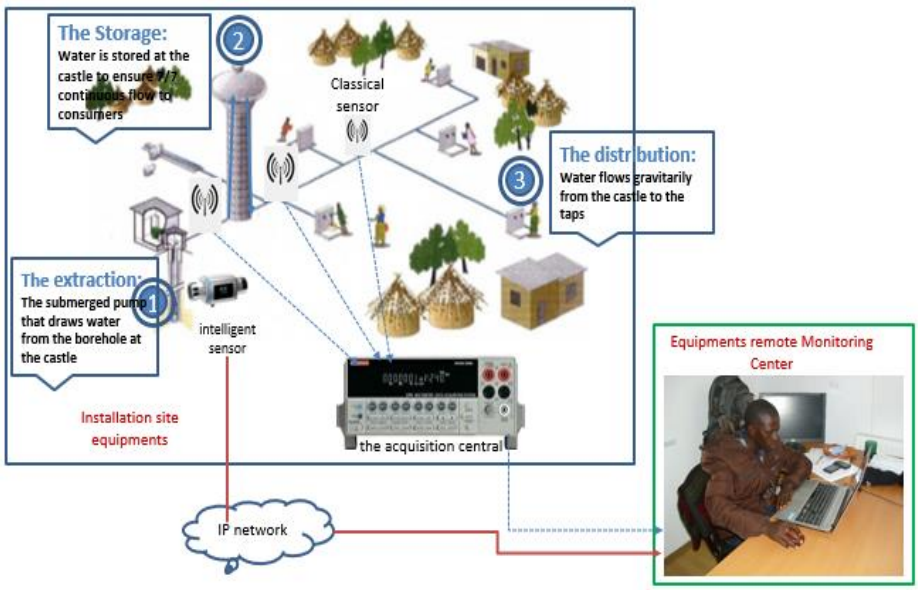

Figure 3: Operation the Infra SEN platform

For data acquisition by sensors, we use classical sensors who send the message to the monitoring center via the acquisition central. For each installation, we target a critical equipment that will be connected by an intelligent sensor. In our example, it is the submerged pump. For this object, it is the technology of the Internet of connected objects that will be use to communicate with the central remote monitoring station.

6. Deployment of the infra-SEN platform

Failing to have physical installations, we used the Scilab numerical analysis software to simulate the measurements acquisition. In the case of a physical installation, the procedure and algorithms remain unchanged.

Scilab, is a free multi-domain simulation software that provides a graphical platform and a set of libraries that allow modeling, simulation, the implementation and control of systems in different areas of application.

To simulate, we need a description of the program. In the execution of this program, we have respected the various stages of operation of the central. The time step is managed by the multithreads programming technique. We used the function rand (n, m) which automatically generates values that simulate measurement sensors outputs as a function of time. n is the measurement time and m, the measurement output of the sensors. The thread function Sleep (z) is used to manage the time step. This allows to asleep the program for a desired time Z. Every day measurements are made. The total number of experiments is 100 days. Every hour the sensors send measurements to the acquisition central. We present the results in Figure 4.

1.	43.11733	72.174381	52.641283	74.444567
2.	61.453848	47.685359	52.973941	22.695036
3.	92.589621	63.930579	92.917561	68.369308
4.	9.9381728	99.638653	97.654303	93.650726
5.	42.805786	15.747883	62.25464	50.530174
6.	94.31831	53.506937	98.225833	25.248146
7.	3.2739527	21.290646	75.429888	68.188398
8.	92.132671	55.914506	54.547881	28.363682
9.	94.490244	43.04966	72.86016	14.094857
10.	90.070699	2.2805485	2.5259695	67.591096
11.	80.943161	57.614598	40.251685	45.126776
12.	2.5195429	71.491304	9.8313199	75.430292
13.	0.1964506	93.21636	26.086253	13.702143
14.	50.752213	12.326993	36.363423	66.082405
15.	40.76043	28.655522	17.466178	38.900542
16.	84.080461	1.2479957	92.341395	70.018205
17.	50.172657	57.694048	76.051409	91.680057
18.	91.287808	39.386961	56.402041	21.229
19.	44.357295	68.885837	37.970652	26.978331
20.	59.83784	97.023218	87.762262	31.998894
21.	77.418426	85.157643	82.174258	2.3218025
22.	79.220083	33.933045	67.870581	72.654473
23.	55.046049	87.725318	8.2200981	15.340586
24.	40.850437	11.314025	25.527314	23.552638

Figure 4: Results of measurement values by sensors during a day

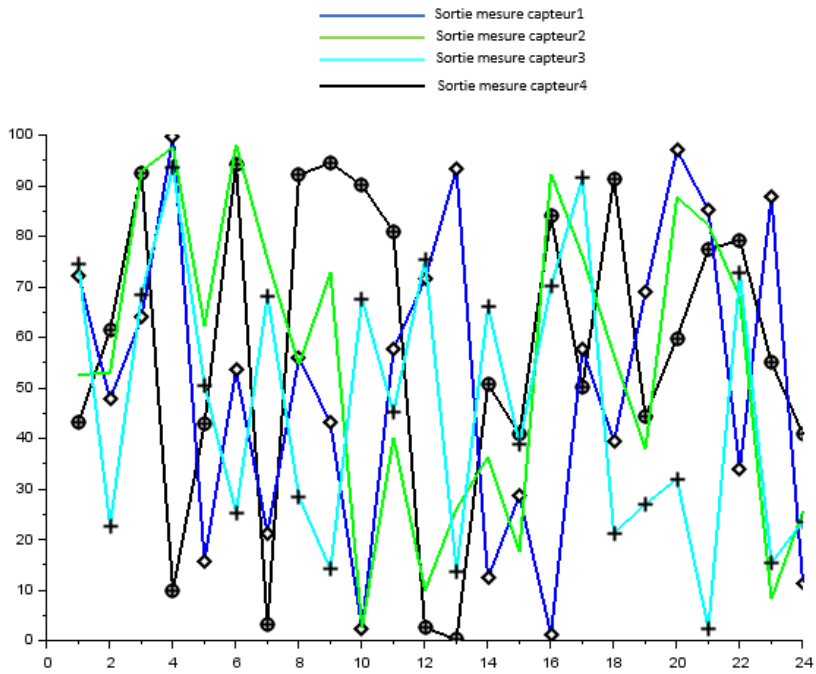

Figure 5: sensor measurements versus the time.

The generated values will be saved to a file and retrieved by a java program. After executing the code, the program displays all the measurements including those that present leak (Figure 6).

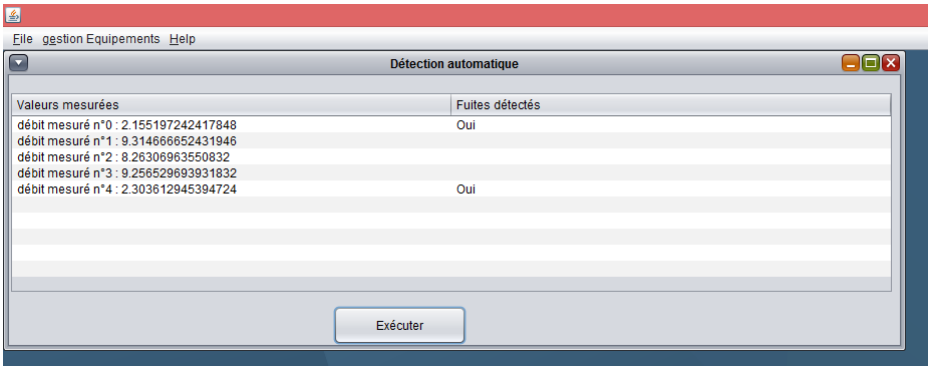

Figure 6: Zoom on the measured values and leaks detected in the Infra Sen application.

These values will also be saved in the Infra SEN database in the measurement table. Indeed, once the failures are detected, ArcGis features are triggered automatically to produce the equipment cards that present failure.

7. Conclusion and perspectives

In this paper, we propose a real-time remote remote equipment monitoring system based on a GIS. This system is efficient and requires fewer resources than those found in the literature. This system significantly improves the quality of service; reduces wasted time and costs related to equipments maintenance. However, if the system proposed allows remote monitoring of the equipment, it does not yet solve the problem of maintenance to remote. This falls under the problematic of remote maintenance that we have not discussed here. The application to the monitoring of hydraulic equipment in the municipality of Niamone in the department of Bignona validated the mapping and algorithmic aspect of failure detection. Future work should allow us to perform full-scale tests for the whole territory. Based on the Infra-SEN project approach, many remote monitoring applications are possible, in the health sectors, education, renewable energies including solar panels.

References

Guépié B. K. (2013), Détection séquentielle de signaux transitoires: application à la surveillance d'un réseau d'eau potable, thèse de doctorat, de l'Université de Technologie de Troyes.

Dary P. (2014), Télésurveillance dans l'insuffisance cardiaque: intérêt d'un suivi limité à 14 jours sur 83 patients, European Research in Telemedicine/*La Recherche Européenne en Télémédecine*, N° 3, 125-132.

DNEPA (2013) Direction Nationale de l'Eau Potable et de l'Assainissement d'Haiti, la maîtrise des pertes d'eau-recherche de fuites, Version 23, Septembre 2013.

Dumas, Jean, Notes de cours, MEC-763 Technique de maintenance industrielle, École de technologie supérieur, http://maintenance.dechamps.free.fr/BTS%20MI/STRATEGIE%20DE%20MAINTENANCE/1_cours/217%20-%20AMDEC/217%20-%20AMDEC%20-%20Exemple%20d'un%20ventilateur.pdf.
Consulté le 11 juillet 2016.

Isenmann G., Bellahcen S., Vazquez J., Dufresne M., Joannis C. et Mose R. (2016), Evaluation of the discharge in an overflow pipe of a pumping station from the measurement of water depths, TSM 2016, 1-2; 71-83.

Blindu I. (2004), Outil d'aide au diagnostic du réseau d'eau potable pour la ville de Chisinau par analyse spatiale et temporelle des dysfonctionnements hydrauliques, thèse de doctorat, de l'université de Jean Monnet, Saint Etienne.

Choi J., Shin J., Song C., Han S., Park D. (2017), Leak Detection and Location of Water Pipes Using Vibration Sensors and Modified ML Prefilter, *Sensors* (Basel), v.17(9).

Karima S., Abdelhamid S., Moula Z. et Olivier N. (2016), Prelocalization approach of physical losses on a water distribution network by optimization of the hydraulic model using an evolutionary algorithm, *La Houille Blanche*, n°6, 2016, 59-66.

Bentoumi M., Chikouche D., Bouamar M., Khelfa A. (2007), Implémentation en temps réel d'un algorithme de détection de fuite d'eau des réseaux de distribution sur le processeur TMS320C6201 en Utilisant la Corrélation Acoustique, 4th International Conference on Computer Integrated Manufacturing CIP.

Cheifetz N., Sandraz A. C., Feliers C., Gilbert D., Piller O. et Heim V. (2017), A greedy algorithm for quality sensor placement on a large-scale water distribution network, TSM 2017, 55-63.

Hunaidi O. (2000), La détection des fuites dans les conduites d'eau, *Solution Constructive* n°40, Institut de recherche en construction, Conseil national de recherches Canada, p. 6.

Hunaidi O. (2012), Stratégie acoustique des fuites sur les conduites de distribution d'eau, *Solution Constructive* n° 79, Institut de recherche en construction, Conseil national de recherches Canada.

Sintes G., Lecoz E., Gilles G. (2011), Une centrale d'acquisition Campbell pour le pilotage des irrigations par tensiométrie d'une culture de plantes en pot. *Cah. Tech. Inra*, 2011, 73, 25-36.

Callens S., Acceptability of remote monitoring, http://www.marsouin.org/IMG/pdf/Callens_papier.pdf.
Site consulté le 15 juillet 2016.

ACCESS TO RENEWABLE ENERGY IN AFRICA

Abdourahmane Mbade Sene*

Abstract

The paper aims to understand trends in geographical distribution and temporal changes in access to renewable energy in Africa. A principal component analysis is then applied to data collected from the World Bank. Africa has the highest rates of renewable energy consumption in the world due to significant use of wood for cooking, low electricity consumption, and a large consumer market for renewable energies products. However, its renewable electricity production is below that of the world. For 25 years, renewable energy consumption and renewable electricity production have been steadily declining worldwide.

1. Introduction

Renewable energies play a strategic role in an international context marked by the scarcity of fossil fuel reserves, rising prices and global warming (Carbonnier et Grinevald, 2011). As clean energy, their importance is also related to the issues and roles of sustainable development in today's economies. Africa is today marked by many concrete initiatives on renewable energies at national or regional level.

For example, since the Bonn Conference on Sustainable Energy in 2001, a number of policies have been launched in West Africa, such as the White Paper of the Economic Community of West African States (ECOWAS) in 2006, the establishment of the Center for Renewable Energy and Energy Efficiency of ECOWAS (ECREEE), the Regional Initiative for Sustainable Energy (IRED) and the Renewable Energy Development and Energy Efficiency Program (PRODERE).

Several policies are also launched in most African countries: the creation of Renewable Energy and Energy Management Agencies in several African countries and the launch of several North-South partnerships to support renewable energies access policies in Africa. For example, the Africa-European Union Energy Partnership (AEEP), which has set itself the goal of constructing 10,000 megawatts (MW) of hydroelectric facilities, including 5,000 MW of wind capacity and 5,000 MW of solar capacity by 2020. This multiplication of policies and actions for the promotion of renewable energies in Africa reflects their importance in the energy development of the continent but also its considerable potential not yet exploited (ADEA, 2015).

* Department of geography, University of Assane Seck, BP 523, Ziguinchor, Senegal. E-mail: asene@univ-zig.sn.

Several studies have focused on the achievements and potentials existing in each African country or region (Ferrenbech, 2012; CEREEC, 2012; REN 21, 2016; ONU Environnement and BNEF, 2017). However, few studies have focused on making a comparative study of access to renewable energies between different countries or understanding their place in development policies. In this context, the general objective of this research is to characterize access to renewable energies in the different countries of the continent. The specific objectives are to first determine the place of renewable energies in development policies. Next, they seek to categorize countries according to their access to renewable energy. Finally, they examine the evolution trends of the West Africa region in terms of access to renewable energy in an African and global context.

2. Theoretical and methodological framework

2.1 Review of the literature

In terms of scientific and academic literature, renewable energy access policies are generally approached from the angle of the energy transition considered as the cornerstone for the fight against climate change and the achievement of sustainable development objectives (Bouchard, 2014; Alexeeva et Y. Roche, 2014). It should be noted, however, that even in developed countries, the concept of energy transition was launched only in the 1980s (Krause et al., 1980). And the concretization of the implementation of the energy transition policy really begins in Europe only from 2000 in Germany with its decision to leave the nuclear power and put in place a policy of financial support for renewable energies (Bruns et al., 2010; Mautz, 2008). This policy will then be taken up by several other European countries (Bailoni et Deshaies, 2014). Today, Europe, like most developed countries, despite its efforts, is still struggling with the application of its renewable energy policies (Deshaies, 2013; Smil, 2010).
In this context, what is the role of renewable energy access policies in African countries? In terms of the scientific literature, most of the documentation dealing with this issue seems to be confined to reports from public or private organizations working in the sector (ADEA, 2015; REN 21, 2016). Like other parts of the world, especially Europe, the situation in Africa is generally presented with ups and downs (Ferrenbech, 2012; Magrin, 2007).

2.2 Methodology

The analysis method has three components: data collection, principal component analysis (PCA), and map processing of results. The data collected is from 2013 and comes from the World Bank. Their database is a compilation of data from several reliable sources. The data collected consists of six variables also called indicators (Table 1) distributed among the 54 independent African States. The choice of variables is related, on the one hand, to their relevance for a study of territorial disparities in terms of access to renewable energies and socio-economic development, but also to their availability. Table 1 shows the World Bank's proposals for definitions of the indicators used in the analysis (Banque mondiale, 2016).

INDICATORS	INDICATORS DEFINITION
Indicators related to access to renewable energies	
Renewable energy consumption	% of total final energy consumption
Renewable electricity output	% of total electricity output
Indicators related to socio-economic development	
GDP per capita (current US$)	GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.
Mortality rate, under-5 (per 1,000 live births)	Under-five mortality rate is the probability per 1,000 that a newborn baby will die before reaching age five, if subject to age-specific mortality rates of the specified year.
Access to electricity, urban	% of urban population
Access to electricity, rural	% of rural population

Table 1: Definition of indicators used in the ACP (Source: Study results)

The PCA, a multivariate analysis, is performed using SPSS software. The PCA determines the correlations between the variables and identifies the factorial axes. It offers a first assessment of the spatial distribution of indicators (Sène et Codjia, 2016). However, it requires certain conditions relating to the normality of the variables and their correlation before its realization. After studying the normality of the data, two of the following three conditions must be satisfied: the value of the Kaiser-Mayer-Olkin index (KMO), the Bartlett test and the correlation matrix (Le Moal, 2002). The Kolmogorov-Smirnov test indicates that, on average, the variables have a significance greater than 0.05. Then, they have a normal distribution. The ACP has a good KMO (0.721). The Bartlett sphericity test (value of 0.000) is also satisfactory. The conditions being satisfied, the ACP is generated.

Finally, a spatial analysis via the ArcMap application of the ArcGis 10 mapping software is carried out in order to better understand disparities in access to renewable energies on an African or even global scale. The Excel software is also used to develop graphs that allow to better understand trends in access to renewable energy.

The indicators selected are globally well representative of all available current data on renewable energies in Africa and in the world (percentage of renewable energy consumption, percentage of renewable electricity production). They also include some relevant socio-economic development indicators such as GDP per capita, infant mortality rate, percentage of access to electricity in urban areas, and percentage of access to electricity in rural areas.
These indicators of socio-economic development are commonly used to determine people's quality of life and their level of economic and social development. The study of their correlation with indicators of access to renewable energies, by factor analysis, makes it possible to deduce the nature of the links between policies of access to renewable energies of African countries with their socio-economic development policies. It also makes it possible to develop a categorization of countries according to their access to renewable energies and their level of socio-economic development.

3. Characterization of access to renewable energy

3.1 Independent access to the level of socio-economic development of the countries

The ACP reduced the mass of original data from 54 African countries and six variables into two major groups represented by components 1 and 2 (Figure 1). Component 1 reflects a strong positive correlation between indicators of GDP per capita and percentages of access of the rural and urban population to electricity. It also shows a strong but negative correlation between these indicators and the infant mortality rate. It is therefore identified as the level of socio-economic development of the countries. Component 2 reflects a strong correlation between the two other variables corresponding to the percentages of renewable energy consumption and renewable electricity production. It corresponds to access to renewable energies.

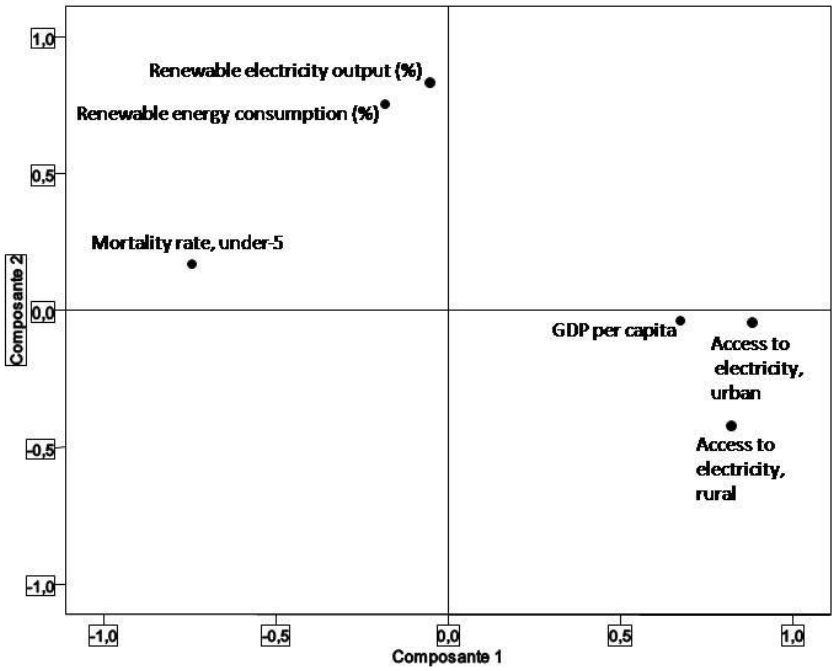

Figure 1: Saturations diagram (variable and components correlation) - Source: Study results

Two main trends emerge: (1) the existence of a close link between the consumption of renewable energies and the production of clean electricity; (2) the lack of a direct correlation between indicators of access to renewable energies and those of socio-economic development. In other words, access to renewable energy in Africa is not directly related to the quality of life or the level of socio-economic development of countries.

This result confirms some widely held beliefs that the share of "traditional" renewable energies is all the stronger in Africa as the level of development is low (Magrin, 2007). In fact, countries with a higher level of development have more means of access to "modern" renewable energies (wind, solar, etc.) that are more expensive. The equilibrium is thus quickly restored and some of the more developed countries such as Morocco, Algeria and Egypt and among the least developed, like Mauritania, South Sudan and Niger, show similarities in terms access to renewable energy (Figure 2).

The score diagram (Figure 2) shows four categories of African countries divided according to their indicators of access to renewable energy and their level of socio-economic development. The first group of countries (Ethiopia, Namibia, Lesotho, Zambia, Mozambique, Burundi, Malawi, Congo, Cameroon, Sudan, Kenya and so on) mainly English-speaking and East, Central and Southern Africa has the best indicators of access to energy renewable but with average socio-economic indicators.

The second group (Cape Verde, Mauritius, Seychelles, Algeria, Egypt, Morocco and Tunisia) is characterized by high socio-economic development indicators but with relatively low indicators of access to renewable energies. These countries are mainly from North Africa and a few island countries. The strong electrification of rural and urban areas of North African countries tends to increase their level of socio-economic development. They have significantly higher rural (99%) and urban (100%) electrification rates than those in sub-Saharan Africa, respectively 16% and 59% (Combes et Kéré, 2015).

The third group (Chad, Somalia, South Sudan, Guinea Bissau, Sierra Leone, Liberia and Niger) is characterized by the weakest socio-economic indicators in Africa and low to medium renewable energies access indicators. Most of the countries in this group are from West Africa. Most of these countries experienced political instability and civil war, which negatively affected their social and economic progress.

The fourth group of countries, which is more numerous, is characterized by an intermediate situation both in terms of indicators of access to renewable energies and the indicators of socio-economic development. Several West African countries are part of the latter group: Côte d'Ivoire, Ghana, Guinea, Togo, Nigeria and so on.

This categorization highlights an important fact: the countries in each major geographical area of the continent (southern, western, eastern, central and southern Africa) have almost similar characteristics in terms of socio-economic development and access to renewable energies. An effective way to improve access to renewable energy in the continent would be to create regional pools that fit more or less into the four categories highlighted. Through these regional pools, countries could gather their resources and

spread their networks across national borders by capitalizing on regional diversity of resources and demand.
The idea of regional energy pools is already defended on the continent. For example, Avila et al. (2017) argue that they would save more than $ 50 billion in capital investment in the electricity sector. "They would also facilitate the adoption of additional strategies to integrate large amounts of intermittent renewable energy, such as the existing hydroelectric reservoir for storage, the deployment of new chemical and mechanical storage technologies and the adoption of demand response programs across the region" (Avila et al., 2017).

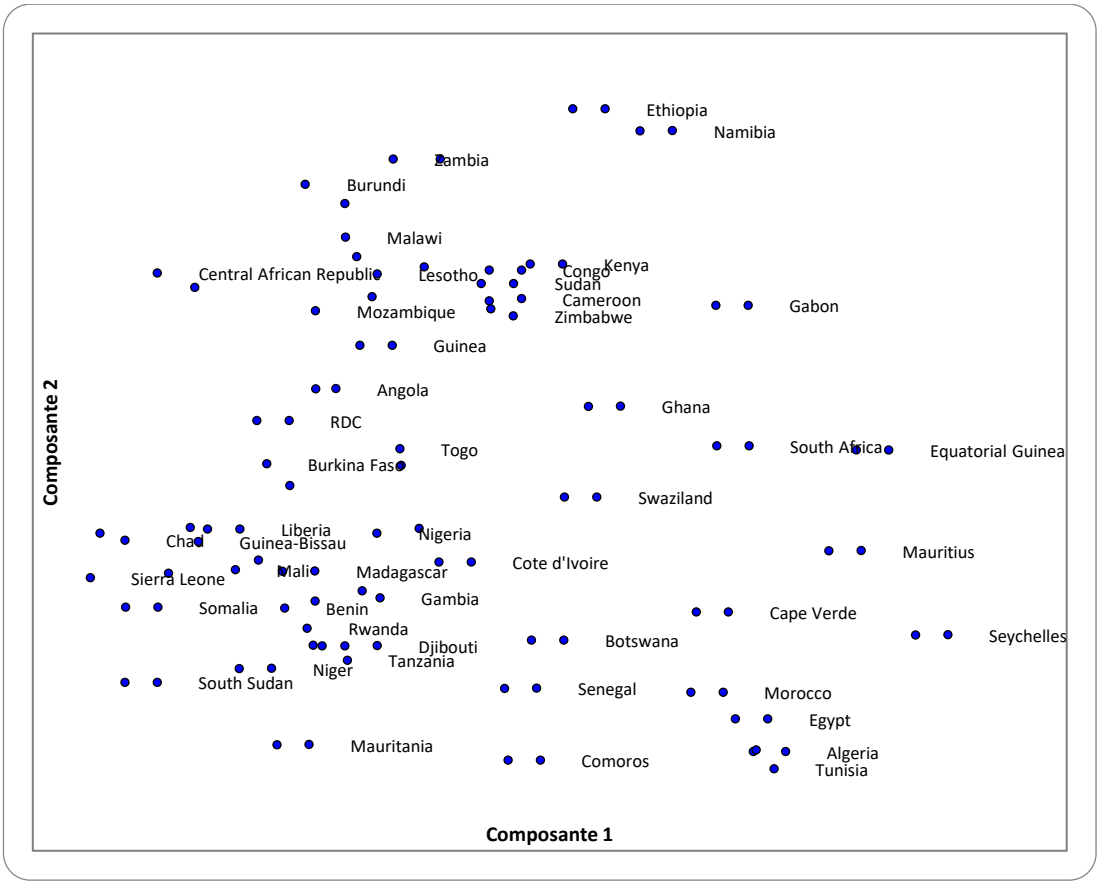

Figure 2: Scoring diagram (country and component correlation) - Source: Study results

3.2 Irregular geographical distribution

The mapping of component 2 on access to renewable energy indicates a very irregular situation across the continent and large geographical areas (Figure 3). With the exception of North Africa, which is globally characterized by low percentages, in all other major regions of the continent, the situation is very different from one country to another. However, in sub-Saharan Africa, West Africa has the lowest indicators. Access to renewable energies in this region does not depend on the geographical location of countries at the coast or inland, their level of socio-economic development, or their stable political history.

Ghana and Guinea top the list, followed by Guinea-Bissau, Liberia, Burkina Faso, Togo and Nigeria. Senegal, Mauritania and Niger, all Sahelian countries, have the lowest indicators. The other regions, especially Southern, Central and Eastern Africa, have the best average indicators, although the situation is very different from one country to another (Figure 3). Access to renewable energy in these countries does not depend on any specific geographical feature. Those with the highest access rates are coastal or continental.

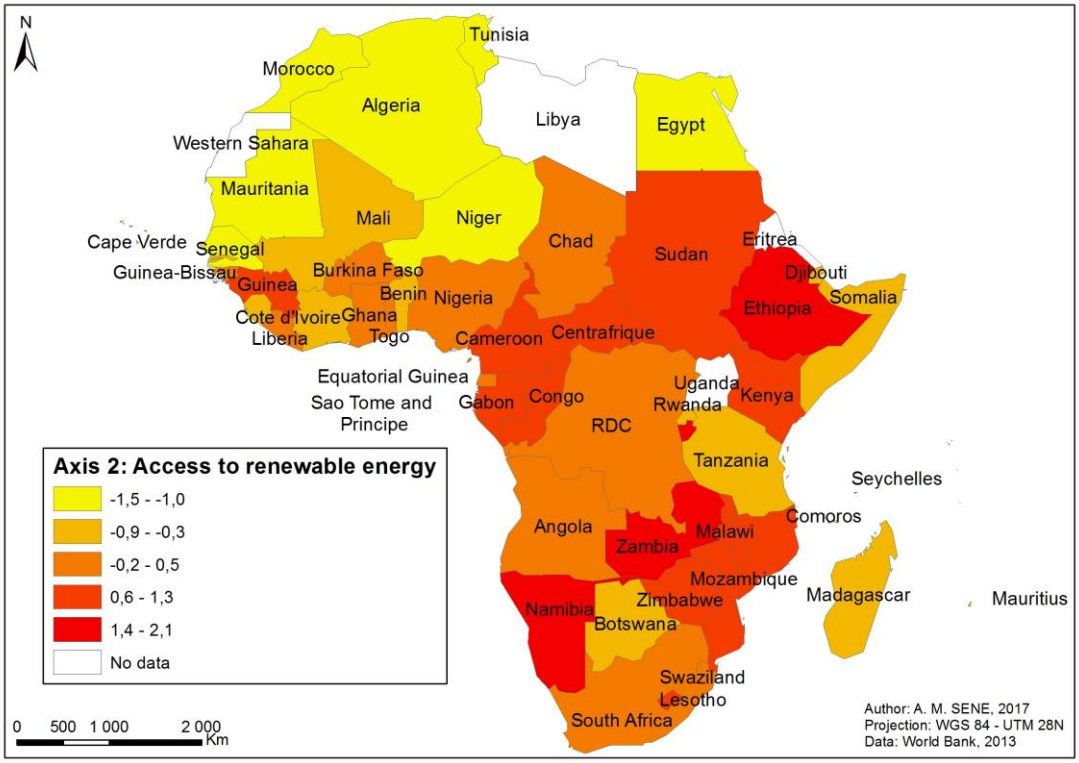

Figure 3: Geographic disparity of access to renewable energy in Africa - Source: Study results

4. Dynamics of access to renewable energy: the case of West Africa

4.1 Variable temporal evolutions

The main trend in the change in the renewable energy consumption percentage (% of total energy consumed) in West Africa shows that most countries have, at least once, a consumption percentage greater than 80 % between 1991 and 2011: for example, Guinea-Bissau, Mali, Niger, Nigeria, Sierra Leone, Côte d'Ivoire, Guinea, Togo and Burkina Faso (Figure 4). Only four countries, all Sahelians, have never reached a percentage of consumption equal to 80% between 1991 and 2001: Senegal, Gambia, Mauritania and Cape Verde. Their consumption varies between 20 and 60% in this period. The West Africa countries have, for the most part, a high percentage of renewable energy consumption (more than 80% of the total energy consumed).
This situation is general in sub-Saharan Africa and is due to a strong exploitation of renewable natural plant resources. "The so-called traditional energies, derived from

renewable raw materials (wood and charcoal) and agricultural by-products (crop residues, animal excrement), occupy a preponderant place in sub-Saharan Africa" (Magrin, 2007). The energy balance of the region in 2010 indicates that nearly 78% of energy demand, over the entire global energy mix of the majority of countries, comes from traditional biomass. And more than 90% of the population uses wood and charcoal for domestic cooking (Ferrenbech, 2012).
However, there is a general decline in the percentage of renewable energy consumption in all countries except Côte d'Ivoire, which is a relatively small jump from 72.4% in 1991 to 79.3% in 2011. The decline recorded varies from one country to another. By way of illustration, Benin's consumption of renewable energies dropped from 95% in 1991 to 51% in 2011, while Nigeria's consumption decreased from 86.5% in 1991 to 86.1% in 2011.

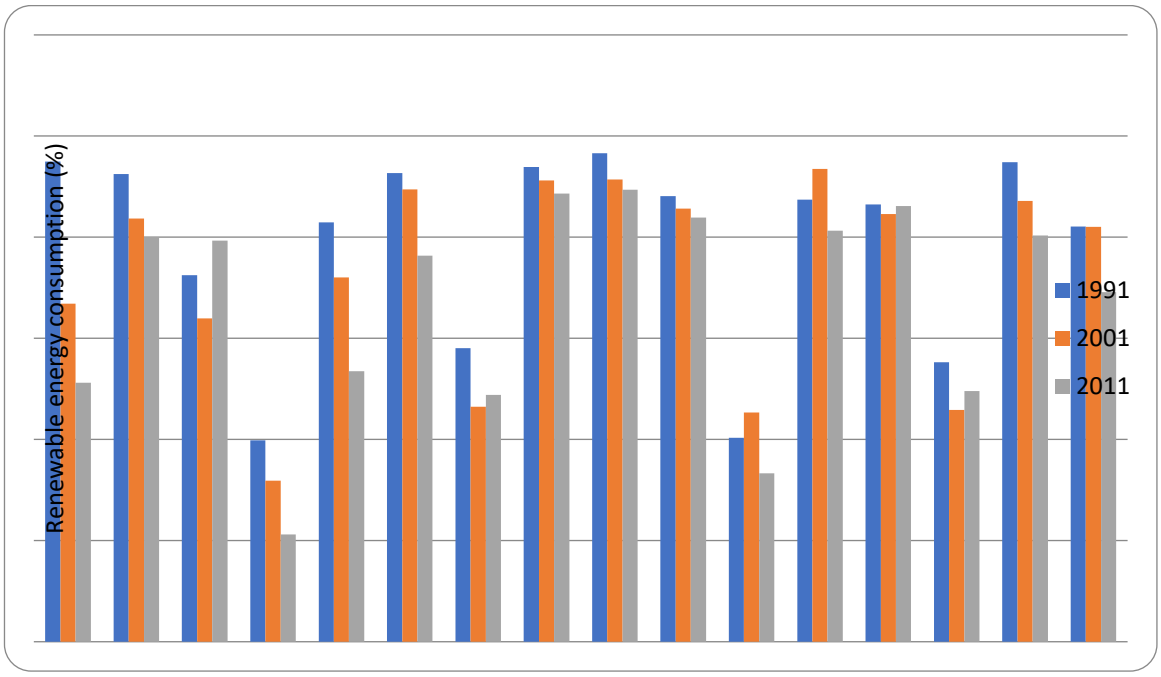

Figure 4: Evolution of renewable energy consumption in West Africa - Source: Study results

Compared to renewable energy consumption, the percentage of renewable electricity generation in West Africa shows greater disparities both between countries and within a country over time (Figure 5). In particular, it indicates that the percentage of renewable electricity production is much lower than the percentage of renewable energy consumption.
In a context where the rate of rural electrification as urban is low, the challenges for the West African region are then important especially since it has a significant potential for wind, solar and hydroelectric power generation (CEREEC, 2012). In 2011, only Togo has a production above 80%. All other countries produce less than 40%. Countries such as The Gambia and Guinea-Bissau even registered zero production between 1990 and 2012. In all countries, production is steadily declining or becoming jagged (Figure 5).

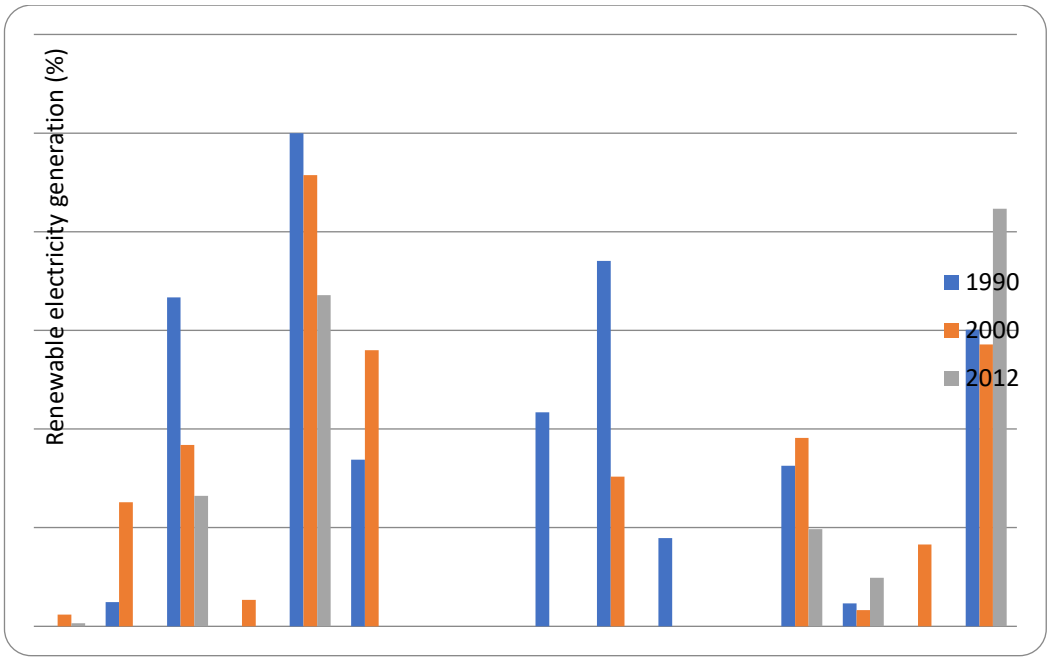

Figure 5: Renewable electricity generation in West Africa - Source: Study results

4.2 Downward trend in access rates

The average percentage of renewable energy consumption in West Africa is significantly higher than that of the world between 1990 and 2011 (Figure 6). In 2011, for example, the average consumption in West Africa is 77.6% against 32% for the world average. According to Claustre et al., The African continent has the highest rate of primary renewable energy consumption globally because of the high use of wood for cooking coupled with low electricity consumption (many tens of millions of Africans do not have access to electricity) (Claustre et al., 2014).

Electricity consumption in 2013 is only 488 Kilowatt hours per inhabitant (KWh / inhabitant) for sub-Saharan Africa compared with 672.6 KWh / inhabitant for South Asia, 2130 KWh / inhabitant for Latin America and the Caribbean and 2880 KWh / inhabitant for North Africa and the Middle East. It is much higher in industrialized regions like Europe and Central Asia (5429 KWh / inhabitant) and North America where it amounts to 13241 KWh / inhabitant (Banque mondiale, 2016). For example, less than 15 per cent of sub-Saharan Africans have access to electricity (Magrin, 2007), and even in the top ten hydrocarbon producing countries of sub-Saharan Africa, two-thirds of the population have no access to electricity (Carbonnier et Grinevald, 2011; IEA, 2008). Factors that limit the development of electricity in the region are the lack of effective technical, financial and political mechanisms for the development of energy resources.

In addition, there is a general decline in the consumption of renewable energies both in West Africa and globally. The average for West Africa rose from 84% in 1990 to 72.6% in 2011, a decrease of 11.4% in 20 years. Globally, the decrease is also noted but slower: 5.7% between 1990 and 2011.

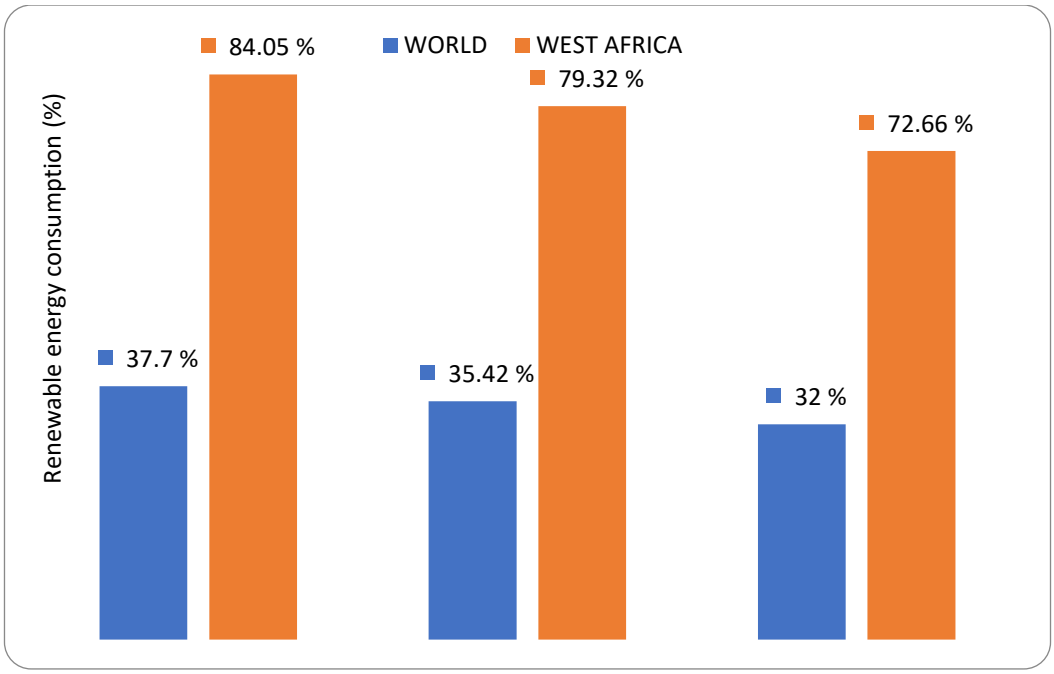

Figure 6: Average consumption of renewable energies in West Africa and the world - Source: Study results

The average percentage of renewable electricity produced in West Africa is lower than that of the world. The gaps are more and more important between the two averages over the years. As with renewable energy consumption, there is also an overall trend of decreasing renewable electricity production on both scales between 1990 and 2012 (Figure 7).

These results confirm the work of Michaelowa and Michaelowa (2011), who argue that funding for renewable energy projects has generally declined in recent years. They state that "the advent of international climate policy in the 1990s has not stimulated renewable energy and energy efficiency projects in the framework of bilateral development cooperation, which accounts for the bulk of aid (Michaelowa et Michaelowa, 2011). Their analysis shows that the Rio Summit of 1992 was accompanied by a marked increase in aid related to renewable energy projects. However, the Kyoto Conference in 1997, the Kyoto Protocol Agreement and its ratification in 2005, rather reversed this trend. They have shown a sharp decline in "traditional" renewable energy projects such as hydropower and geothermal energy from their peak in the early 1980s to the same time as "new" renewable energies such as solar, wind and biomass have been erratic since their peak in the late 1990s.

According to UN Environment and Bloomberg New Energy Finance (BNEF), investment in renewable energy has decreased by 30% in developing countries and by 14% in developed countries in 2016. African countries such as South Africa and Morocco have even experienced in 2016 a decline of 60% or more of their investments due to a lower demand than expected in electricity and delays in financing (ONU Environnement and BNEF, 2017).

Several authors agree today that the often higher costs of renewable energies compared to other fossil fuels justify their difficult breakthrough in the energy

sector, despite the fact that they contribute to reducing greenhouse gas emissions (Claustre et al., 2014; Cruciani, 2014; Ronneau, 2013). However, the market trend indicates a gradual decline in the price of renewable energy technologies (ONU Environnement and BNEF, 2017), while some fossil energy sources such as oil tend to increase (CEREEC, 2012). If this trend continues, the current decline in renewable energy consumption and renewable electricity production could therefore change or even reverse in the coming decades.

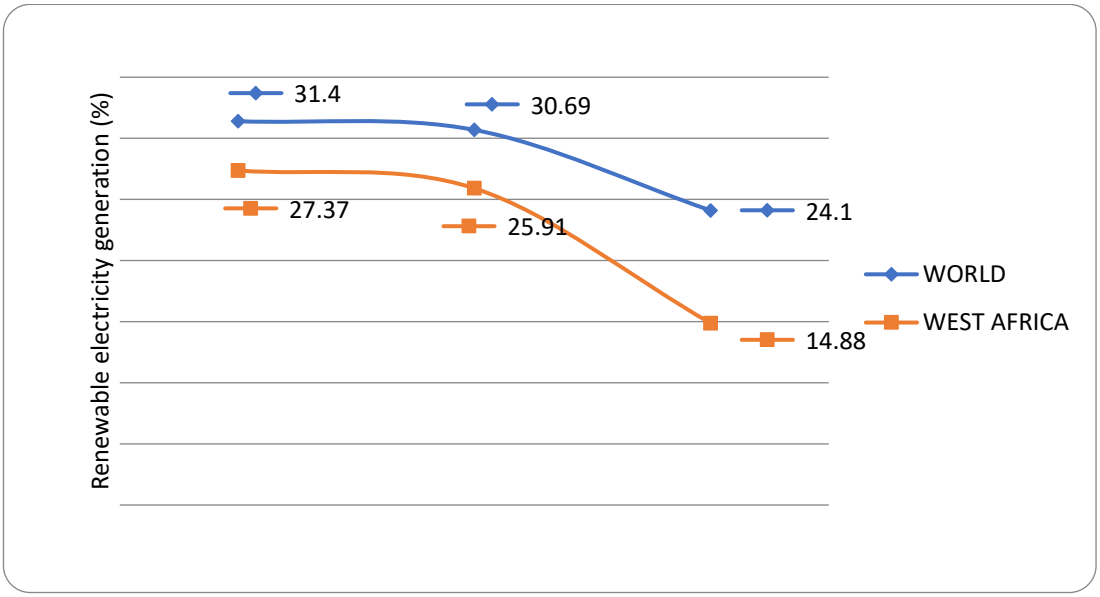

Figure 7: Renewable electricity generation in West Africa and in the world - Source: Study results

4.3 Strong geographical disparities

West Africa, like the African continent, is one of the regions in the world with the highest average percentages of renewable energy consumption (Figure 8). In addition to the strong exploitation of its renewable plant resources (wood, charcoal), other factors also play a role in this high consumption. In fact, sub-Saharan Africa is now a vast consumer market for renewable energy products. The latest report on the global status of renewable energies in 2016 indicates that sub-Saharan Africa is the world's largest market for off-grid solar products (1.37 million units) ahead of South Asia (1.28 million units sold) (REN 21, 2016).

The average percentage of renewable energy consumption in West Africa is higher than most developed countries such as the United States, European Union countries, India, China, Japan or Australia. Renewable electricity production follows the same trends as renewable energy consumption in Africa. "Developing economies have thus invested more in electricity and renewable fuels than developed economies." (REN 21, 2016).

At the scale of the African continent, consumption is very different from one country to another, but also from one region to another. However, we note that North Africa and several Sahelian countries south of the Sahara, such as Senegal, Mali and Mauritania, are among the lowest percentages of renewable energy

consumption (Figure 8). The justification could come, in part, from the weakness of plant biomass in this part of the continent, which then leads to lower pressure on these plant resources, which form the bulk of renewable energy consumption in Africa.

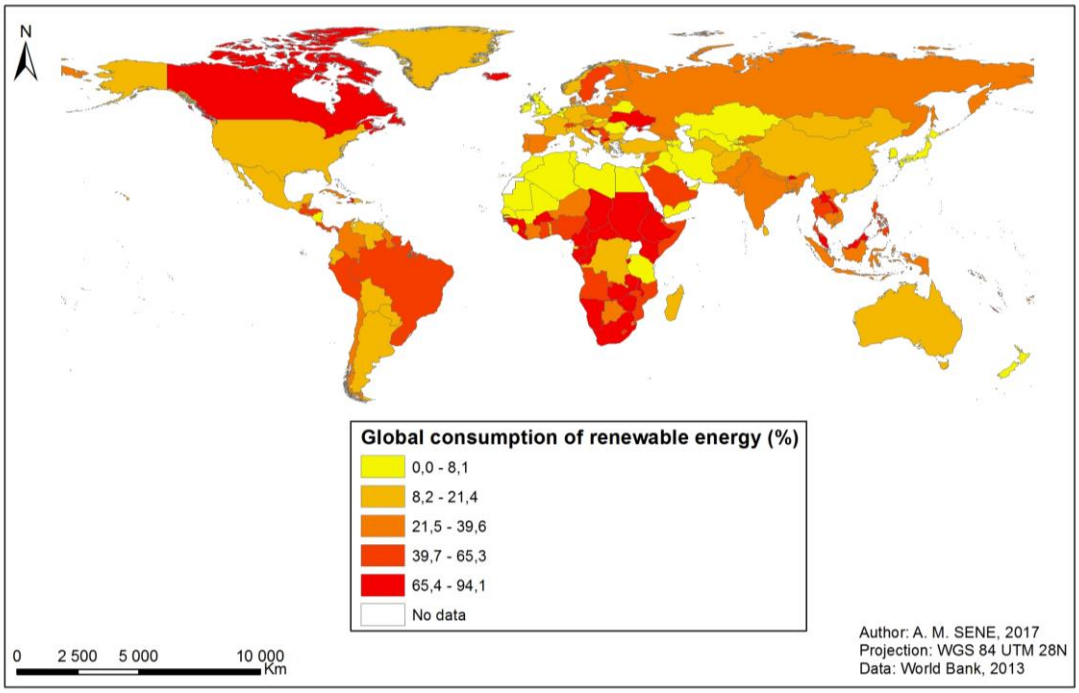

Figure 8: Renewable energy consumption in the world - Source: Study results

5. Conclusion

Africa stands out with countries that have some of the best indicators of access to renewable energy in the world. At the continental level, access to renewable energy is independent of the level of socio-economic development of countries and their quality of life. For example, rural and urban access to electricity is not correlated with renewable energy consumption or renewable electricity generation. For example, North African countries have the highest percentages of access to rural and urban electricity despite the fact that they have the lowest percentages of renewable electricity generation.

Four categories of African countries are identified according to their indicators of access to renewable energies and their level of socio-economic development. The first group, consisting mainly of English-speaking countries in Eastern, Central and Southern Africa, has the best indicators of access to renewable energy but with average socio-economic indicators. The second group, made up of North African and island countries, is characterized by high socio-economic development indicators but with relatively low indicators of access to renewable energies. The third group, mostly formed by West African countries, is characterized by the weakest socio-economic indicators in Africa and indicators of access to renewable energies that are low to medium. The fourth group of countries, more numerous and mostly made up of West African countries, is

characterized by an intermediate situation both in terms of access to renewable energies indicators and socio-economic development indicators. The development of energy policy strategies, following these categories corresponding to regional pools, would facilitate the achievement of national and regional energy sufficiency targets. It would boost access to energy across the continent.

The countries with the lowest indicators of access to renewable energies are those in North Africa and some Sahelian countries in West Africa such as Senegal, Mauritania and Niger. The regions of southern, eastern and central Africa, which are often richer in plant biomass, therefore have the highest rates of access to renewable energies. In addition to these broad trends, the overall picture is very different from one country to another in each geographical region of the continent.

The average percentage of renewable energy consumption in West Africa in 2011 (72.66%) is significantly better than that of the world (32%). On the other hand, for renewable electricity production, the average of West Africa (14.88% in 2012) is lower than the world average (24.1% in 2012). However, in both cases, there is a decrease in the averages of West Africa and the world between 1990 and 2012.

Contrary to popular belief and the expectations of the scientific literature, the average percentages of renewable energy consumption and renewable electricity production have steadily decreased over the last 25 years in West Africa and in the world. Even higher costs of clean energy technology partly justify this trend. However, not only has the dynamism of international renewable energy policy been noted since the 1992 Rio Summit and the Bonn Conference on Sustainable Energy in 2001, but there is also a gradual decrease in the costs of clean energy products.

The mapping shows that Sub-Saharan Africa is one of the regions with the best indicators in terms of percentage of renewable energy consumption. At first glance, the subcontinent appears to be a leader in renewable energies facing developed countries in the North and many Asian countries. However, the analyzes show that this leadership is linked to a very important use of wood for cooking and to a low consumption of electricity. The African continent is also a large consumer market for renewable energy products from abroad rather than a real producer despite its huge potential such as wind, solar, hydroelectricity and geothermal energy.

References

Alexeeva O.V. et Y. Roche (2014), La Chine en transition énergétique: Un virage vers les énergies renouvelables?, *VertigO - la revue électronique en sciences de l'environnement*, 14(3), http://vertigo.revues.org/15540.

ADEA (2015), *L'énergie en Afrique à l'horizon 2050*, Rapport d'étude, p. 160.

Avila N., Carvallo J. P., Shaw B., and Kammen D. M. (2017), The energy challenge in sub-Saharan Africa: A guide for advocates and policy makers: Part 1: Providing energy for sustainable and equitable development, Oxfam Research

Backgrounder series, https://www.oxfamamerica.org/static/media/files/oxfam-RAEL-energySSA-pt1- fr.pdf.

Bailoni M. et Deshaies M. (2014), Le Portugal et le défi de la transition énergétique : enjeux et conflits, *Cybergeo: European Journal of Geography*, http://cybergeo.revues.org/26567.

Banque mondiale (2016), Base de données de 2013, http://donnees.banquemondiale.org.

Bouchard C. (2014) Transition énergétique: contexte, enjeux et possibilités, *VertigO - la revue électronique en sciences de l'environnement*, 14(3), http://vertigo.revues.org/15975.

Bruns E., Ohlhorst D. and Wenzel B. (2010), 20 Jahre Förderung von Strom aus erneuerbaren Energien in Deutschland - eine Erfolgsgeschichte, *Renews Spezial*, Ausgabe,
http://www.unendlich-viel-energie.de/uploads/media/41_Renews_SpezialJahre_EE-Strom-Foerderung.pdf.

Carbonnier G. et J. Grinevald (2011), Énergie et développement, *Revue internationale de politique de développement*, 2, http://poldev.revues.org/687.

CEREEC (2012), Politique en matière d'énergies renouvelables de la CEDEAO, Version final, Praia.

Claustre R., Jedliczka M. et Fink M. (2014), Énergies renouvelables - en finir avec les idées reçues. Réseau Action Climat France (RAC-F), CLER - Réseau pour la transition et Hespul, http://www.hespul.org/wp-content/uploads/2014/05/ENR-idees_recues_CLER-Hespul-RAC_2014.pdf.

Cruciani M. (2014), Le coût des énergies renouvelables, *Notes de l'IFRI*, Paris, IFRI.

Deshaies M. (2013), Essor et limites des énergies renouvelables en Allemagne: la transition énergétique en question, *Revue de l'énergie*, 613, mai-juin, 169-184.

IEA (2008), *World energy outlook 2008*, Paris, IEA.

Krause F., Bossel H. and K. F. Müller-Reißmann (1980), Energiewende - Wachstum und Wohlstand ohne Erdöl und Uran, Francfort, S. Fischer Verlag.

Le Moal L. (2002), L'analyse en composante principale, Document de recherche, L'ACP sous SPSS, http://www.lemoal.org/download/spss/ACP.pdf.

Magrin, G. (2007), L'Afrique sub-saharienne face aux famines énergétiques, *EchoGéo*, 3, http://echogeo.revues.org/1976.

Mautz R., Byzio A. and W. Rosenbaum (2008), Auf dem Weg zur Energiewende: Die Entwicklung der Stromproduktion aus erneuerbaren Energien in Deutschland, Universitätsverlag Göttingen, http://www.oapen.org/download ?type =document&docid =353968.

Michaelowa A. et K. Michaelowa (2011), Du neuf avec du vieux: la politique climatique influence-t-elle l'aide bilatérale au développement?, *Revue internationale de politique de développement*, 2, 75-104.

Motel Combes P. et E. Kéré (2015), Défis énergétiques en Afrique Sub-saharienne, 10ième édition des journées de l'Afrique, 2 avril 2015, Université d'Auvergne.

ONU Environnement and BNEF (2017), Global trends in renewable energy investment 2017, Frankfurt, Frankfurt School-UNEP Centre, http://www.fs-unep-centre.org.

REN 21 (2016), Rapport sur le statut mondial des énergies renouvelables 2016 - Faits essentiels, Paris, Secrétariat du REN 21, p. 32, www.ren21.net.

Ronneau C. (2013), *Énergie, pollution de l'air et développement durable*, Louvain, Presses Universitaires de Louvain, 249-277.

ECONOMIC DEPRESSION AND DEVELOPMENT POLICIES FOR "MEZZOGIORNO" AND ITALY

Francesco Adamo[1]

Abstract

This paper considers the economic depression that in the period 2008-2014 has hit most traditionally less advanced Mediterranean regions and particularly the South of Italy. It interprets their economic performance mainly on the basis of the theory of late capitalism, develops some reflections and outlines some possible policies to promote the recovery and realize in the long run a significant reduction in the inequality of working conditions and of life between these peripherical regions and the most advanced region of Eurozone.

1. Introduction

In order to identify some useful policies for the development of the South and therefore of the whole of Italy, whose economy is traditionally conditioned by the southern question, this paper starts from the interpretation of the regional economic trends.
It assumes the theory of capitalism lately developed (Fuà, 1980; Cardoso de Mello,1982) and tries to verify its validity in the long period of economic crisis in Europe after 2007. In particular, it tests the hypothesis that at the macroeconomic level, using the classic indicators of wealth, the international gap shrank in favor of countries politically independent from the capitalist core countries and that they have already registered the economic take-off (as the emerging economies of Bric). This reduction of the gap goes on, however, until when the prolonged crisis affects the same emerging economies, the more the more their economy is based on exporting.
Instead, the countries of Southern Europe bound by the rules of the Union, and, in addition, with income levels and labour costs so high not to be competitive with countries of the Southern World, cannot take advantage of the delay of their capitalist development; so their macroeconomic gap growths with respect to the capitalist core countries of Northern Europe.
This growth of the gap is even more evident at the regional level, between the developed and underdeveloped regions within a same country of the South of Europe. In these regions - as in the poorest countries of the South, which unlike those emerging benefited less from globalization and received less external investment - even if their

[1] Università degli Studi del Piemonte Orientale. E-mail: francesco.adamo@uniupo.it
Paper presented at EUGEO 2015 – Fifth EUGEO Congress on the Geography of Europe - Pannel 31 << "Mezzogiorni" of Europe - Old and new growth gaps of European less developed regions in the years of economic crisis.>>, 31 August 2015.

macro economic gap is accentuating in the crisis as well- show some positive development trends. Lack of external investment and difficulties in importing stimulate the nativity of local micro-businesses that - if favoured by specific policies, in particular against organized crime - makes possible the generation of a sustainable endogenous development.

2. Some data of the Eurozone periphery depression.

Countries/ *regions*	2001-'07 comulative	2008 -'09 comulative	2010-'11 comulative	2011	2012	2013	2014	2008-'14 comulative	2001-'14 comulative
Mezzogiorno	**4.2**	**-6.3**	**-0.5**	**0.0**	**-2.9**	**-2.7**	**-1.3**	**-13.0**	**-9.4**
Centre-North	**9.6**	**-6.3**	**3.2**	**0.7**	**-2.8**	**-1.4**	**-0,2**	**-7.4**	**1.5**
Italy	**8.3**	**-6.3**	**2.4**	**0.6**	**-2.8**	**-1.7**	**-0.4**	**-8.7**	**-1.1**
E.Union (28c.)	**17.1**	**-3.9**	**3.9**	**1.7**	**-0.5**	**0.1**	**1.3**	**0.7**	**17.9**
Euroarea (18c.)	**14.6**	**-4.1**	**3.7**	**1.6**	**-0.9**	**-0.4**	**0.8**	**-0.9**	**13.6**
Not Euroarea	**24.6**	**-3.4**	**4.4**	**2.0**	**0.4**	**1.4**	**2.7**	**5.5**	**31.4**
Germany	**10.2**	**-4.6**	**7.8**	**3.6**	**0.4**	**0.1**	**1.6**	**5.0**	**15.7**
Spain	**27.7**	**-2.5**	**-0.6**	**-0.6**	**-2.1**	**-1.2**	**1.4**	**-5.0**	**21.4**
France	**13.8**	**-2.8**	**4.1**	**2.1**	**0.2**	**0.7**	**0.2**	**2.3**	**16.3**
Greece	**32.8**	**-4.8**	**-13.8**	**-8.9**	**-6.6**	**-3.9**	**0.8**	**-25.8**	**-1.7**

Table 1: Comulative and annual growth rates of gross domestic product in real terms (%) (a) - Source: Rapporto SVIMEZ 2015 sull'economia del Mezzogiorno
(a) Calculated on linked values - year of reference: 2010.

On some peripheries of the Eurozone, and in Italy in particular, the recession is so pronounced and prolonged that it can be considered already for these reasons a depression. Moreover, in previous recessions - and in total period since the crisis of the ford-taylorist capitalism in the years 1970ies which marks the start of the transition to the current capitalism flexible and globalist (Adamo, 1984; Adamo et Al.,2000). Regions and cities at that time peripheral were characterized by a higher relative growth compared with regions and cities central in economic development.
This is 1) because they "enjoyed" their late capitalism and could still afford extensive economic growth, not founded on innovative products or production processes; 2) because their products, intended mostly for the domestic market, are not substantially affected by short recessions, in contrast to export products offered by companies in the North.
For the last reason the recent signs of recovery in output - which, although weak, are finally certified by companies of regions and cities of the central and northern Italy, more export-oriented - do not occur again in the South and, given that, unlike the production, employment and consumption do not show signs of growth (apart from a few statements of propaganda) it is difficult to think of an economic growth of the South (so of reducing divergence, unemployment and new poverties) without adequate policies on different scales.

3. Which policies

a) At European level and particularly for the Eurozone, it is needed to abandon the present ordinary economic policy, based essentially on austerity, for policies ensuring

the necessary stability of economy not only without preventing growth, as the ECB is trying to do, but also promoting growth so as to achieve the convergence of economies. These policies, however, will be fully realized only through an actual agreement between the Governments of the Eurozone, to build a fiscal and monetary policy for the Eurozone and therefore a real European Ministry of Economy and Finance. Meantime, it is urgent to define: compensatory mechanisms of fiscal and monetary disadvantages of peripheral regions of the Eurozone, with respect to other countries of EU, especially the countries that joined the EU enlargement of 2004, b) a bolder industrial policy, development of IT and competitiveness.

b) At the national level, it is necessary to adopt, as a fundamental instrument of government, a planning (which also means full monitoring of the actions and their effects) of the territory development (socio-economic, cultural and physical) with a systemic and multi-scale approach. This planning policy should be capable of combining the objective of growth and progress of the South with that one, with it strictly linked, of the growth of the competitiveness of companies and the Italian production system overall. To this end, the national planning will have to define, in consultation with the regions and communities affected, strategic decisions, establishing areas and places of intervention, and to monitor projects and coordinate regional plans. The Priority should be, in my opinion, the networks of transport and communication, alternative energies, higher education and research in science and technology, the strengthening of local systems of enterprises and the creation of new ones, especially through the promotion of IT investments, enabling a revival of industrial production, a further growth of the agro-industrial productions and handicraft of quality (fashion), a growth of sustainable and responsible tourism.

c) At a sub-national scale it is necessary a specific regional policy for the South, carried out by State and local Regions, having as main objective the industrial development. In particular, effective measures are urgently needed to support employment (such as works on infrastructure and public services still lacking) and consumption, but also measures to promote growth of the total productivity of enterprises. It is also necessary that the national strategic choices of industrial policy of high profile, mentioned above, interest adequately the South – particularly some of the places most endowed with conditions for progress of knowledge economy – and enter in synergy with actions within their regional plans, based on bottom-up projects or , nevertheless , which exploit local potential.

Like at national level, development policy in the South can not be limited to tourism (whose promotion announced in the National Strategic Plan for Tourism 2013 is, among other things, still on paper). It must point to the agro-food quality, which already made great progress, and not least on the development of new enterprises and local systems of enterprises of the knowledge economy, enhancing the network of universities which is fitted into the South and a network of partnerships with universities and Italian and European research centers.
You can not give up this goal neither at national level, unless you want a reduction in income, nor in the South if you do not want better educated and intellectually rich young people increasingly fleeing, depriving the region of the main resource for its progress.

Emigration from the South, essentially blocked since 1974, from the beginning of the second millennium has recovered and is intensifying. “Between 2001 and 2014 they have migrated from the South to the North-Centre over 1,667,000 people, compared with a return of 923 thousand people, with a net migration of 744,000 units. 70% of this loss of population, 526,000 units, concerned the youth component, of which just under 40% (205,000) graduates”. (SVIMEZ, 2015) With the resumption of emigration, together with the natural negative balance since time, the South risks desertification.

4. Assumptions and arguments in support of the above political lines.

For monetary union to be sustainable, the economic convergence between the member countries is fundamental and the convergence needs, if you don’t like a reduction of the GDP of central countries, the growth of peripheral countries.

“Since the Maastricht criteria were introduced in 1992, the spread between GDP per capita (in purchasing power parity) of the countries of the core and the periphery narrowed… However, this convergence, which never consolidated, started to reverse with the onset of the global financial crisis of 2008…
In short, the convergence occurring between peripheral and core countries over the last few decades has been very limited. Moreover, the convergence that has occurred has been due to higher growth in labour and capital factors in the periphery, making this improvement short-lived. At the end of the day, productivity must increase more in the periphery than in the core in order to achieve durable convergence between countries. Translated into concrete actions, those countries lagging behind must improve the efficiency of their economies by adopting the institutions, technologies and production methods of the advanced countries and must also make more use of the advantage of the economies of scale offered by the single market. Total factor productivity is the key element that determines long-term growth. Only by increasing this productivity in the periphery will convergence between countries be stronger and more sustainable”(SVIMEZ, 2015).

Well, convergence and monetary union need an intensive growth of peripheries , that is of both their GDP and their productivity and competitiveness. They need new policies by EU, by peripheral States of Eurozone and by their peripheral regions, as announced above.
In fact, just some liberists - the most obtuse and ideologised - can think about dealing with the depression of some Eurozone peripheries without a stronger public leverage and even that the timid resumption of growth in the core countries is sufficient to promote growth and convergence of the peripheral ones, maintaining the current policies at EU and national level, from the ordinary austerity to industrial and regional. As claimed by many other economists - although the media did not spread much their arguments and opinions - are indispensable important public investments. The financial resources made available by Europe 2020 strategy are thought generally insufficient and especially poor are capital investments needed for intensive growth of the economy of the European peripheries and Europe.

As of the current constraints of the fiscal compact - a deal that in principle it is certainly important - it is very difficult, if not impossible, for countries such as Italy find

financial resources for public investments necessary to sustain the recovery and development the South and then the entire national economy. Apart from the request of a certain easing of these constraints, which me, public financing of growth of the South can and must find other channels (v. Cappellin et al., 2014; Pianta, 2014). Just to begin, an important contribution should be given by the European Union as compensation for competitive disadvantages that Italy and especially the South are suffering as a result of the aggravation of the disparities in 2004 with the entry of Eastern
European countries, which enjoy tax much more advantageous, a lower cost of labour and the further competitive leverage given from any devaluation of its currency, in addition to the EU structural funds. These asymmetries are certainly the main competitive advantage that enables the growth and convergence of these European peripheries, but meanwhile heavily penalize some other peripheries.

According to Sterlacchini (2014), Europe 2020 strategy was a definite improvement on the “previous (failed) Lisbon strategy by establishing, for example, a small number of targets in support of growth, employment, environment and social inclusion. Among them, the so-called "industrial compact" aims to reverse the decline of the manufacturing sector reporting, in 2020, his weight to 20% of European GDP (currently at 16%)”. However, besides the fact that for this purpose "the financial resources in the field appear totally inadequate ..., the emphasis on quantitative target is likely to overshadow the ways in which you can pursue."
While it is for the nation states and regions to define these methods, according to their vocations and potential, it would be desirable to introduce measures that discourage the adoption of an industrial policy of "low profile", based on price competitiveness, which is definitely a loser for the advanced economies of Europe. Unless you want to reduce wages, consumption and income, these countries need to focus on policies of "high profile", that privilege research, innovation, product quality (see: Figure1) having as targets growth productivity, competitiveness and quality of life (Adamo, 2003).

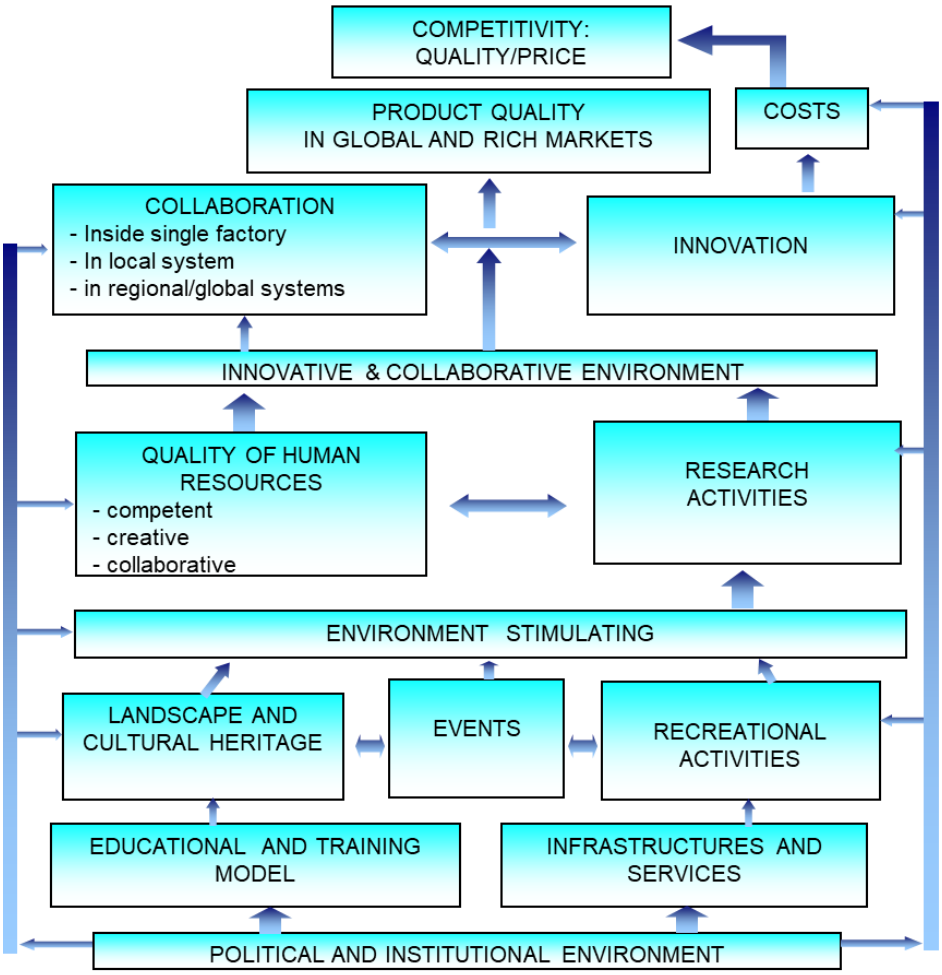

Figure 1: Global competition and local environment values

In fact, only few European countries have adopted effective measures of industrial policy to enable it to compete with large economies, such as those of the United States, Japan, Canada, and that address the growing competition from emerging countries (BRICS). Overall, Europe's lower growth compared with the United States is, at least partly, due to a lower growth of investment in IT capital, both in core and peripheral countries of the euro area. “Between 2009 and 2013, public investment fell by 20% in real terms in the EU, as they grew substantially in the United States" (Focus Economics). "Considering the pre-crisis period, Buiges (2011) distinguished the major European countries which have increased or decreased their competitiveness with respect to the emerging economies. Among the first, there are Germany, Austria, Sweden and Finland; among the latter France, UK, Spain and Italy. The countries in the first group reported wages above the EU average, they invest more resources in R&D and support with higher subsidies environmental protection, energy conservation and renewable sources. Italy did not follow this path (Sterlacchini, 2014), nor has it changed direction during the recession. If you don't consider the mere declarations of political will of the last two years, the Italian State seems to have given up on pursuing the policy of high profile necessary, for the South, Italy and Europe. Suffice it to say that in the intensity of spending on R&D to GDP, Italy's objective for 2020 is 1.53%, i.e. a percentage slightly higher than that recorded in 2008 (1.2%). If the 3% target set

for the whole EU would be unrealistic, such a low target by Italy constitutes a waiver to production growth and to be a competitive economy in the world market, and at the same time increase its gap in the Eurozone and jeopardize its monetary union.

To understand the importance and the need to increase public investment, as well as private, for a policy of growth and particularly growth in the "Mezzogiorno" (South) is enough to recall that both the national and regional policies and the policy of the European Union structural funds, while with their many shortcomings and even errors, led to a huge advance in these regions: a great progress in living conditions, the rise of a widespread entrepreneurship, still represented mainly by micro-enterprises, but also from some interesting companies. This despite the difficulties of penetration of capitalist enterprise in this environment where traditional social relations of production were opposed and still oppose resistance to be replaced.

If in the past some actions of industrial policy, as well as of development policy for the South, have not yielded the expected results, not for this one policy should be eliminated. Rather we must carefully evaluate strategies, actions, formality and way of implementation; so, by understanding the reasons for failures and successes, we should change policies. The failures then are not necessarily due to an inherent inability of public administration, as claimed by the supporters of a utopian Market without State. If we look to the experience of the Italian Mezzogiorno and industrial policy, many failures are due to the behavior of private companies, although the responsibility remains of the State, as responsible for funding and evaluation of projects. The government, in any case, can be reformed - and when necessary it must be - in order to have public managers even more responsible than private ones, since good management should be in their own interest and in the public interest.
Let me be clear, however, that the lack of convergence and the inequality of the South, as for other European countries with economies dualist, does not mean that state intervention has not produced, along with the mechanisms of the market growth, a big improvement in conditions of life. It must now be an additional effort, national and EU as well as local, to increase its production structure and especially its productivity and competitiveness, in the interests of all of Italy and the strengthening of the European Union.

A confirmation of the importance of public investment in this regard is the comparison of the southern economy with that of the Centre-North in recent years. The greatest difficulties of the South derive not only, as mentioned, from its less resilience to the recent recession, from the tax dumping and generally its competitive disadvantages compared to Eastern Europe, but also largely from the much smaller public investment, as rightly highlighted by the last report SVIMEZ (2015). "While between 2000 and 2007, the level of productivity in the manufacturing sector in South stood at above 70% of that of the more developed regions of the country, since 2008 it has been gradually reduced, and stood around 58% in 2014. Between 2008 and 2013, while the advantages granted to firms in the Centre-North... decreased by -17% (from 3.2 to 2.6 billions euro), those intended for the South fell by -76% (from 5.5 to 1.3 billion euro)". In the pre-crisis period 2001-2007 the South had held almost the same rate of industrial growth of the rest of Italy (+ 5.9% against + 7.5% of the central and northern regions). In the seven years 2008-2014, the southern manufacturing sector, already not very

present in the economy of the South and in difficulty due to the increased impact of globalization on their production, showed a fall of 34.8%, more than double the amount of in the Centre-North, equal to -13.7%. For comparison, in the same period the cumulative decline of the manufacturing sector was -3.9% in the Eurozone and by 3.2% for the entire European Union.

Finally, I have to clarify in the case of Italy, unlike perhaps in other dualist countries of late capitalism, why a specific regional policy for the growth of peripheral regions is an absolute need and therefore it is necessary to avoid the risk of generalizing the positive direct correlation between national growth and regional convergence, and thus of its political implications. This risk derives from the possible influence of the findings of this positive correlation in several countries and recently confirmed in some Spain studies (De la Fuente, 2004; Barrios and Strobl, 2005). These studies certainly "fit well with the original predictions of Kuznets (1955) as well as with a model à la Tamura (1996) and Lucas (2000) where the transition dynamics of regional economies towards their steady state level of income can generate such a curve and where spillovers play a central role in transmitting growth and technological progress across region .. De la Fuente (2004), estimates that, in the case of Spain, which has largely benefiting from EU aid since the late 1980ies, the allocation structural funds would have provided greater welfare through more concentration on the most dynamic regions in order to favour nation-wide growth" (Barrios e Strobl, 2005).
These findings are probably correct and it may be rational in some country, as in the case of Spain, but the generalisation of a positive correlation between national growth, particularly growth of the nation central areas, and convergence of peripheral regions, is wrong. This generalisation is common to the neoclassic theories of regional development and misleads policy makers, to consider useless public interventions in favour to peripheral regions, or justifies the choices of those who have contrary interests. Leaving aside these interests, the error of generalisation derives from the assumption that territory is just pure space, without environment. This reductive assumption (explicit or pity, often, just implicit) - common to all other theories of regional development by economists - not allow to explain, in the case of Italy, why the convergence process between central and peripheral regions and cities was achived within Centro-Nord (from 1950s to 1980s) and why, instead, the divergence respect the South or "Mezzogiorno" is still wide.

The difference can not be simply consider as due to the physical distance of the Mezzogiorno from the centres of the Italian and European capitalism, and even less of a perverse lack of goodwill by Northern capitalists. The most important reasons are both in the social and cultural environment of Mezzogiorno, where people remained long time subjects and only in recent times - as showed by growing accusations against corrupts and "Mafiosi" - are becoming citizens. For this socio-cultural obstacle, a relevant role is given to the historical political compromise of Northern and Southern ruling classes: between Northern industrialists and Southern "land lords" who until the middle of XX century were recipients of agrarian rent, after the recipients of urban rent together their representatives who are local politicians - "owners" (controllers) of a package of adhesion cards to a political party and/or collectors of votes - conceding employments, like once the "caporali" (recruiters of day laborers) of the agrarian lords did.

A new European and national policy for "Mezzogiorno", but also policy for every other regions, have to take seriously into account and face eventual "political deficit" of Local Administrations (Regions and Municipalities) and in particular their capacity and efficiency in spending national and European funds.
At national level, like within each region, is certainly incorrect both simply to wait local initiatives or the execution of projects already funded and to adopt mechanisms that reward the most virtuous administrations. Incapability and inefficiency of spending by local Administrations are part of the local weakness and of the development problems of peripheral regions. While respecting the competences (not sovereignty that belongs to State) of local institutions, the State (as well as Regions toward Municipalities) has first the role to stimulate local bottom up initiatives of development and the implementation of local projects funded. Moreover, it has right and duty to apply the subsidiarity principle, that is to intervene when implementation of a project is late or incorrect, promote local initiatives based on local resources when they do not exist or are poor, coordinate local projects with national development plan. After decades that bottom up development is emphasised, I also have to make clear that bottom up does not exclude top down development and in any case top down monitoring and coordination actions are necessary to create synergies among local initiatives, besides the conditions of their implementation.

5. Conclusion

The current economic situation in Europe and Italy and political trends leave no means to predict a reduction of regional disparities. Indeed, giving the increasing importance of the knowledge economy and the importance of dense locations for knowledge-based industries it leaves open the prospect of an increase in regional disparities.

What is worse, in the Italian case, is the apparent prospect of a growing impoverishment of the South of Italy, to avoid that, it requires industrial and regional policy aforementioned, large public investments in favor of the South must be far greater than those granted on average per year since the creation of the "Cassa per il Mezzogiorno", that does not seem to be many[2].

These public investments - compatible with fiscal compact insofar as they allow to increase GDP - should be to attract local entrepreneurial iniziative and private

[2] When compared to the amount of resources committed by other dualist economies, such as Germany, or even just to the huge Italian Statedebt, which certainly is not due to the support of the South and it may be consider even among the causes of the persistence of the gap after decades.
"*It has been established that the total expenditure for the extraordinary intervention for the Mezzogiorno, between 1951 and 1998, amounted to 379,229 .1 billion lire (calculated in constant values, referred to the final year), of which 108,998.1 represented incentives for private investment; ... at the same time the contributory benefits were equal to 202,420.4 billion lire ". If these figures represent a substantial public commitment by the weak Italian economy, you can resize the criticism to their effects, if one considers the financial resources committed by Germany to try and reduce its great dualism after unification. According to estimations of the German Ministry of Finance, in fact, in the first 10 years after reunification the transfers to the eastern Länder for promoting development and infrastructure, were about 390 billion. This amount is of the same order of magnitude as realized in 50 years for the South, excluding spending on contributory benefits*" (Lepore, 2011).

investment from outside, so, they should primarily be aimed at creating necessary conditions for IT and generally productions of high quality, among them a prominent place is the presence of human resources of high quality (skills, creativity and aptitude for collaboration), required by high profile productions; so a significant proportion of public investment will have to be engaged in education and vocational training, as well as in the growth of accessibility (transport and communications) and in scientific and technological research.

References

Adamo F. (1984), The Urban Crisis in Italy, in G. Heinritz & E. Lichtenberger (Eds), *The take-off of suburbia and the crisis of the central city*, Proceedings of the international symposium in Munich and Vienna 1984, Stuttgart, Steiner V., 1986, 207-227; and in A. Segre, Regioni in transizione, Milano, F. Angeli, 1985, 21-78.

Id. (1993), A varosfejlodés valsaga a 70-es évtizedben in H. GYULA (ed.), *Regiok és varosok az olasz modernizacioban*, Magyar Tudomanyos Akademia, Regionalis Kutasok Kozpontja, Pècs.

Id. (2003), Competizione e valori del territorio nel capitalismo flessibile e globalistico (Competition and Territorial Values in the Flexible and Globalistic Capitalism), in *Bollettino della Società Geografica Italiana*, Roma, Serie XII , vol. VIII, 245-264.

Id. (2006), Sviluppo e sottosviluppo nell'era del globalismo (Development and Underdevelopment in the Globalism Age), in D. Lombardi (Ed.), *Percorsi di geografia sociale*, Bologna, Patron, 165-192.

Barrios S. and Strobl E. (2005), The dynamics of regional inequalities, European Economy, *EC, Economic Papers*, nr. 229, July 2005.

Buiges P. (2011), L'industrie dans le pays européens: des gagnants et the perdants face à la montée des pays emergents, *Revue d'économie Industrielle*, Nr. 136, 199-210.

Cappellin R., Marelli E., Rullani E., Sterlacchini A. (2014), *Crescita, investimenti e territorio: il ruolo delle politiche industriali e regionali*, Website "Scienze Regionali" www.rivistar.it, eBook 2014.1.

Cardoso de Mello J. M. (1982), *O Capitalismo Tardio*, São Paulo, Brasiliense.

De la Fuente A. (2004), Second-best Redistribution Through Public investment: A Characterization, an Empirical Test and an Application to the Case of Spain, *Regional Science and Urban Economics*, 34(5), 489-618.

Focus Economics (Economics Forecasts from the World's Leading Economists), *Euroarea: the importance of freal convergence for economic union*, www.focus-economics.com.

Fuà G. (1980), *Problemi dello sviluppo tardivo in Europa: Rapporto su sei paesi appartenenti all'OCSE*, Bologna, Il Mulino.

Kuznets S. (1955), Economic Growth and Income Inequality, *The American Economic Review*, vol. 45, Nr.1, Mar.1955, 1-28.

Lepore A. (2011), La valutazione dell'operato della Cassa per il Mezzogiorno e il suo

ruolo strategico per lo sviluppo del Paese, *Rivista Giuridica del Mezzogiorno,* 1-2.

Lucas, R.E. (2000), Some macroeconomics for the 21st Century, *Journal of Economic Perspectives,* vol.14, Nr.1, 159-168.

Pianta M. (2014), An industrial policy for Europe, *Seoul Journal of Economics, Vol. 27, No.3,* 277-*305.*

Sterlacchini A. (2014), Verso una politica industriale di alto profilo in Italia, *Giornale di Scienza Regionale - EyesReg*, Vol. 4, N. 6, Novembre 2014.

Tamura R. F. (1996), Regional economies and market integration, *Journal of. Economic Dynamics and Control*, Elsevier, vol. 20 (5), 825-845.

SVIMEZ (2015), *Rapporto Svimez 2015 sull'economia del Mezzogiorno*, Roma.

U. N. (2016), *World Economic Situation and Prospects 2016*, New York.

SWFs: TRANSNATIONAL INVESTMENTS AND LOCAL DEVELOPMENT

Maria Giuseppina Lucia*

Abstract

The accumulation of enormous amounts of money from petroleum exports and from balance of payments surpluses has led to the creation of Sovereign Wealth Funds. While the geography of sovereign wealth funds' capital inflows and outflows has not changed significantly in recent years, the financial crisis led to a marked emphasis on lower risk assets, real estate in particular. This paper will seek to understand the role of these new protagonists in the world financial system. We will thus examine the Qatar Investment Authority's acquisition of the Porta Nuova district in Milan to determine whether long-term investment of cross-border capital in a driving sector such as real estate, together with strengthened ties between local actors and global players, can have positive effects on the area involved.

Keywords: Sovereign Wealth Funds, real estate, urban regeneration, landing, anchorage

1. Introduction to Sovereign Wealth Funds

The aftermath of the 2007-2008 crisis provided a clear demonstration of the power of Sovereign Wealth Funds (SWFs)[3] in the global financial system through their role as stabilizers in bailing out beleaguered banks. Citygroup and Merrill Lynch, for example, received almost seventy million dollars from the SWFs of Kuwait, South Korea and Singapore (Ciarlone et Miceli, 2013).
However, though sovereign wealth funds began to attract attention only in the first decade of this century, they are by no means new. The current Saudi Arabia Monetary Fund was set up as early as 1952, followed in the next year by the Kuwait Investment Authority, or KIA.
The number of SWFs began to increase in the 1970s, when the energy market turmoil of 1973 and the full-scale crisis in 1979 induced the oil producing countries to deploy strategies for dealing with the risks associated with fluctuating commodity prices and to diversify national economic systems that rely entirely on petroleum revenues.

[3] The term Sovereign Wealth Fund was coined in 2005 by Andrei Rozanov.

* Department of Regional and Urban Studies and Planning; mglucia@unito.it

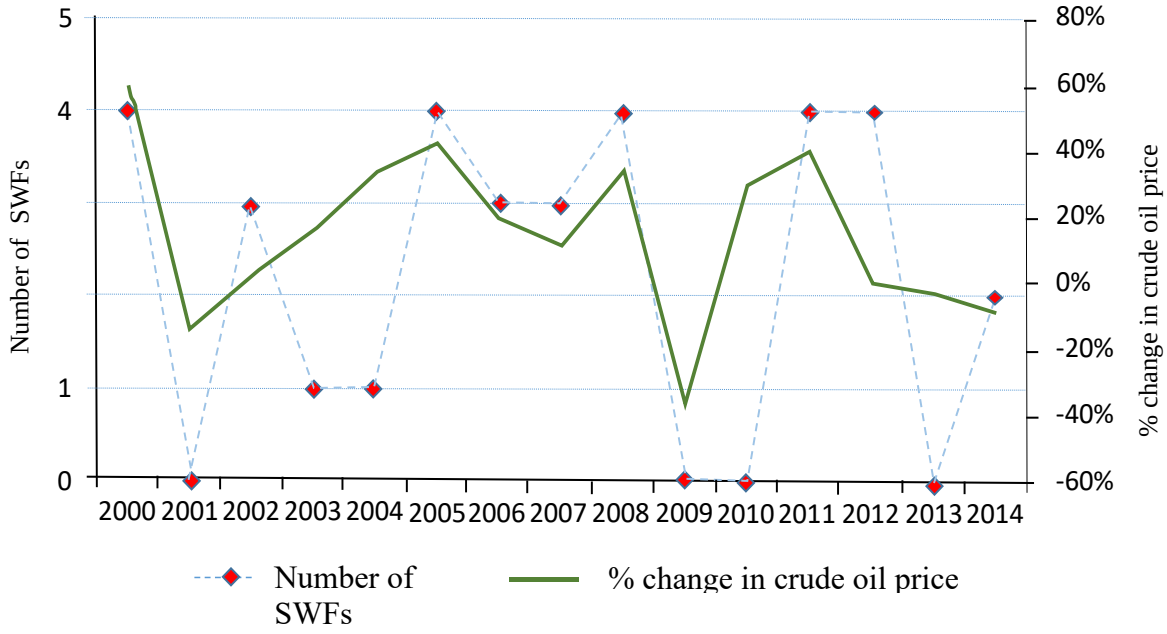

Figure 1: New SWFs and crude oil price trends from 2000 to 2014 - Source: based on Amar, 2016

By now, almost all countries have instituted financial instruments of this kind, an example of which is the Government Pension Fund that Norway established in 1990 to invest its revenues from petroleum exports. Today, the Norwegian fund is the largest in the world in terms of total assets, and is notable for its commitment to environmental stewardship and development cooperation efforts (Arduino, 2009; Quadrio Curzio et Miceli, 2010).

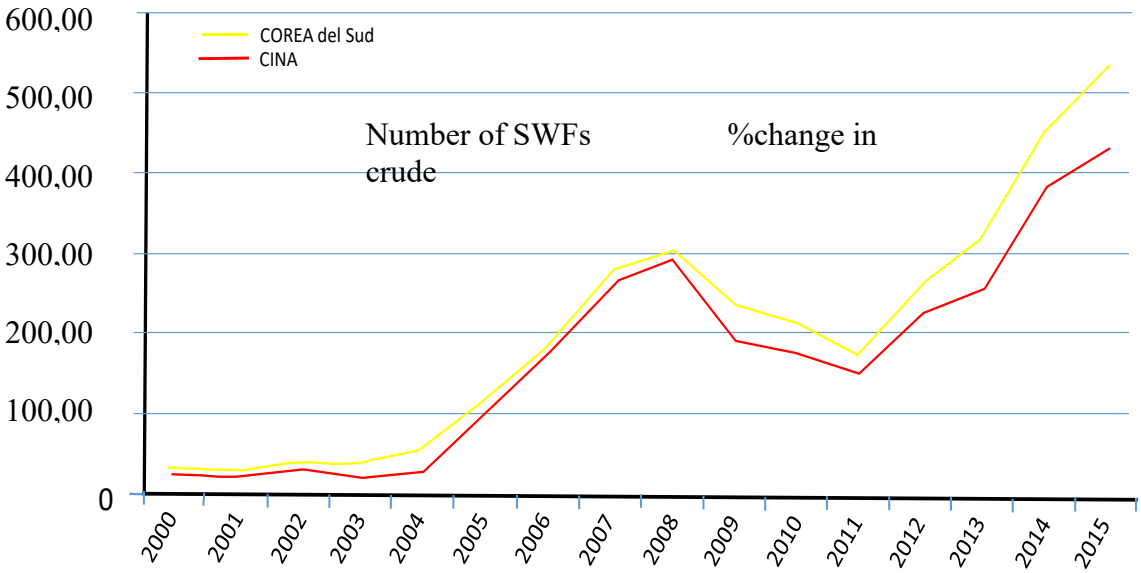

Figure 2: Trade surplus in two emerging countries from 2002 to 2015 (millions of dollars) - Source: based on Amar, 2016

In the first decade of the twentieth century, there was also an increase in the number of sovereign wealth funds in emerging countries. Among the many SWFs on the world

financial scene, mention should be made of the China Investment Corporation (CIC) and South Korea's Korea Investment Corporation (KIC). These funds manage the resources generated by rising foreign exports, and have resulted in significant increases in foreign currency reserves[4], especially those denominated in US dollars. In any case, they channel the enormous amounts of money accumulated by energy exporters - commodity wealth - or by countries with steadily growing trade surpluses (see Figures 1 and 2).

Depending on their objectives, SWFs can be classified either as saving funds that aim to diversify an economic system based entirely on petroleum and thus guarantee that future generations can benefit from the resources generated by non-renewable resources, or as pension reserve funds and stabilization funds. The latter are intended respectively to compensate for any imbalances in retirement systems, and to insulate public finances from fluctuating commodity prices. A further category is that of reserve investment corporations, which are set up to achieve higher yields on investments in foreign reserves (Ciarlone et Miceli, 2013).

Given the wide variety of SWFs, it is difficult to arrive at a precise definition, as can be seen from the many formulations emanating from academia, as well as from the attempts made by the major international organizations and several important financial players. The consensus view, however, is that an SWF can be defined as an investment vehicle which is owned by a sovereign state, funded chiefly by foreign exchange assets, and is legally and administratively separate from the government's central bank. Very briefly, then, we can say that an SWF is an entity established by a sovereign state in order to manage its medium-long term investments of financial resources deriving from foreign currency assets (Quadrio Curzio et Miceli, 2010; Alvaro et Ciccaglioni, 2012). Consequently, the sovereign state functions as an investor in the same financial arena as other actors, a situation that, according to some scholars (Savona et Regola, 2009) could not only lead to a resurgence of government interference in the economy with the attendant risk of free market restrictions, but could also throw the world's geopolitical equilibria out of their current kilter.

The rise of SWFs in the global financial system offers many opportunities for investigation and analysis. Here, we will simply attempt to outline how these funds operate worldwide, and then focus on their investments in Italy's real estate sector, examining the case of the Porta Nuova area in Milan. Lastly - on the basis of the geographical literature - we will seek to determine whether the SWFs' investment flows can provide opportunities for the development of the real economy.

2. Sovereign Wealth Funds on the global financial scene

As mentioned above, the increase in the number and size of SWFs began in the early 2000s and continued steadily until 2011. Total assets under management (AUM) peaked in 2008, when they amounted to around 112 billion US dollars. After that date, the number of SWF transactions has risen, but deal value has dropped. Nevertheless, in 2015 total assets under management accounted for 7% of world GDP and 3% of the total value of the global financial stock (Bortolotti, 2015; Preqin, 2015).

[4] For a better understanding of the international relations involved, note that China holds most of the United States' national debt (Romano et Padoa Schioppa, 2009).

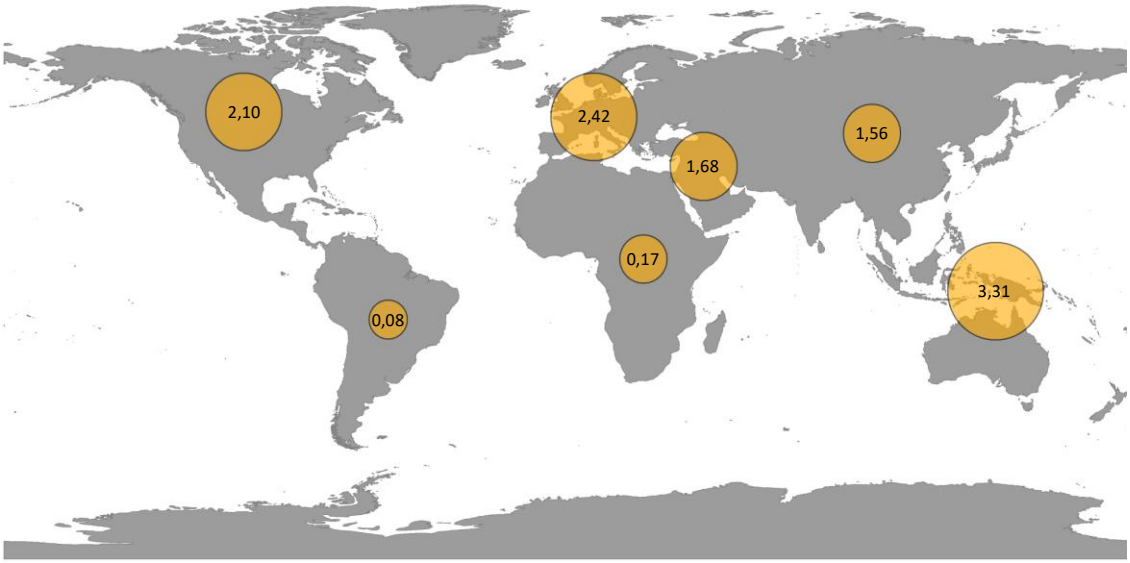

Figure 3: SWF assets under management in 2016 (US$bn) - Source: based on PwC, 2016

Countries in Asia and the Middle East hold around 80% of sovereign funds' AUM, followed at a distance by Europe (14%), North America and Oceania. The United States and the United Kingdom rank among the world's top recipient countries, together with China, whose SWF is also one of the largest in the world.

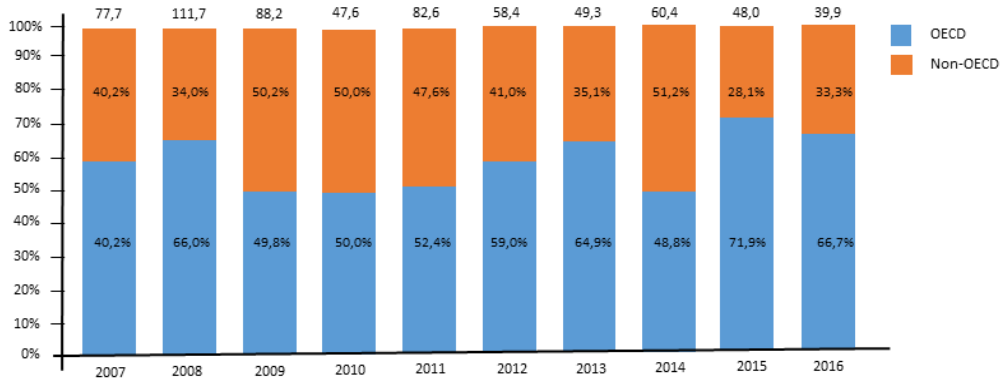

Figure 4: Total assets under management (US$bn) and percentage of investments in OECD and non-OECD markets - Source: based on Sovereign Investment Lab, 2017

As a look at sovereign wealth funds' capital inflows and outflows will show, most investments have been allocated to OECD countries, as they guarantee greater political and economic stability. But in recent years, there has been an increase - though still a fairly modest one - in investments in SWFs' domestic economies, as well as in various emerging markets.

Geographically speaking, the resulting financial flows are extremely complex, because the presence of SWFs creates a variety of relationships both between developed countries and the countries of the South, and among the Southern countries themselves. The objectives pursued, moreover, are ambiguous, making it difficult to arrive at a clear view of the financial and political strategies involved. Consequently,

assessments of sovereign wealth funds' role in the global financial system are often based more on the observers' perceptions and ideologies than on objective evidence, particularly in view of the poor or entirely nonexistent transparency of the funds belonging to countries with totalitarian regimes. Here, examples include China and the Gulf States. In 2007, China set up the China-African Development Fund (CADFund) to encourage Chinese firms to engage in development projects in Africa, while the Gulf's sovereign wealth funds have joined together in the Gulf Cooperation Council to invest in Muslim developing countries. (European Investment Bank, 2012). It is thus difficult to determine where the line is between development cooperation initiatives and bids to increase political influence in underdeveloped countries. In the case of Western countries, on the other hand, it is clear that the objective is to achieve capital gains.

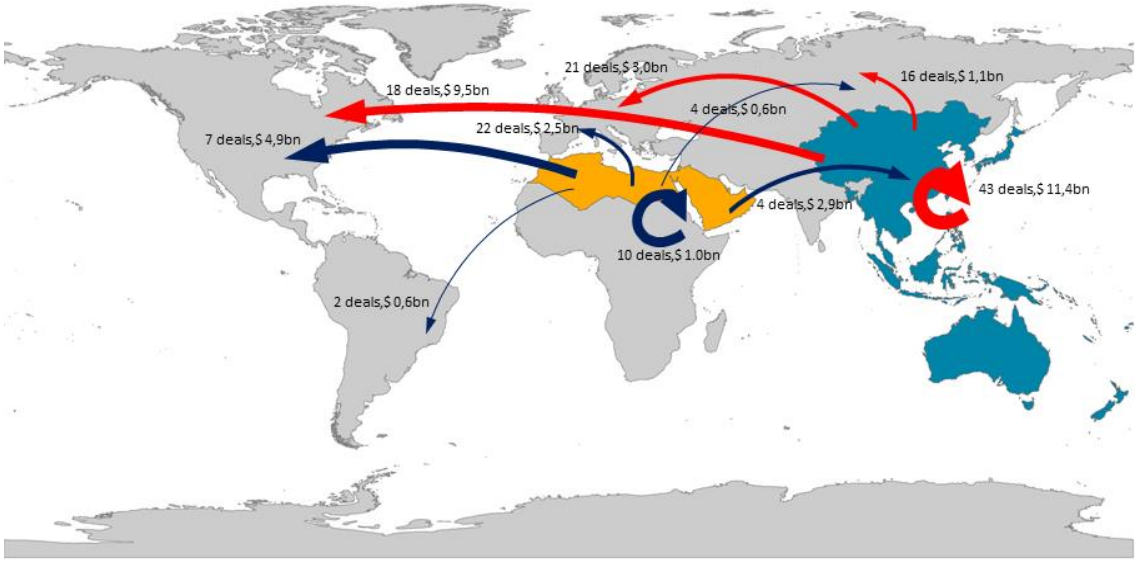

Figure 5: Geographical breakdown in SWF investment flows in billions of US dollars and number of deals in 2016 - Source: based on Sovereign Investment Lab, 2017

The 2007-2008 crisis sparked an interest in diversifying investments across sectors and a marked emphasis on lower risk assets. Between 2011 and 2015, there was a movement towards the so-called safe assets (real estate, hotels and tourism facilities, infrastructure and utilities) which in addition to being low in risk can also become development opportunities for the recipient areas. In the following year, there was something of a retreat from safe assets, as investments tended to be channeled into personal and business services and, above all, into innovative technologies (Bortolotti et al, 2014; Bortolotti, 2016), as these sectors are less dependent on international political relationships. However, real estate continues to be a prime area of interest for SWFs, given their "patient"- i.e. long-term - investment strategies.

In Italy, the real estate sector has only recently begun to attract the attention of sovereign wealth funds, but some reflections on this trend are in order to determine whether the flow of cross-border capital can contribute to local development. In the following pages, we will thus attempt to arrive at a understanding of the role these new protagonists of the world financial system play in creating value in Italy, and the

strategies deployed by local actors to access and materialize the financial resources moving on the global scene.

3. The SWFs in Italy

In the world rankings of SWF investments by target country in the first decade of this century, Italy occupied twentieth place, with only 1% of total assets under management worldwide, and slightly under 5% of those in Europe. The pace of investment in the country began to pick up in 2012, however, and only two years later Italy accounted for 14% of all SWF capital inflows to Europe (Bortolotti, 2015).
Among the sovereign wealth funds that invest in Italy, the Libyan Investment Authority is particularly active in terms of number of deals, while in terms of deal size the Qatar Investment Authority takes the lead with 3 billion dollars, followed by Abu Dhabi's International Petroleum Investment Company and Mubadala, and by Singapore's GIC[5]. Other sovereign wealth funds also operate in the country but for the moment have a smaller financial impact, although they are highly significant because they invest in such important areas as infrastructure, telecommunications and energy. Precisely because these sectors are considered vital to national security, golden share provisions have been introduced that cap sovereign wealth funds' shareholdings in strategic enterprises at 10% to avoid the risk that representatives of foreign investors will have a decisive voice in company management[6] (Ruggeri, 2012).
Investments in the financial sector are one of the preferred assets, absorbing 40% of the total and controlling almost 19% of Milan's stock market capitalization[7]. In 2015, in fact, sovereign wealth funds had holdings in around 102 firms, or 36% of all companies listed on the Milan stock exchange (D'Ascenzio & Mangano, 2015)[8]. According to the most recent statistical data, the real estate sector, which as mentioned earlier has been particularly attractive to sovereign investors since 2006, accounts for 39% of all assets managed by SWFs in Italy, and thus comes a close second to the financial sector (Bortolotti, 2014).
Reliable studies indicate that the reasons behind investors' renewed confidence in Italy's real estate are chiefly to be sought in the favorable regulatory framework for the sector established by the so-called Stability Law enacted in 2014. This legislation allowed real estate companies to proceed with internal reorganization, and to list themselves on the stock market. Further stimulus for the real estate sector's recovery was provided when the European Central Bank launched its quantitative easing program to boost bank lending. Between 2014 and 2015, real estate thus showed clear signs of rallying, with revenues rising by 3.7% (SorgenteGroup, 2016).
Sovereign wealth funds contributed to the Italian real estate sector's surge by investing around 1,79 billion dollars in the early months of 2016, chiefly in purchases of office space (36% of the total), followed by retail (31%). Mixed-use buildings and the

[5] Originally set up as the Government of Singapore Investment Corporation. For details, see Amato, 2012.
[6] The United States and the European Commission have also set limits on investments by sovereign wealth funds. See Goldstein & Subacchi, 2008; Thatcher, 2012.
[7] The Milan Stock Exchange is - better known as Borsa Italiana. It merged with The London Stock and Exchange in 2007.
[8] The most emblematic example is Unicredit, whose stockholders include the AABAR fund of Abu Dhabi with a 6.5% stake, followed by the Libya funds (4.9%) and by LIA (1.6%). Alvaro & Ciccaglioni, 2012.

hospitality segments accounted for 15% and 7% respectively, while the industrial and logistics sector followed at a distance, with 1%. The majority of these outlays were made in the northern (57%) and central regions, largely in the provinces of Milan, which alone accounted for 44%, Rome (27%) and Florence with 7% (Gabetti, 2016).
For the most part, we are dealing here with existing properties of considerable iconic value - so-called trophy assets such as prestigious hotels, luxury resorts, historic buildings and revitalized urban areas - which ensure international visibility for investors.
In this context, an investigation - albeit still exploratory - of the investments made by the Qatar Investment Authority (QIA) sovereign wealth fund in Milan's revamped Porta Nuova area can shed light on whether cross-border capital flows in real estate signal a move towards a correct use of finance in development processes, and can thus be seen as heralding a welcome reinstatement of the virtuous circle between the financial economy and the real economy.

4. The Qatar Investment Authority and urban renewal

Among the real estate investments by sovereign wealth funds in Italy, the Qatar Investment Authority's acquisition of Porta Nuova in Milan is an emblematic case.
Located in the heart of the city, the Porta Nuova area has been revitalized through an urban renewal project centering on public spaces which is designed to establish a strategic link between the Garibaldi, Isola and Varesine districts, and between them and the rest of the city.
While the Porta Nuova operation began in 2005, the Qatar Investment Fund's involvement dates to 2013, when it took up a 40% stake in the fund set up over several stages by the project's promoters. Two years later, it acquired the remaining 60% (Molinari et Russel Catella, 2015).
The purchase of a redeveloped urban area by a financial player combining both financial and political functions, and ranking near the bottom of the Truman transparency and accountability scoreboard (2008) sparked considerable concern, as it was feared that the QIA's aims and interests were political as well as strictly economic. Accordingly, a number of Italy's most respected mastheads and several scholars presented the Qatari investments as the beginning of a "soft colonization"[9], warning that the transfer of ownership and the waning presence of Milan's traditional entrepreneurship would result in a loss of urban identity, made even worse by selective gentrification processes.
Nevertheless, there is no lack of approval, based in particular on the fact that the revitalized area has returned public spaces and green areas to the community. In addition, while there are those who maintain that the use of "homologizing" architectural modules brings a loss of urban identity, there are others who, conversely, consider them as contributing to a twenty-first century metropolis, and point out that dialog with the public and disseminating the master plan before it was implemented made it possible to arrive at a shared vision of how the derelict areas were to be regenerated[10]. In support of this view, we can cite several projects that enjoyed the

[9] See the press review published in Il Foglio, March 2, 2015.
[10] These opinions were voiced in a number of direct interviews, in particular with the director of the COIMA Marketing Office, the specialist in sovereign fund investments at the La Scala law firm in Milan, academics from the Milan Polytechnic and the University of Turin, and real estate companies.

backing of public institutions and local associations, in which a number of buildings intended for cultural, research and educational purposes were tasked with "showcasing and preserving the city's memory"[11].

To complete our picture of the contrasting viewpoints, the reassurances offered by the forces spearheading the Porta Nuova project should also be mentioned. The institutional actors assert that they took an active role in orchestrating the area's revitalization to maintain a connection between innovating and preserving the district's distinctive character, noting that a number of the local government's choices were able to engage the public through projects benefiting the community as a whole. COIMA Sgr, the company heading the Porta Nuova operation, affirms that the capital provided by the Qatar Investment Authority is not a threat but an opportunity, because unlike speculative funds - private equity funds in particular - the Qatari fund has a long-term investment horizon and undertakes to maintain real estate's position unchanged in its core business. In addition, COIMA Sgr acts as property and facility manager, thus ensuring that a sizable portion of the area's value production stays local, thanks to the creation of multiplier effects in several segments of the economy and to the attraction that the revitalized area can have for other international investors, setting a virtuous circle in motion.

For its part, the QIA has attempted to allay the doubts of those who see its activities as involving dangers of various kinds. Thus, the sheikh, his family members and aids have issued statements to the effect that the sovereign wealth fund focuses on income-producing assets, i.e., investments that generate steady revenues over time, and have expressly indicated their desire to provide support at this critical juncture for the economy of a country with which they have long-standing bonds of friendship.

It is clear the situation described so far owes more to the perception of the sovereign wealth fund's investments than to the actual impact they have on spurring development in the urban setting as a whole. The inherently mobile and cross-border nature of capital, the difficulty in obtaining reliable information, and the time that invariably lapses between when a project is unveiled and when its concrete economic and social effects make themselves felt all prevent us from arriving at conclusions substantiated by objective evidence. Nevertheless, the available material can be used as the basis for an initial investigation of whether methods and concepts that have been applied in the many geographical studies addressing the relationship between multinationals' localization and regional development can be employed in the analysis of the financial phenomena that arise during a continuous circular process cycling between the space of flows and the space of places.

5. Capital landing and anchoring in the real estate sector: a few concluding remarks

Investigating sovereign wealth funds, and their real estate investments in particular, can cast light on issues of considerable geographic interest, indicating that studies of

[11] An example is the *Casa della Memoria*, a building hosting research, cultural and educational activities which, following a proposal by the Ministry for the Cultural Heritage and Tourism**,** has been designated as the site of the future National Multimedia Museum of the Resistance. There are also other preservative renovation projects, including the old railway depot in Via De Castilla, now headquarters of the *Riccardo Catella Foundation* and, close by, the *Stecca* area which after various disputes among different stakeholders is now home to cultural and crafts associations.

the processes behind the production of urban space and of urban development should not only consider the localization of assets that generate immediately visible impacts on the economic and social system, but also address the financial dynamics that networks of actors channel in the real economy. Admittedly, however, the fact that the intangible nature of financial assets must be borne in mind makes this a far from easy task.

The real estate sector has already sparked considerable interest, particularly with a view to analyzing the banking system's practices of mortgage lending discrimination and redlining urban neighborhoods on the basis of their inhabitants' income, and the social and financial exclusion resulting from them (Hernandez, 2009; Aalbers, 2011). Apart from a few exceptions, however, sufficient attention has not been paid to the economic implications of sovereign wealth fund investments in real estate, as these transactions are often viewed only as speculative instruments that generate social inequalities.

In reflecting on these implications, useful insights can be provided by the studies that draw a distinction between the notions of embeddedness and embedding, the latter being the process whereby economic actors become intertwined with "objects" that are not necessarily part of their "original network" (Oinas, 1997; Pike et al., 2000). If the notion of embedding thus theorized is joined with a definition of sovereign wealth funds interpreted as "nodes of a network active in the materialization and production of global capital value in a local setting", it follows that whether these operations turn into opportunities or threats for the development of the area where the capital lands will depend on the nature of the relationships forged between the network's local and global networks.

To complete the analysis that must be carried out, it should be noted that a significant contribution to interpreting the findings regarding Porta Nuova is also provided by the arguments advanced by Theullirat, Vera-Bückel & Crevoisier (2016). According to these scholars, the different patterns of interrelationships between the network's actors determine the degree of legitimation of stakeholders' real estate investment vehicles. The ideal situation is when urban value depends, not on the market, but directly and exclusively on the level of interaction between local and non-local actors, users, consumers, public actors and tourists.

Viewing the findings from the Porta Nuova case through the lens of the literature examined here, it is clear that we are dealing with a process of anchoring cross-border capital that commits to maintaining its stake in the area for thirty-some years. It is thus a long-term investment with a low risk-return profile that seeks stable returns. In addition, as indicated earlier, COIMA Sgr is responsible for managing the area's residential, commercial and tourist facilities as well as maintenance and security. This means that part of the value produced is able to create new jobs, bring benefits to the local government in terms of direct and indirect tax revenues, and encourage new processes for materializing capital gains through further urban revitalization projects[12].

There are also other aspects that can provide valid reasons for maintaining that sovereign fund investments represent a process of anchoring in the area concerned. These reasons are connected with the gradual strengthening of relationships and the formation of partnerships of various kinds between local actors and the Qatar Investment Authority. On the one hand, in fact, increasing amounts of Qatari capital

[12] An example is COIMA's investment in the Venice Lido.

are being funneled into COIMA Sgr's financial activities, specifically in COIMA RES SpA SiiQ, Italy's first REIT to be listed on the Milan stock exchange. On the other hand, careful evaluations are already being carried out of cultural arbitrage initiatives, or in other words, cross-border collaborations between cultural institutions, private enterprise and institutional investors to preserve and leverage the cultural heritage. Cultural arbitrage could produce economic benefits and financial returns for the contracting parties, as well as set the stage for fruitful intercultural dialog and more productive forms of political cooperation between states (Bortolotti et Segre, 2016)[13]. Once again, it should be emphasized that it would be premature to advance specific methodological suggestions regarding the development opportunities associated with sovereign fund investments in real estate that we have attempted to document in these pages. The difficulties that stand in the way of a more substantiated investigation are far from inconsiderable in a field such as this, where the information needed for closer scrutiny is highly confidential. Nor is the task made any easier by the divergent claims that were made about the multiplier effects of sovereign fund investments, some of which derive from opinions that are chiefly concerned with the potential risks posed by the investing governments' political regimes, while others were voiced in interviews with some of the protagonists of the Porta Nuova revitalization project. Nevertheless, it seems reasonable to suggest that long-term investment of cross-border capital in a driving sector such as real estate, together with strengthened ties between local actors, can have positive effects on the entire economic system and on the community.

References

Aalbers M. B. (2011), *Place, exclusion and mortgage markets*, Chichester: Wiley &Sons.

Alvaro, S. and Ciccaglioni, P. (2012), *I fondi sovrani e la regolazione degli investimenti nei settori strategici*, Consob, Discussion Paper: 1.

Amar J. (2016), *Sovereign Wealth Funds: major actors in the global economy*, http://www.oee.fr/files/swfs_briefing_paper_oee_2016.pdf.

Amato V. (2012), *Global 2.0. Geografie della crisi e del mutamento*, Rome: Aracne.

Arduino A. (2009), *Il fondo sovrano cinese, Milan*, 0 barra 0 edizioni.

Bortolotti B. (2014), (ed), Sovereign wealth fund in the new normal- reassessing risks, redefining strategies, SIL, *Annual Report* 2014, https://www.unibocconi.eu/wps/wcm/connect/Cdr/Baffi_Carefin/Home/Research+Units/Sovereign+Investment+Lab/Reports/.

Bortolotti B. (2015), *The sky did not fall. Sovereign Wealth Funds Report 2015*, http://www.bernardobortolotti.com/.

Bortolotti B. (ed) (2007), *Hunting unicorns. sovereign wealth funds annual report* 2016,

[13] The government of Abu Dhabi entered into an agreement of this kind with Agence France-Muséums, paying 522 million dollars to use the brand Louvre Abu Dhabi and a further 747 million dollars for loans of art work, exhibitions and management advice provided by the French museum.

http://www.bafficarefin.unibocconi.eu/wps/wcm/connect/31b91fab-44a8-4ed3-ab54-50693a010140/report_SIL_2017.pdf?MOD=AJPERES&CVID=lQMRw4m&CVID=lQMRw4m&CVID=lQMRw4m.

Bortolotti B., Fotak, V. and Megginson W.L., *Sovereign wealth funds: definition, organization, and governance*, 2014, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2538977.

Bortolotti B. and Segre, A., *The cultural arbitrage: new frontiers in heritage and tourism management*, Workshop, Milan, October 26th, 2016.

Ciarlone A. and Miceli V. (2013), *Le strategie di portafoglio dei fondi di ricchezza sovrana e la crisi globale*, Banca d'Italia, Occasional Paper, 2013, n.156, Roma.

D'Ammando L. (2012), Milano, Qatar. Colonizzazione in corso, Rassegna Stampa, *Il Foglio*, March, http://www.ilfoglio.it/articoli/2015/03/02/news/milano-qatar-colonizzazione-in-corso-81421/.

D'Ascenzo M. and Mangano M. (2015), Nel portafoglio dei fondi sovrani oltre 19 miliardi di Piazza Affari, in *Il Sole 24Ore*, 1 October.

Gabetti (2016), *Investment overview*, Gabetti Property Solutions, Milan.

Goldstein A. and Subacchi P. (2008), I Fondi sovrani e gli investimenti internazionali: salvatori o sovvertitori, *Italia nell'economia internazionale*, Rapporto ICE 2007-2008, Rome.

Hernandez J. (2009), Redlining Revisited: Mortgage Lending Patterns in Sacramento 1930-2004, *International Journal of Urban and Regional Research*, 33 (2), 291-313.

Molinari L. and Russel Catella K. (2015), *Milano Porta Nuova: l'Italia si alza*, Skira, Milan.

Oinas P. (1997), On the socio-spatial embeddedness of business firms, *Erdekunde*, LXI, 23-32, http://www.jstor.org/stable/25646865.

Pike A., Lagendijk A. and Vale M. (2002), Critical reflections on 'embeddedness' in economic geography: the case of labour market governance and training in the auto - motive industry in the North-East region of England, in Giunta, Lagendijk A. and Pike A. (eds), *Restructuring industry and territory. The experience of Europe's regions*, The Stationery Office, London:59-82.

Preqin (2015), *The Preqin 2015 Sovereign Wealth Fund Review: Exclusive Extract*, https://www.preqin.com/.../2015-Preqin-Sovereign.

PWC, https://www.pwc.com/ee/et/publications/pub/sovereign-investors-2020.pdf.

Quadrio Curzio A. and Miceli V. (2010), *I fondi sovrani. I nuovi attori della finanza mondiale: opportunità o rischi?*, Il Mulino, Bologna.

Romano B. and Padoa Schioppa T. (2009), *La veduta corta. Conversazione con Beda Romano sul grande crollo della finanza*, Il Mulino, Bologna.

Rozanov A. (2005), Who Holds the Wealth of Nations?, *Central Bank Journal*, 5:52-57.

Ruggeri, L. (2012), I fondi sovrani e la nuova "GOLDEN SHARE" italiana, *Il Caso.it*, doc. n.311, http://www.ilcaso.it/opinioni/a311.php.

Savona P. Regola P. (2009), Il ritorno dello stato padrone. I fondi sovrani e il grande negoziato globale, Soveraia Mannelli, (Catanzaro), Rubettino.

Sorgente Group (2016), *Real estate in* Italy. Analyss and outlook, Rome.

Thatcher M. (2012), Western policies towards sovereign wealth fund equity investment: a comparison of the UK, the EU and the US, *Policy Brief*. www.lse.ac.uk/.../national-policies-towards-sovereign-wealth-fu**.**

Theurillat T., Bückel N. V. and Crevoisier O. (2016), From capital landing to urban anchoring: the negotiated city, *Urban Studies, Special Issue Financialisation and the production of urban space*, 1-8.

Truman E. M. (2008), A Blueprint for Sovereign Wealth Funds Best Practices, *Peterson Institute for International Economics*, 2008, n. PB08-3 https://www.google.it/?gws_rd=ssl#q=truman+2008.

IL CIOCCO IN TUSCANY: A SIGNIFICANT CASE STUDY FOR THE LITERATURE DEBATE ON RURAL TOURISM

Alessandro Capocchi[14]

Abstract

This short paper aims to highlight the case of 'Il Ciocco' in Tuscany in order to contribute with a case study to the debate on rural tourism local development. In particular, this paper describing the peculiarities of Il Ciocco aims to highlight the existing link and in part already covered in literature between rural tourism and new and alternative models of hospitality.

Keywords: Il Ciocco, Rural Tourism, Sustainability, Hospitality, Tuscany

1. Background

In a recent paper Lane and Kastenholz (2015) describe the evolution of practice and research in the rural tourism field. More in detail they described the three phases of modern rural tourism and the important contamination between tourism and rural environment. This link during the past decades assumed a higher importance in term of economic development and sustainable development. In this framework an emergent issue concerning the evolution of innovative and alternative hospitality models such as Agritourism and Albergo Diffuso (Giampiccoli et al., 2016; Fissi et al., 2019; Vallone et al., 2013; Romolini et al., 2017; De Montis et al., 2015; Romolini, Fissi & Gori, 2017; Cucari et al., 2019).

More in particular in the last few decades, the economic structure of rural areas has changed. In Western Countries with advanced economies, the reorganization of spaces, demography and production have played an important role in reducing the borders between countryside and city centres. While the population has moved from rural areas to the main urban centres, new activities and services have come about, which are linked to the local natural characteristics of rural areas. Urban pace and behavioural patterns added to the traditional landscape of the countryside causing different relations and balances to emerge. In this scenario the relation between tourism and rural areas has started to become important in term of reinvention of the economic development: tourism seems to be a driver for the rural areas economic development (Fleischer and Tchetchik, 2005).

In the literature there are several definitions of tourism as Pearce illustrated in his studies (Pearce, 1989). Following Tinsley and Lynch tourism could be defined in various ways (Tinsley R. and Lynch P., 2001: 372). In the literature there is a growing

[14] University of Milano Bicocca, alessandro.capocchi@unimib.it.

recognition that tourism constitutes one end of a broad leisure spectrum. Usually tourism as a phenomena it takes place within a tourist destination (Garrod et al., 2006). There have been many studies and models of development based around what is referred to as the tourist destination (Butler, 1980; Gunn, 1993; Laws, 1995; Pearce, 1989).
Moving from these studies in this paper an analysis of the 'rural' definitions has been carried out. From a tourist's point of view, travel to areas that have not been extensively developed for tourism can be considered rural. Conversely, areas that have been heavily transformed for tourism development but have low levels of year-round residents can also be considered rural (Gartner, 2004).
Long (1998) proposes a definition of rural that reflects lifestyles one is likely to encounter in a visit to a 'rural' community (Randelli et al., 2014; Long and Lane, 2000; Wilson et al., 2001). In a functional sense, rural can be considered a place where small-scale enterprises dominate the economic scene, open space is abundant, contact with nature or 'traditional societies' is offered, development is slow growing using local capital and the types of touristic activity offered varies but reflects local resource capabilities (Lane, 1994). Getz and Page (1997) argue that even local enterprises are capable of growing quickly and rural tourism is still a possibility even with rapid transformation of the physical plant. Long's (1998) definition of rural, once accepted, changes the focus from a statistical, easy to measure, parameter to one that is more ambiguous and benefit based. Gartner describe that there is a number of market trends that indicate positive signs for rural tourism development. In particular following Long and Lane (2000) it is possible to take into consideration i) the growing interest in heritage, tradition, authenticity and rural life, ii) taking multiple holidays per year with a desire to take a second short break in a rural area, iii) increasing health consciousness giving a positive appeal to rural lifestyles, iv) market interest in high performance outdoor equipment from clothing to all terrain bikes and high-tech climbing equipment, v) search for solitude and relaxation and vi) an ageing but active population retiring earlier but living and travelling far into old age (Long et Lane, 2000).
Gartner argue that as a result of these trends there have been numerous attempts to create additional tourism products with a heavy emphasis on heritage and culture and with an orientation to the development of niche markets.

2. Method

This paper analyzed the experience of a family business company - Il Ciocco International Centre - situated in a rural area in Tuscany as good practice of local development. The method is based on the case study (Yin, 1984; 1994). According to Zainal (2007) "Case study method enables a researcher to closely examine the data within a specific context. In most cases, a case study method selects a small geographical area or a very limited number of individuals as the subjects of study".
The analysis is articulated in two phases. The first phase involved the experience of Il Ciocco International Centre with particular acre to the second period of its cycle of life. The second phase involved all the Region of Garfagnana which is the rural area where the company is situated.
The research has been carried out moving from the most significant literature to the collection of data related to the economic development and to the demographic trends

of the local population. In the second phase a questionnaire has been delivered to local public and private actors and to opinion leaders at Regional and National level.

3. Local development of a rural area: the case study of Il Ciocco International Centre in Tuscany

In this scenario the number of tourists looking for a true, genuine, authentic experience of tourism based on 'natural values' is increasing. Rural destinations became a refuge from urban life and thanks to the rediscovery of 'natural values', new activities have started to be developed in rural destinations such as traditional commerce, craft and services. Unfortunately the reinvention of rural destination has been affected by the seasonality effects.

In Tuscany a significant experience of reinvention of a rural destination concerns the case of Garfagnana. In Garfagnana - the upper valley of the Serchio River, situated in the Lucca Province in the north-west of Tuscany in Italy - the reinvention process has been pushed by the presence of an important business company called 'Il Ciocco International Centre'.

Il Ciocco International Centre is a family business company located in Garfagnana, situated in a park covering a surface of more than 2000 hectares, with an accommodation capacity of 950 beds comprising a hotel, a residence, a chalet and some flats. It offers meeting rooms, a Conference Palace, exhibition rooms, sports facilities, mobility infrastructures (internal roads, open-air parking lot, heliport) and a new Beauty and Spa Center. Il Ciocco started its activities in 1954, when Guelfo Marcucci, founder and owner, bought from a farmer a farmhouse and the land around it. In 1966, the farmhouse started being used as a hotel. In 1971 a new structure was built next to it with an accommodation capacity of around two hundred beds and two large meeting rooms allowing the development of congress activities. In 1976, another new structure was built, with an accommodation capacity of four hundred beds and an auditorium holding 750 seats and with further expansion following later. In the same year, holiday houses for young people were built, together with other facilities including: a swimming pool, soccer fields, riding schools, basketball and volleyball courts, tennis courts, natural trails for walking, mountain biking and for enduro, off-road vehicles and rally races. In 2000 an auditorium was built, with a capacity of 1000 seats.

Il Ciocco experience is very significant as example of development of a rural destination. Its cycle of life can be divided in two main phases: the first phase - from the beginning to the end of 1999 - concerns the development of Il Ciocco as business company with positive impacts on the territory, mainly in term of recruitment and job market, but without any effect in term of economic development for the Garfagnana area; the second phase - from 2000 - concerns the reinforcement of the link between Il Ciocco and the region where it is located.

The modern competitive dynamics in a globalized context changed also for companies like Il Ciocco the development strategies.

In the first phase Il Ciocco developed all the necessary characteristics to be considered not just as a business company, but as a destination. In the first phase the experience of Il Ciocco shows that the hotel is its main attraction element. The centre offers such a large number of activities that tourists can satisfy all their needs while staying in the centre. The relation with the region and with its main public and private actors are

based on synergies and integrations, and on the absence of any form of competition (Beteille, 1996).
The touristic development of the surrounding area has benefited from the presence of Il Ciocco, but only in the second phase of its cycle of life all the actors realized the importance to create a real system able to be in competition with other destinations all around the world.
In the second phase Il Ciocco International Centre realized that its development and its competition should be strictly related to the promotion and to the economic development of the Garfagnana Region. Also public actors realize the same necessity to give a perspective to their territories and to their communities by the development of an integrated tourism system.
Public policies in one hand and business strategies in the other hand try to realize a combination of actions in order to support the local economy following the model of an industrial area where the main business is surrounded by other businesses carrying out supplementary activities and services.
This paper investigated the change between the first and the second phase in order to analyse the experience of Il Ciocco International Centre as good practice of local development of a rural area that has become a rural destination.
After the investigation of Il Ciocco's experience this paper focused its attention on the following dimensions:

- public and private actors with interviews;
- registration of records related to the tourism dynamics in the Garfagnana Region;
- the development of new companies and of new businesses on the territory
- the dimensions of the local population;
- the tourist chain with particular care to the education system and the creation of new professional positions.

The promotion of Il Ciocco is linked to the promotion of the areas of Garfagnana and the Valley of the Serchio River. Despite being very well known, such areas are not able to simply rely on the fame of their names, as it happens in other geographical areas, such as the Chianti. Local promotion is one of the goals of this business. In order to promote its brand on the market, the business has gradually strengthened its relations with local institutions, and has developed new forms of cooperation with private actors. In view of promoting conference tourism, for example, Il Ciocco and other private operators created in 2000 the Convention Bureau Lucca e Valle del Serchio. The Centre has embraced some local traditions and values by preserving its existing contacts and promoting a cooperation with local authorities or institutions. The aim was not only to protect traditions, but also to encourage the development of tourism in the area through the promotion of the area itself and the organization of concrete initiatives sponsored by Il Ciocco such as a collaboration with the Consorzio Garfagnana Produce. Such close relations with the region were confirmed by a series of interviews to public and private opinion leaders.

Conclusion and future research

This paper is an exploratory short paper oriented to highlight the case of Il Ciocco in Tuscany in order to contribute with a case study to the debate on rural tourism local development. In particular this paper describing the peculiarities of Il Ciocco aims to highlight the existing link and in part already covered in literature between rural tourism and new and alternative models of hospitality.
This link is very important in the current context where the development and often uncontrolled growth of tourism collides with phenomena described in the literature by the term overtourism. The overtourism issues recall the importance of designing and developing alternative and innovative forms of hospitality. Hence the study of case studies like Il Ciocco in Toscana.

References

Ballestrieri G. (2005), Il turismo rurale nello sviluppo territoriale integrato della Toscana, IRPET, Regione Toscana.

Béteille R. (1996), L'agrotourisme dans les espaces ruraux européens, *Annales de Geogr.*, 592, 584-602.

Butler R. (2008), The concept of a tourist area cycle of evolution: implications for management Resources, *Canadian Geographer*, 24(1), 5-12.

Cucari N. Wankowicz E. De Falco S. E. (2019), Rural tourism and Albergo Diffuso: A case study for sustainable land-use planning, *Land Use Policy*, 82, 105-119.

De Montis A., Ledda A., Ganciu A., Serra V. and De Montis S. (2015), Recovery of rural centres and "albergo diffuso": A case study in Sardinia, Italy, *Land Use Policy*, 47, 12-28.

Devesa M., Laguna M. and Palacios A., (2010), The role of motivation in visitor satisfaction: empirical evidence in rural tourism, *Tourism Management*, 31, 547-552.

Fissi S., Romolini A., Gori E. (2019), Building a business model for a new form of hospitality: the albergo diffuso, *International Journal of Contemporary Hospitality Management*, https://doi-org.proxy.unimib.it/10.1108/IJCHM-01-2019-0047.

Fleischer A. and Tchetchik A. (2003), Does rural tourism benefit from agriculture? *Tourism Management*, 26, 493-501.

Garrod B., Wornell R. and Youell R. (2006), Re-conceptualising rural resources as countryside capital: The case of rural tourism. *Journal of Rural Studies*, 22, 1, 117-128.

Gartner W. C. (2004), Rural Tourism Development in the USA, *International Journal of Tourism Research*, 6, 151-164.

Getz D., Page S. (1997), Conclusions and implications for rural business development, *The Business of Rural Tourism: International Perspectives*, Page S., Getz D. (eds). International Thompson Business Press: London.

Giampiccoli A., Saayman M. et Jugmohan S. (2016), Are 'Albergo Diffuso' and community-based tourism the answers to community development in South Africa?, *Development Southern Africa*, 33, 2016, 548-561.

Gunn C. (1993), Tourism Planning, Taylor & Francis, London.

Lane B. (1994), What is rural tourism?, *Journal of Sustainable Tourism*, 2(1 + 2), 7-21.

Lane B. et Kastenholz E. (2015), Rural tourism: the evolution of practice and research approaches – towards a new generation concept?, *Journal of Sustainable Tourism*, 23:8-9, 1133-1156, DOI: 10.1080/09669582.2015.1083997.

Laws E. (1995), *Tourism Destination Management: Issues, Analysis and Policies*, Routledge, London.

Long P. (1998), *Rural Tourism Foundation Information Piece*, University of Colorado: Boulder.

Long P, Lane B. (2000), Rural tourism development. *Trends in Recreation, Leisure, and Tourism*, Gartner W, Lime D (eds). CABI: Wallingford; 299-308.

Pearce D. (1989), *Tourist Development*, Longman, New York.

Pina I. P. A. et Delfa M. T. (2005), Rural tourism demand by type of accommodation, *Tourism Management*, 26, 951-959.

Randelli F., Romei P. and Tortora M. (2014), An evolutionary approach to the study of rural tourism: The case of Tuscany, *Land Use Policy*, 38, 276-281.

Romolini A., Fissi S., Gori E. (2017), Integrating territory regeneration, culture and sustainable tourism. The Italian albergo diffuso model of hospitality, *Tourism Management Perspectives*, 22, 67-72.

Royo-Vela M. (2009), Rural-cultural excursion conceptualization: a local tourism marketing management model based on tourist destination image measurement, *Tourism Management*, 30, 419-428.

Sanagustin Fons M. V. (2011), Rural tourism: a sustainable alternative, Applied Energy, 88, 551-557.

Tinsley R. et Lynch P. (2001), Small tourism business networks and destination development, *Hospitality Management*, 20, 367-378.

Vallone C., Orlandini P., Cecchetti R. (2013), Sustainability and innovation in tourism services: the Albergo Diffuso case study, *Eurasian Journal of social Sciences*, 1(2), 2013, 21-34, ISSN 2148-0214, http://hdl.handle.net/10281/48766.

Wilson S., Fesenmaier D. R., Fesenmaier J. and Van Es J. C. (2001), Factors for Success in Rural Tourism Development, *Journal of Travel Research*, 40 (2), 132-138.

Yin R.K. (1984), Case Study Research: Design and Methods. Beverly Hills, Calif: Sage Publications.

Yin R. (1994), Case study research: Design and methods (2nd ed.). Beverly Hills, CA: Sage Publishing.

Zainal Z. (2007), Case study as a research method, *Jurnal Kemanusiaan* bil.9.

Publishing date: 06/10/2019