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Aims of the Journal: Journal of Regional Socio-Economic Issues (JRSEI) is an international multidisciplinary refereed journal the purpose of which is to present papers manuscripts linked to all aspects of regional socio-economic and business and related issues. The views expressed in this journal are the personal views of the authors and do not necessarily reflect the views of JRSEI journal. The journal invites contributions from both academic and industry scholars. Electronic submissions are highly encouraged (mail to: **gkorres@geo.aegean.gr**).

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Editorial Note

Current socio-economic developments, have renewed the interest for the role of regional development and spatial planning, underlining the interactions with socio-economic sustainability, technological change and socio-economic growth, worldwide. The reason is that these new developments lead to increase productivity of factors of production, contributing in the long-term improvement of competitiveness, innovation and entrepreneurial spirit.

Socio-economic sustainability, through competitiveness and growth enhancement, upgrading the production infrastructure and organization through capital equipment, state-of-the-art knowledge, and human capital investment, combined with innovative, along with technology-based production processes are among the most important issues of today's socio-economic analysis. Within this framework, socio-economic development increasingly relies on information and knowledge, and creates value through their ability to manage these valuable assets.

This Volume 5, Issue 3 of the Journal of Regional Socio-Economic Issues considers these above-mentioned issues, providing both an economic and social perspective to increase the information base and derive broader conclusions about the social consequences of the economic crisis. For this reason, this issue is considered to be of particular research relevance because evidence shows that even though economic crisis has been widely analyzed with respect to economic consequences, yet little attention has been paid to the evaluation of social consequences. More specifically, this Issue of the Journal of Regional Socio-Economic Issues covers the following sections:

- 'Smart' Cities at the Service of Urban Sustainability – A Flavor of the Mediterranean Experience (by Anastasia Stratigea and Maria Panagiotopoulou)

- The Relevance of Asian Development Bank: Existing in the Shadow of the Asian Infrastructure Investment Bank (by Viktor Jakupec and Max Kelly)

- A Model to Measure SMEs Sustainable Procurement Implementations from a Study of Western European Food and Beverage Companies (by Richard N. Lacroix, Lambros Laios and Sokratis Moschuris)

- Regional Disparities in Resource Allocation of Hospital Care in Greece (by Athanasios Adamopoulos, Olga Gioti - Papadaki and Aris Sissouras)

- Spatial Planning & Economic Development of the islands: A Benchmarking Study for Lesvos, Rhodes & Crete (by Korres, G. M., Pavlogeorgatos, G. and Kokkinou, A.)

- Economic Development and Congress Tourism: How Could Greece be a Pole of Attraction (by Delitheou Vasiliki and Dimitris Tsalavoutas)

To conclude, the Editor would like to thank all the participants of the Journal of Regional Socio-Economic Issues, who, through this Issue, have contributed with their academic and research works, providing a platform for scientific dialogue, leading to knowledge creation and dissemination.

The Guest Editor,
Ass. Prof. Dr. Maria Michailidis: Dean, Department of Management & MIS, University of Nicosia, Cyprus.

'Smart' Cities at the Service of Urban Sustainability – A Flavor of the Mediterranean Experience

Abstract:
The concept of smart cities is nowadays considered as a new paradigm for serving sustainability objectives in urban environments. In this respect, various cities around the globe are placing efforts on developing as smart cities, taking advantage of technological developments at the service of successfully managing urban sustainability objectives. The focus of the present paper, in this respect, is on the study of such efforts in a number of Mediterranean cities (eight cities, four of which belong to the Greek territory), aiming at: presenting the Mediterranean experience on the smart city concept, by emphasizing on the variety of ICTs applications developed in each specific smart city context; and comparing priorities set in selecting domains of smart city applications through work carried out so far in these city examples. Finally, some concluding remarks are drawn as to the barriers applying in 'going smart' efforts in these specific city environments.

Keywords: ICTs, smart city, Mediterranean smart cities, sustainable urban development, urban planning

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1.Introduction

Urbanization is nowadays considered as a phenomenon that is rapidly expanding at a global level, while according to the estimations of United Nations, it is expected to further intensify up to 2050 (Oracle, 2011). The impacts of the escalation of this urbanization trend are evident in many fields and sectors e.g. intensity of energy consumption, increasing volume of urban waste, lack of adequate infrastructure, raising of pollution levels, lack of social cohesion, etc. These impacts are already at the epicenter of policy makers' and planners' work, while it is largely realized that contemporary cities will shortly be confronted with great challenges, threatening their future state, with *sustainable urban development* still be remaining a *key planning goal* in policy agenda (EU, 2011), but also a *moving target*, based on expected intensifying urbanization patterns.

In planning a sustainable future for cities, policy makers and planners are nowadays largely supported by the radical technological advances and the new potential these offer for economic development, organizational performance, social equality and quality of living in urban environments. Broadband network developments (DSL, cable, satellite and wireless communication, mobile communication, etc.) are largely affecting the interaction and networking potential of various actors (individuals, businesses, institutions and local governments), by providing access to a range of tools to 'connect' both locally and globally (Stratigea et al., 2014).

Apart from the new challenging broadband network opportunities, which largely reflect the rapid *technological developments* that have taken place during the last decades, certain *social developments* have also been noticed that emanate merely from the enhancement of accessibility of the various societal groups to knowledge and information as well as the increasing pattern of interaction among them and social networking, at the local but also global level. Accessibility to knowledge resources, interaction and social networking have, among others, increased the level of *awareness* of citizens and stakeholders on various topics of local but also global interest that can affect their everyday life and also strengthened their propensity to actively *engage* in planning solutions to urban problems and cooperate towards the creation of more sustainable futures of urban environments.

In a networked and largely globalized world, the concept of *smart city* emerges as a new paradigm in seeking to fulfill sustainable urban development objectives, which can: support local prosperity and social inclusion in the urban context (Stratigea, 2012); and is largely delineated by technological as well as social developments occurring during the last decades,

playing a critical role in creating *locally and globally connected active citizens and stakeholders*.

Based on the above discussion, the present paper aims at getting a flavor of 'smart' cities in the Mediterranean through the elaboration of certain prominent city examples. In this respect, it firstly elaborates on the smart city concept, in an effort to clarify issues, dimensions and perspectives for sustainable urban development, involved in this concept; then four successful smart city examples from Mediterranean countries are explored (Barcelona and Santander from Spain, Issy-les-Moulineaux from France and Turin from Italy), shedding light on the rationale but also the ICTs applications developed in these specific examples for serving sustainable urban development objectives; it follows a discussion on four Greek smart city examples (cities of Trikala, Heraklion, Thessaloniki and Kozani), where steps carried out in the context of 'going smart' efforts of these specific cities are explored by means of specific applications serving pursued development objectives. Finally, based on the experience gained from all eight Mediterranean smart city examples considered, some conclusions are drawn as to the way the different cities' environments have prioritized domains of smart city applications (e.g. applications supporting smart environment, smart citizens, smart government etc.) as well as the type of barriers that apply to the two groups of cities concerned (Greek and other cities) and can hamper successful implementation of the smart city concept.

2. Conceptualizing the 'Smart' City

"…Over the past few years, the definition of 'smart cities' has evolved to mean many things to many people. Yet, one thing remains constant: part of being 'smart' is utilizing Information and Communications Technologies (ICTs) and the Internet to address urban challenges" (http://www.cisco.com/).

What is actually meant by 'smart' cities? A clear-cut definition of the term does not exist in the literature, stressing thus the need for further conceptual research (Boulton et al., 2011). Occasionally, several definitions of 'smart' cities have been introduced and adopted, some of which focus on ICTs as the dominant technology driver and enabler of urban growth, while others provide a broader perspective, including socio-economic, governance and participatory aspects in order sustainable urban development to be enhanced (Manville et al., 2014). Some significant definitions, put forward and used in both practice and academia, describe the smart city as:

- *" ...a city well performing in a forward-looking way in smart economy, smart people, smart governance, smart mobility, smart environment and smart living, built on the 'smart' combination of endowments and activities of self-decisive, independent and aware citizens"* (Giffinger et al., 2007:11);

- *"...the use of smart computing technologies to make the critical infrastructure components and services of a city - which include city administration, education, healthcare, public safety, real-estate, transportation, and utilities - more intelligent, interconnected, and efficient"* (Washburn et al., 2010:2);

- *"...a city where investments in human and social capital and traditional (transport) and modern communication infrastructure (ICTs) fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance"* (Caragliu et al., 2010:70);

- *"... system of systems and there are emerging opportunities to introduce digital nervous systems, intelligent responsiveness, and optimization at every level of system integration – from that of individual devices and appliances to that of buildings, and ultimately to that of complete cities and urban regions"* (http://smartcities.media.mit.edu/frameset.html).

- *"...a city seeking to address public issues via ICTs-based solutions on the basis of a multi-stakeholder, municipally-based partnership"* (Manville et al., 2014:9).

Furthermore, a number of terms similar to 'smart' cities appears, such as 'wired' or 'smart' communities, 'broadband' communities, 'digital' communities, 'networked' communities, 'intelligent' communities, etc. (Droege, 1997; Keenan and Trotter, 1999; CISC, 2001; Coe et al., 2001; Komninos, 2002, 2006 and 2009; Steventon and Wright, 2006; ICF[2], 2006; Intel, 2007; Stratigea, 2012), which are interchangeably used by various researchers, all implying communities that are making *'a conscious effort to understand changes and engage in a world that is increasingly connected'* (Albert et al., 2009:8). Despite the differences on the way the above terms are used, they seem to have in common the: *communication mean* (network infrastructures); *process* (networking among actors); and *goal* pursued (public involvement or other) (Stratigea, 2012).

At the heart of the smart city concept lie (Stratigea, 2012):

- *sustainability*: pursuing balance among environmental, social and economic objectives;
- *innovation*: seeking to empower both people and places;
- *participatory governance*: implying the way that rules are set and implemented by governing bodies towards a more effective resource management perspective; and
- *investments*: pertaining to ICTs infrastructure and applications that effectively satisfy the needs of each specific urban environment.

[2] Intelligent Community Forum

The creation of smart cities is based on the successful combination of five *critical success factors*, used also as evaluation criteria for assessing smart cities' progress. These refer to (ICF, 2006; Komninos, 2006; Bell et al., 2008; Passerini and Wu, 2008):

- *broadband communication infrastructures*, upgrading local capacity for digital communication;
- *education and training* of human resources, improving their ICTs skills / capabilities for performing knowledge-intensive activities, participating in knowledge creation processes, etc.;
- *'digital democracy'*, bridging 'digital divide' among different societal groups;
- *innovative capacity*, leading to the creation of an innovation-friendly environment in order highly creative people / businesses to be attracted;
- *marketing* of 'smart' communities as advantageous places to live, work and run a business, in order to attract talented employment and investments.

By offering a range of tools and ICTs-enabled applications, smart cities support the creation of virtual environments, which enhance individual choices and group communication-collaboration options (Komninos, 2006). These applications can be classified into (Stratigea, 2012):

- *e-Information*: providing various information to a wide range of audience;
- *e-Business*: exploiting e-business opportunities, business-to-business (B2B) and business-to-client (B2C) interaction models, new innovative strategies for business development, etc.;
- *e-Marketing*: marketing a city's image, products, archaeological sites, cultural assets, etc.;
- *e-Government*: providing services to citizens, businesses, and governmental institutions (G2C, G2B and G2G interaction models);
- *e-Innovation*: e-cooperation and on-line development of new products;
- *e-Participation*: e-inclusion of citizens, broadening public participation in policy making.

By providing access of citizens to effective / affordable ICTs systems, a smart city can also support *community development processes*, leading to a more *equitable share* of knowledge and information among societal groups that respectively fuels a shift of *power structure* that affects decision-making processes. Community development, in turn, supports a more active public participation, where upgrading of skills and capacity to innovate drive citizens' empowerment, engagement and more knowledgeable decision-making. The

challenge is to redefine the city as an environment of innovation, empowerment and participation of citizens, businesses and other stakeholders in shaping their future, through the choices they have and decisions they make; or the challenge is to focus on change and transformation towards a smarter city, in the sense of a change towards shaping a better and more participative, inclusive and empowering city (Schaffers et al., 2012).

3. 'Going Smart' Efforts in the Mediterranean

This section focuses on the experience gained from indicative but prominent smart city examples in the Mediterranean. More specifically, Barcelona and Santander in Spain, Issy-les-Moulineaux in France and Turin in Italy are presented in the following.

Figure 1: 'Smart' city examples in the Mediterranean
Source: http://www.worldatlas.com/aatlas/infopage/medsea.htm

3.1. *City of Barcelona - Spain*

Barcelona is among the pioneers, both at the European and global level, regarding 'going smart' efforts. Its distinguished industrial and entrepreneurial background has contributed to the formation of a knowledge-intensive economy, based on the promotion of competitiveness, technology and innovation, which are tightly interwoven with economic growth and production process (Schaffers et al., 2012). All the above, in combination with the vision of a prosperous city, dominated by competitiveness, use of new technologies, social welfare and environmental protection, delineate the framework in which Barcelona is transformed into a new, open and innovative urban environment.

Barcelona's 'going smart' strategy intends to convert the city into a *'living habitat'*, where new technologies and innovation set the ground for: improving quality of life, supporting sustainable urban development, boosting competitiveness, creating new communication channels, accessing information and enhancing effectiveness of public services. These are taking place in an 'open' environment, mainly characterized by: promotion of clusters and open data, development of 'living labs', citizens' involvement in the creation of new products / services, as well as development and implementation of smart projects (Schaffers et al., 2012).

The smart city model of Barcelona is based upon *four fundamental pillars*, namely (Gavalda and Ribera-Fumaz, 2012):

- *Ubiquitous infrastructures*: allowing direct access to networks, information and services, through an integrated Web platform.
- *Information*: enhancing transparency and efficiency of governmental processes and services, so as to encourage social use of public data.
- *Smart services*: exploiting Web applications in order public services and procedures to be provided and managed.
- *Human capital*: referring to the development of citizen's skills, so as local economy to be supported and new investments to be attracted.

These pillars include interventions in various sectors such as: e-governance, transportation, security, public infrastructures, mobility, entrepreneurship, management of cultural heritage, etc. In recent years, local authorities are steadily and methodically working in order an urban platform of services / applications to be developed, as a means for building a sustainable and interconnected city. The platform is supported by ubiquitous telecommunications infrastructures, incorporating fiber optic networks, boosting Wi-Fi and sensor networks, while reducing operating and maintenance costs.

The most significant initiatives undertaken, aiming at transforming Barcelona into a modern smart city, are shortly described in the following (http://cityclimateleadershipawards. com/ barcelona-barcelona-smart-city/):

- *Smart lighting*: remotely controlled street level lighting, activated by motion detection and providing environmental information (humidity, temperature, pollution, and noise).
- *Zero energy blocks*: creation of self-sufficient blocks, based on the construction of bioclimatic buildings, use of photovoltaics on roofs, electric vehicles, etc.
- *Tele-management of irrigation*: remote management system for monitoring automated irrigation infrastructures in order *duration* and *frequency* of irrigation to be c*ontrolled.*

- *Heating and cooling*: environmentally-friendly pilot heating and cooling system (78 buildings), expected to expand in the city. The heating system uses steam from urban waste combustion, while the cooling system uses seawater, reducing that way fossil energy consumption and producing less carbon emissions.
- *Smart transportation*: targeting public transport's efficiency through the restructuring of bus networks; and urban sustainable mobility by using hybrid buses for reducing emissions, and establishing smart bus shelters, using solar panels to activate screens that provide information on 'waiting time'.

- *Bicing*: bicycle sharing system designed to cover short and medium daily routes within the city. Citizens have also the opportunity to check out real-time availability at stations, through the Bicing app.

- *Smart parking spaces*: sensor network used for displaying *real-time parking availability* to clients, supporting urban mobility management.

- *Zero emissions mobility*: encouragement of electro-mobility through the extensive deployment of electric charging stations, electric vehicle fleets and electric car rentals.

- *Open government*: transparent municipal activities and strengthening of citizens' participation, through the deployment of 44 *"citizens' attention" kiosks* and the launch of Open Data portal.

- *Bústia ciutadana*: smart phone application for gathering citizens' complaints, suggestions and reports on city problems.

- *IDBCN (ID Barcelona)*: remote citizens' identification through a digital ID in their mobile phone.

- *Smart waste management system*: drop-off containers leading trash to a subterranean vacuum network. In some cases, sensors have been installed on rubbish and recycling bins, providing information to a central system as to the trash level.

- *22@ Innovation district*: transformation of a former industrial area to a pioneer business district and a prominent pole of technology and innovation. Companies, universities, research institutions and communities work and cooperate in clusters so as pace of knowledge to be accelerated and business sustainability to be encouraged.

- *Barcelona urban lab*: public space, where tests and pilot programs on products and services with an urban impact are conducted (sensorization, urban planning, mobility, tourism, education, etc.) in large-scale real-life environments (Schaffers et al., 2012).

- *'Barcelona in your pocket'*: encouraging developers and business owners to participate in competitions and workshops for creating *new city applications*.

3.2. *City of Santander - Spain*

Since 2009, the city of Santander is making a vigorous effort for establishing itself as the most innovative smart city in Europe, by use of Internet technologies, so as urban problems and dysfunctions to be effectively managed. The smart city project, called *'Smart Santander'*, is implemented through the joint collaboration of European Union, key technology companies, academic and R&D institutions as well as municipal authorities, and constitutes a fundamental pillar of the *strategic city plan 'Santander 2020'*, intending to improve citizens' daily life and efficiently manage city services (http://mobileworldcapital.com/en/article/250).

The 'Smart Santander' project focuses on creating a unique, innovative, city-scale experimental facility, in support of research and development of smart applications and services relating to the 'Internet of Things'[3] (IoT). The particular facility was developed in an effort Europe to gain leadership in cutting-edge technologies for the IoT, through the design and use of a single platform, consisting of sensors, activators, cameras, monitors and communication infrastructures, which is suitable for large-scale experimentations and evaluation of the concept of the IoT under real conditions (Tsarchopoulos, 2013).

Moreover, the facility is fairly large, open and flexible, allowing Santander's network connectivity with other experimental facilities, creating this way a large-scale and real-time control nodes network in various cities, aiming at stimulating and developing new applications through the integration of advanced research on the IoT. The project also envisions the deployment of 12000 sensors in the city (http://www.sensorsmag.com/).

The Santander test-bed is composed of around 3000 IEEE 802.15.4 devices, 200 GPRS modules and 2000 RFID tags and QR codes, installed both at static locations (street lighting, building facades, bus stops, etc.) as well as on moving vehicles (buses, taxi). Based on these devices, several initiatives have been undertaken as (http://www.Smartsantander.eu/):

- *Environmental monitoring (static)*: around 2000 sensors, installed especially at the city centre, provide measurements on different variables (temperature, noise and CO levels, etc.).

- *Mobile environmental monitoring*: the ability of monitoring environmental parameters is further extended by installing sensors on 150 public vehicles (buses, taxis and police cars), providing environmental information regarding the whole city.

[3] IoT is an integral part of the Future Internet (FI) and describes the networking and communication among Internet-enabled devices and other Web-enabled gadgets (Viitanen et al., 2011). According to Santucci, *"... the Internet of Things must be seen as a vision where 'things', especially everyday objects, such as nearly all home appliances but also furniture, clothes, vehicles, roads and smart materials, and more, are readable, recognizable, locatable, addressable and / or controllable via the Internet"* (Santucci, 2009:1).

- *Traffic intensity monitoring*: around 60 devices, located at the main city entrances, are used in order main traffic parameters to be measured (traffic volumes, road occupancy, vehicle speed or queue length in case of traffic congestion).

- *Outdoor parking area management*: 400 sensors, 'buried' under the asphalt, have been installed at the main parking areas of the city centre, so as free parking spaces to be detected.
- *Guidance to free parking lots*: information retrieved from the parking sensors is transmitted via 10 screens, placed at main roads' intersections, in order drivers to be guided towards available free parking spaces.

- *Parks and gardens irrigation*: 50 sensors have been installed in two green city zones, to monitor variables associated with irrigation (temperature, moisture, humidity, wind speed, etc.), saving that way valuable water resources.

- *Augmented Reality*: around 2000 RFID tags and QR codes offer the possibility of 'tagging' city's points of interest (public transport, tourist attractions, companies, administrations, parks, etc.). In a small scale, the service provides the opportunity to distribute information in the urban environment as location-based information. *SmartSantanderRA*: application that provides information relating to 2700 points of interest (beaches, parks, monuments, shops, museums, libraries, cultural events, parking, etc.). It allows real-time access to the city cameras, weather predictions, information on public transport and bicycle rental services.

- *Participatory sensing*: users, utilizing their mobile phones, send information related to the physical environment (GPS coordinates, environmental data such as noise, temperature, etc.), which feed the 'SmartSantander' platform. Moreover, users have the opportunity to subscribe to services such as 'the pace of the city', that enables them to receive *up-to-date geo-coded information* for specific types of events occurring in the city. Users, have also the opportunity to report the occurrence of such events, which are subsequently diffused to other subscribers.

3.3. *City of Issy-les-Moulineaux - France*

Since 1995, the city of Issy-les-Moulineaux has adopted an ambitious *digital technology strategy*, which transformed it into a *real living laboratory* of innovative and exemplary use of technology to the benefit of citizens and its economic prosperity. Issy's strategy envisions an *'innovation triangle'*, formed by businesses as technology facilitators, citizens as users and the government as projects' initiator and coordinator. Focusing on six fundamental *'smart' pillars* (digital solidarity, infrastructures, e-Services, e-Government, e-Democracy and mobile services), Issy-les-Moulineaux has turned into a successful smart city example. Most important *'smart' initiatives* are (http://www.issy.com/):

- *Free Internet access - multiple internet public access points*: free internet terminals - distributed all over the city - used by citizens, strengthening that way *public awareness* on ICTs and bridging *digital divide*.

- *Issy's interactive city council*: broadcasting of the city council meetings simultaneously over cable network and Internet. Citizens have also the opportunity to actively *participate* by asking questions to the representatives (via phone or email) and receive real-time answers.

- *Issy's citizen panel*: representative group of citizens regularly *e-consulted* by the City Council on significant municipal issues.
- *Participative budget making platform*: enabling citizens' participation in setting top investment priorities to the benefit of the city and its inhabitants.

- *E-voting*: on-line voting used for district councils' elections, on-line registration in voting lists enhancing participation through polls.

- *IRIS local one-stop-shop*: system properly addressing issues raised by citizens and visitors, through various communication modes (phone, mail, e-mail, fax).

- *City's website*: significant source of information for citizens, public servants, business and other actors.

- *Local Web-TV*: providing local information on a weekly basis.

- *Tomorrow's city hall*: virtual administrative service, enabling access to local administrations and authorities for citizens and businesses.

- *On-line city services*: serving G2C communication in various administrative acts (birth, marriage and death certificates, parking reservation in case of relocation, change of address and family status, etc.).

- *Multimedia libraries*: variety of books, newspapers and magazines for free, Wi-Fi connection, lending facilities, on-line lending extension and electronic reading machines (e-books).

- *The cube*: first recreation centre fully dedicated to advanced technology, where digital creations are practiced, produced and diffused.

- *Connected seniors*: fighting seniors' ICTs-illiteracy.

- *Cyber senior centre*: computer training courses for elderly people
.
- *Issy spots*: augmented reality application, allowing residents and visitors to navigate in the city's main points of interest.

- *IssyGrid*®: energy use optimization at district level, smart street lighting adapted to road traffic, time and seasonal conditions.

- *Les flux d'Issy*: real-time discovery of the latest city news.

- *PaybyPhone*: paying parking place via mobile phone.

- *Issy 3D*: digital 3D city model displaying urban projects, construction sites, building rules, etc.

3.4. *City of Turin - Italy*

By the end of 2011, the city of Turin, taking advantage of the European Initiative *'Smart Cities and Communities'*, has placed efforts on developing as a smart city, through the creation of the *'Fondazione Torino Smart City'*. This organization is in charge for the coordination of efforts and initiatives for transforming the city into a smart city. Towards this end, the *'Matching Board'* tool has been used to explore available technological specialization and willingness of local businesses to work with local public authorities for the development of common plans (http://dailyenmoveme.com/en/smart-city/torino-smart-city).

The future development of Turin as a smart is based on a smart city model, grounded on the *SMILE program* - *S*mart *M*obility, *I*nclusion, *L*ife and health, *E*nergy, which was initiated early 2013 and focused on (http://dailyenmoveme.com/en/smart-city/torino-smart-city):

- *five vertical sectors*, namely energy, mobility social inclusion, environmental sustainability, digital city and innovation; and
- *two horizontal themes*, namely integration of various applications as well as governance and business models.

The outcome of the above efforts is the development of a *strategic plan* that is based on the elaboration of a wide variety of *data* on key variables, which can affect the future development of the city; while it is also heavily grounded on *participatory processes*, involving a wide range of relevant stakeholders. This plan forms the basis for actions and activities of the city serving the goal of developing as a smart city.

The most important *'smart' initiatives*, undertaken by the city of Turin, have as follows:

- *Action plan for sustainable energy*: aims at decreasing CO_2 emissions, setting the target of 40% decrease in 2020. This is based on the: improvement of energy efficiency (EE) of existing building stock, further exploitation of Renewable Energy Sources (RES), development of a transport plan setting at its heart public transportation means, and further expansion of district heating.
- *Smart school*: a plan targeting to increase students' *awareness* on environmental sustainability issues and involve them in the on-going discussion on the smart city concept.
- *Energy centre*: an exemplary centre for the development of energy innovations that have a positive impact on environmental protection.
- *Table of urban functions*: a tool providing an up-to-date and more precise image of the functions of urban space, which is of crucial importance for the analysis and interpretation of various phenomena and the support of actions to effectively cope with them. Based on that, surveillance of energy consumption and saving is possible, while it

also supports the creation of the city's energy map, the data collection on urban mobility, the identification of pollution levels, the monitoring of safety standards, etc.

- *Traffic management centre*: an operational centre for monitoring traffic flows of the city, which has been integrated into the system that monitors public transport flows. This aims at the improvement of traffic flows and efficiency of public transportation, which in turn can support control of air pollution in the city.
- *BIP - Business Integrated Piedmont*: an innovative electronic ticketing issue system, allowing access to all public transport means, in every part of the city. Its main goal is to improve accessibility to urban transport mobility and upgrade the quality, efficiency and safety of public transport.
- *Social innovation program*: aims at the promotion of youth and social entrepreneurship, serving the transformation of innovative ideas into products, thus supporting the creation of economic and social value in the city.
- *Biciplan*: a tool for identifying actions and technical works that will encourage the use of bicycles in the city. These may relate to both technical solutions, but also promotion initiatives and strengthening of cultural aspects that can serve the goal of sustainable mobility and support the shift to more environmentally responsible transportation means, i.e. bicycles.
- *Open*: open internet portal, allowing accessibility of public data to a variety of users (citizens, businesses, public and private organizations, etc.).
- *Geoportal*: internet portal for getting access to city's geographical data and advanced mapping tools.
- *Map of Torino*: Web 2.0 municipal service, allowing users to create maps of the city and share them with other users. Maps have geographical reference based on Google maps service and are organized in specific thematic categories.
- *Digital Library*: collection of digitized texts, relating to the Turin city.
- *Portal Torinofacile*: a portal offering on-line services, where citizens can be served on request.

4. 'Going Smart' Efforts in Greece

This section endeavors to delineate the development of 'smart' cities in Greece, by shedding light on 'going smart' efforts carried out by four different urban environments, namely Heraklion in the southern, Trikala in the central, Thessaloniki and Kozani in the northern part of the country (Figure 2). These refer to *four distinct peripheral city profiles* of the Greek territory in terms of size, role in urban hierarchy, structure and extraversion of local economy, accessibility to transport and communication infrastructures, presence of R&D and educational institutions, etc. It should be noted that Trikala is the first Greek 'digital' city and was placed among the 21 first rating 'smart' cities in the world, awarded by ICF in 2009, 2010 and 2011, while Heraklion was awarded in 2012, 2013 and 2014. Moreover, inter-municipal networks, recently evolving, in order good practices and experiences - concerning managing urban problems - to be exchanged, are shortly discussed (see also Fig. 2).

4.1. *City of Trikala*

The prefecture[4] of Trikala, located in the central part of Greece, is a mainly mountainous region (83% mountainous / semi-mountainous), endowed with remarkable natural and cultural assets. The city of Trikala (capital of prefecture) is a small peripheral urban settlement, where almost half of prefecture's population is located (80.900 inhabitants in 2011). With regards to the local economy, the rural sector prevails, while tourist and service sectors are recently gaining importance. During the last decades, the whole region has suffered by isolation, population decline and economic stagnation. As key *barriers*, threatening the region's development potential, were considered the: insufficient transport accessibility for intra- and inter-mobility; rough morphology, impeding productivity and economic efficiency; limited access to communication and knowledge infrastructures; and low-skilled population.

Going 'smart' reflects an effort to address *new development perspectives*, by use of ICTs-enabled applications for *removing isolation*. Based on national and European resources and liberal local leadership, the city is transformed into a pioneer at the national and one prominent example at the international level. Emphasis is placed upon creating: a *vision*, inspiring and motivating local citizens and businesses to participate in local affairs; and an *innovative urban e-environment*, affecting people's lives and opportunities.

The main goal was to establish effective interactions among local actors (G2C, G2B and B2C), serving sustainable urban development objectives. Efforts were concentrated on: a) *smart living*, for improving quality of life; b) *smart economy*, supporting business interaction / development; c) *safety of citizens*, protecting disabled citizens (Alzheimer patients); d) *social care*, providing e-Health services to population; and e) *e-Participation – e-Democracy*, encouraging citizens' participation in decision-making processes. More specifically, *e-initiatives* undertaken are (http://www.trikalacity.gr/):

- *smart health care*: health services to elderly, disabled and chronically ill citizens, based on the wireless broadband city's network and portable devices, via which citizens are steadily monitored and offered health care services.
- *smart safety*: creation of a 'smart house' for Alzheimer elderly, based on sensor technology, house surveillance equipment, reminder / help equipment, GPS, etc.
- *DEMOSTHeNES system*: gathering citizens' complaints on everyday life aspects (e.g. litter collection, pavement problems, parking spaces), properly addressed for further handling.
- *Smart park system*: use of SMS for pre-reserving, paying and extending duration of a parking place.

[4] Prefecture: administrative unit – NUTS3 level.

- *Smart transport*: supports monitoring / managing of municipality fleet, monitoring of public transport fleet and congestion, e-ticketing services and location-based information on bus transportation.
- *GIS – Location-based information to citizens*: on a range of city's activities;
- *Tourist portal*: information on the region's assets potentially downloaded by PDA's connected to municipal free Wi-Fi.
- *e-Participation – e-Democracy*: high priority in citizens' participation, setting the agenda of the municipality board, expressing opinions on issues discussed, e-voting and e-interacting with the city council to affect final decisions.

4.2. *City of Heraklion*

Heraklion is the administrative and commercial capital of Crete Region, with population of 173.450 inhabitants (2011). The city has a strong local economic base, with emphasis on agriculture, tourist services and transportation. It is characterized by a low quality of urban environment due to the density of population and traffic congestion. It also exhibits a medium quality of health services and a low exploitation of the abundant cultural resources. It disposes a very good intra- and inter-regional accessibility, while it hosts a range of important higher education and research institutions.

The city of Heraklion has been one of the privileged cities of the Greek urban system, in terms of natural and cultural resources, transport accessibility, role in the urban hierarchy, proximity to R&D and educational institutions, geographical position, etc. The scope behind 'going smart' reflects an effort to *re-gain competitiveness* and improve *quality and range of services* offered to citizens. The *strategy* set in this respect is twofold, aiming at promoting:

- *place identity*, focusing on preservation and e-marketing of local assets; and the upgrading of *competencies* of local labour force, taking advantage of the proximity to R&D institutions and universities; and
- *digital inclusion* of local stakeholders in order to improve services offered and strengthen participation in local affairs.

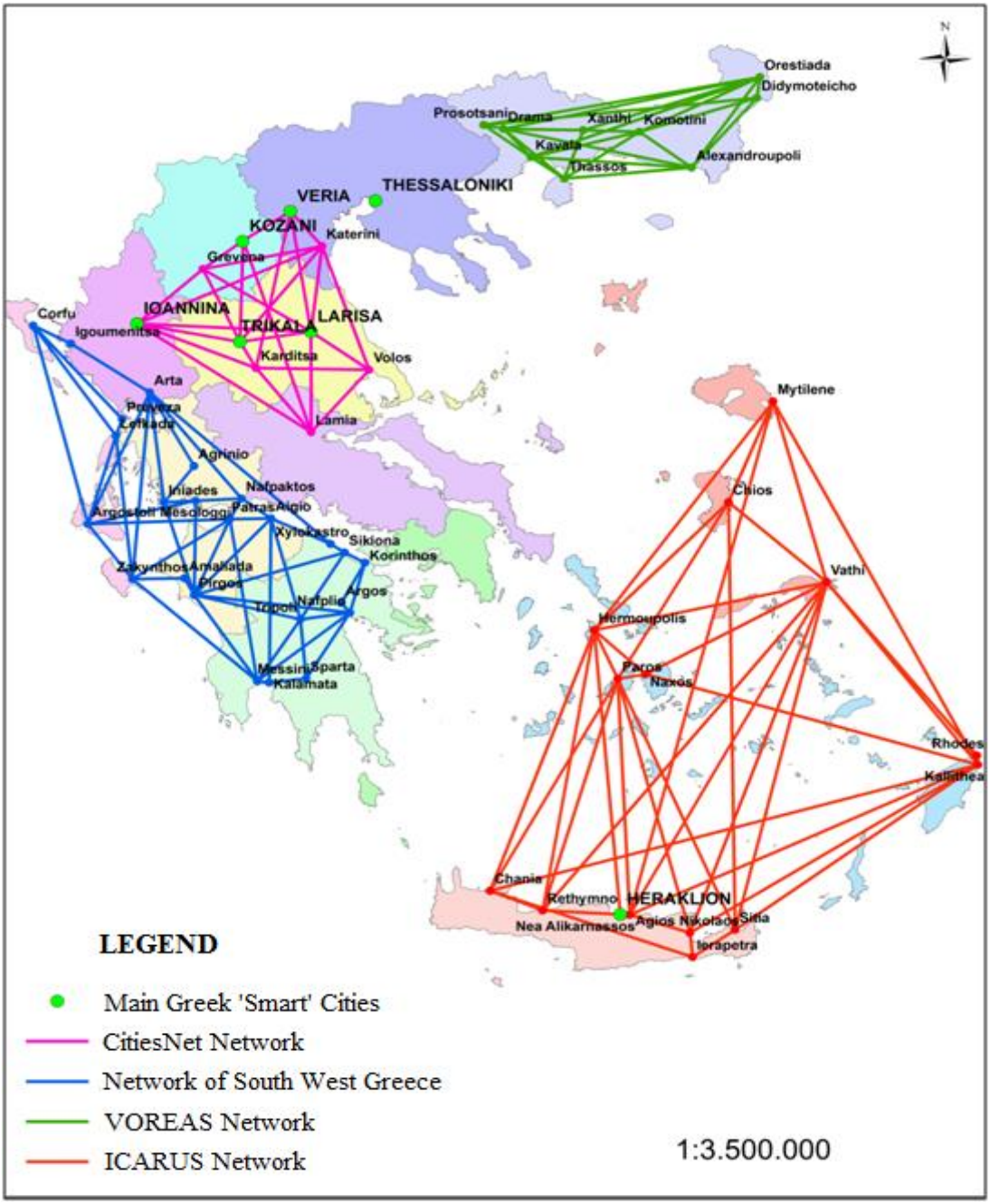
In order to pave 'smart' development, the city has prepared a *strategic development plan*, where key objectives are: broadband infrastructure development, investments in new technologies, training of local population, promotion of e-culture, e-government and e-democracy, and strengthening of bonds between local businesses and research community.

Based on the development of Fiber Optic Network (MAN) and municipal wireless network, the following *e-initiatives* are undertaken (https://www.heraklion.gr/):

- *Heraklio@DigitalCity*: refers to integrated, user-oriented, ICTs applications, including:
  - ✓ *e-Democracy*: strengthening public participation in the decision making processes, and
  - ✓ *e-Services to citizens*: round the clock, on-line, provision of services to citizens and businesses, and electronic transactions.

- *Steps to civilization and tradition*: digital portal for cultural and tourist marketing, protecting and enhancing the world class natural and cultural assets for the sustainable future development of the city.
- *Digital library*: protection of historic documents, used also for city marketing purposes;
- *GIS - Serving locally-based population needs*: provides information for serving local population's daily needs.

Figure 2: Smart Cities and Smart Cities' Networks in Greece
Source: Elaboration of data from http://geodata.gov.gr/geodata/



4.3. *City of Thessaloniki*

Thessaloniki (1.104.460 inhabitants) is the capital of Central Macedonia Region and the second largest urban, economic, industrial, commercial and political centre in Greece. The

city also constitutes a major transportation hub for the rest of southeastern Europe, while it is well-known for its festivals, events and vibrant cultural life in general.

The effort towards 'Intelligent Thessaloniki' is implemented through two parallel processes, namely: a) development of innovative clusters and technology districts (Technology Park, Alexander Innovation Zone, etc.), supported by the public policies for the promotion of R&D; and b) development of broadband networks and Internet services for businesses, local authorities and citizens, supported by the private sector (Schaffers et al., 2012; Tsarchopoulos, 2013). These efforts are not the result of a coherent visionary city strategy, but they derive from individual actions, organizations, business and civic associations, following that way a *bottom-up approach* (Tsarchopoulos, 2013). The most important 'smart' city initiatives undertaken are (Tsarchopoulos, 2013):

- *Development of broadband networks.*
- *Telematics applications for urban transport*: identification / management of the bus fleet and provision of passenger information.
- *Intelligent management system for urban mobility*: digital platform, providing services / information regarding optimal ways to move in the city, environmental awareness, strengthening of public transport and alternative means of transportation.
- *Cartographic portal*: integrated Geographic Information System, which provides a wide variety of information / services concerning the city (attractions, public transport, controlled parking zones, navigation, address detection, etc.).
- *Thessaloniki 360º - Virtual tour*: Internet city guide, with emphasis on providing 360º virtual tours of the most significant monuments and attractions.

4.4. *City of Kozani*

The city of Kozani (70.420 inhabitants) is one of the most important *energy production nodes* of the Greek energy system. This is based on the lignite deposits available in the region, largely affecting the local economic structure, in which the energy sector prevails. The city nowadays, after the completion of the Egnatia East-West TEN-T road transport corridor, consists of a *transport node*, connecting the Regions of Macedonia, Epirus and Thessaly. Moreover, it is in progress the development of a new business and residential district at the suburbs of the city, which, based on the high-speed ICTs network connectivity, aims at serving as an *innovation pole*, attracting talented workforce and highly innovative entrepreneurial activities.

The trajectory of *Kozani* has been marked by the presence of lignite deposits, assigning the city a specific role, that of the energy production node at a national level. This has

conditioned the type of socio-economic development of the city, but also its environmental quality. Certain developments of the last few years (e.g. improved road transport accessibility, participation in the first Greek digital community - CitiesNet), have opened new development perspectives for the city. In the course of these developments, the 'going smart' efforts focus on the promotion of innovations in both the social and the business level, involving: community development based on digital inclusion, social integration, networking / participation of local population and businesses in the decision making processes; and promotion of cooperative clusters and regional innovation systems, shifting the emphasis of the local economic structure and adopting a more extravert orientation of the local economy, while at the same time creating new opportunities for innovation, employment and attraction of high quality labour force and innovative businesses.

The *e-initiatives* undertaken by the city of Kozani are (http://www.kozanh.gr/):

- *e-Democracy – e-Participation*: promoting public participation in decision-making processes through the creation of the *e-dialogos* platform.
- *Transparency*: by on-line transmission of municipality meetings.
- *Smart park system*: managing parking spaces in the city.
- *GIS - Serving locally-based population needs*: providing information on everyday life needs of citizens.
- *Active citizens*: social networking platform / applications strengthening social cohesion through Citizen-to-Citizen (C2C) interaction.
- *Creation of an innovation pole at the outskirts of the city*: co-financed by the state, the local government, the university and the private sector, a broader coalition for further supporting innovative development of the city.

4.5. *Inter-municipal Networks*

In recent years four inter-municipal networks have been developed in the Greek territory (Figure 2), in order to meet social needs, design new services and applications in the context of 'smart' city. More specifically, these networks aim at: promoting local products and services, informing and supporting citizens and stakeholders in ICTs issues, bridging digital divide among societal groups, diffusing knowledge, providing a range of useful services to citizens and businesses, strengthening public participation, etc.

5. Conclusions

Experience gained from the implementation of the 'smart' city concept for sustainable urban development, but also from the previously discussed 'smart' city examples, shows that successful 'going smart' efforts are strongly based on creation of a vision at the local level, introduction of the concept in the effort of planning the development / regeneration of urban environments, as well as strong commitment of actors involved, i.e. local authorities,

planning institutions, citizens and stakeholders. Moreover, time and effort should be devoted so as community needs and expectations, based on traditions, culture, etc., to be identified, in order to make decisions on proper ICTs infrastructures and relating city- and citizen-specific e-applications (Stratigea, 2012; Stratigea et al., 2014). The latter is of crucial importance as customer profiling or, even more, co-designing of services with citizens can lead to more sustainable and effective e-services, providing to citizens a higher level of satisfaction and thus higher rates of *'log-in' potential* (Stratigea, 2011).

The comparison of the Mediterranean cities' efforts, presented in this paper, reveals the importance of ICTs and their applications in a smart city context for serving local needs and sustainable future development expectations. More specifically, of *priority* are applications relating to the (Table 1, colored rows):

- creation of *'active citizens'* as one of the cornerstones of the concept of smart cities;
- use of e-initiatives to support a variety of *urban functions* in city environments;
- management of *parking places*, consisting of a considerable problem in many urban environments, with evident consequences in terms of congestion, infringement of cities' free space, environmental load, energy consumption, etc.;
- management of *traffic load*, coping with irrational use of energy and environmental deterioration aspects of contemporary cities;
- strengthening of *participation* of various stakeholders' groups in the decision making process as a factor that enhances interaction, democracy, empowerment of all parties involved and transparency of decision-making processes;
- management of *cultural resources*, which is of importance when thinking the range and value of cultural resources of Mediterranean cities and their power in their development perspective.

Based on the Mediterranean examples of the cities of Barcelona, Santander, Issy-les-Moulineaux and Turin, it is largely concluded that the concept of smart cities has been greatly integrated in contemporary urban planning processes. Although respective examples are not comparable, due to the great differences appearing among these cities (size, spatial structure, economic structure, urban functions, development perspectives, etc.), but also the maturity of the smart city planning efforts in each specific example, it is evident that the 'going smart efforts' are progressing as coordinated efforts for the development of applications and services, which mainly cope with the: de-materialization of bureaucratic processes; enhancement of stakeholders' participation; strengthening of efforts towards reaching sustainability objectives; promotion of competitive advantages of relating urban environments; etc. Considerable *barriers*, in this respect, constitute: the limited role of stakeholders in articulating development policies; the digital divide among stakeholders' group; and the certain lack of coordination among public agencies involved in this effort.

Looking at the *Greek context*, things appear to be rather different, as the unfavorable economic coincidence, the lack of knowledge and skills in ICTs and their applications, the lack of technical expertise etc., seem to hamper the transition of Greek cities to the new ICTs-enabled era. Nevertheless, based on the examples of Greek cities previously presented, it seems that the concept of smart cities is continuously gaining ground as a *new paradigm* for urban management and a strategy for coping with contemporary urban problems. Special emphasis is placed on citizens' participation, taking a core position in the effort to plan the sustainable development of urban environments. Moreover, adoption of the smart city concept seems to be placed at the service of a variety of development goals at the local level, ranging from removing isolation (e.g. the city of Trikala) to the setting of a strategy for the promotion of place identity (e.g. the city of Heraklion), implying of course a different rationale as well as different tools and applications, serving each specific goal (Stratigea and Panagiotopoulou, 2014).

As *barriers* to the development of smart cities in the Greek context can be considered: the lack of a *vision* and an integrated strategy for sustainable urban management; the dramatic decrease of public investments on ICTs infrastructure; the limited adoption of technology and innovations in the public sector; the lack of citizens' participation; the limited accessibility to open data; the inability of coordination of public institutions; the intensity of digital divide both among regions and citizens in the Greek territory. From the study of the Greek 'smart' city examples, the following *conclusions* can be drawn:

- The role of ICTs in sustainable urban management is nowadays greatly acknowledged by many Greek cities.
- The concept of 'smart' cities is *gaining ground* in Greece for coping with sustainable urban development challenges in the broadband economy. It should be noted that a large number of Greek cities are now 'on the way' to deliberately invest on human capital and proper ICTs infrastructure and reap the benefits of 'going smart' technological applications.
- *Isolation* is a key motive for many of the urban settlements 'entering the game' in the Greek context. According to the four, previously referred, city examples, Trikala and Kozani are discrete paradigms of isolated, declining urban environments.

Table 1**: A comparison of smart cities' applications, based on the selected Mediterranean urban environments**

Domain	Applications	Mediterranean Cities							
		Barcelona	Santander	***Issy-les-Moulineaux***	Turin	Trikala	Heraklion	Thessaloniki	Kozani
Smart economy	Innovation	X			X				
	Teleworking								X
Smart citizens	Active citizens	X	X	X	X	X	X		X
	Visitors		X			X	X	X	X
	Training	X		X	X				X
	Augmented reality		X	X					
Smart government	Transparency	X		X					X
	Participation	X		X		X			
	Open data	X			X	X	X	X	
	Urban functions	X		X	X	X	X	X	X
	Public services			X		X	X		X
Smart mobility	Traffic		X		X	X		X	
	Public transport	X			X	X		X	
	Use of bicycles	X			X				
	Parking	X	X	X		X			X
	Electric vehicles	X							
Smart environment	Environmental data	X	X		X				
	Energy	X		X	X				
	Waste	X							
	Lighting	X		X					
	Irrigation	X	X						
Smart living	Culture	X		X			X		
	Social care					X			

- *Key issues* in all Greek smart city examples presented in this paper, although with somehow diversifying emphasis, are e-democracy and e-government, as well as the creation of innovative urban environments for attracting high skilled labour and investments in order to confront with new challenges and threats introduced by the broadband economy.
- All cities aim at the establishment of a *new participatory culture* in decision-making as a *tool* for increasing citizens' and stakeholders' awareness, building of consensus, promoting smart and inclusive growth, and a assuring a balance between public and private interests.
- The *benefits* reaped by 'going smart' for the city of Kozani are not quite evident yet, as the city is at early steps. For the early-comer, the city of Trikala, some primary positive impacts can be drawn as to the restraint of urban population decrease, the lesser vulnerability of the city in the economic crisis (ICF, 2011), the active participation in a range of national, European and international activities in the field of 'smart' city development, the participation in a range of EU Research Projects, focusing on the development of specific e-applications, the establishment of links with the pioneers in the 'smart' city development field (member of the International Network of e-Communities, Pan-European e-Participation Network PeP-NET, DigitalCities etc.), the strong interaction established between the city and universities at the national level, the dynamic development of the e-Trikala A.E. (from 1 employee to 22 technology specialists within 5 years), etc. Concerning the city of Heraklion, a considerable progress has been achieved, bringing the city in a very short time period among the 21 'smartest' cities of the world; while it has become part of wider networks (Eurotowns, Eurocities, Balkan cities) and leader of the IKARUS network.
- It should be stressed the pioneering role of local government towards driving 'smart' city initiatives and enhancing 'log-in' willingness of citizens in all three Greek case studies presented.

As *barriers* for 'smart' cities development in Greece can be considered the lack of:

- *financial resources* for developing proper communication infrastructure;
- knowledge stock, technical personnel and relevant equipment, as well as relating costs for getting access to this staff;
- *ICTs skills* of population in peripheral urban settlements; and
- ICTs culture that would strengthen the use of ICT applications in everyday life.

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Municipality of Heraklion: https://www.heraklion.gr/
Municipality of Kozani: http://www.kozanh.gr/

The Relevance of Asian Development Bank: Existing in the Shadow of the Asian Infrastructure Investment Bank

Abstract:
This paper analyses the potential impact of the China-led Asian Infrastructure Investment Bank (AIIB) on the Japan-USA-led Asian Development Bank (ADB). Given the financial strengths and the technical know-how of the newly formed AIIB there is a question about the future role and indeed relevance of the ADB. The questions canvassed in this article refer to ADB's ability to change and adapt to the new situation, where it is no longer the dominant multi-lateral development bank (MDB) in the Asia-Pacific region. Against this background the discussion turns to issues concerning the geo-political sphere of influence of the ADB and AIIB and analyses the ADB – AIIB geo-political equilibrium in the Asia-Pacific region. Subsequently this paper discusses factors that may impact on ADB's future relevance.

Keywords:
Foreign Aid, Development, Development Bank, Asian Infrastructure Investment Bank, ADB, Asia, Geopolitics.

JEL Subject Descriptors:
O190 International Linkages to Development
F35 Foreign Aid

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1. Introduction

In March 2015 PR China announced the de facto formal inauguration of the Asian Infrastructure Investment Bank (AIIB). From its beginnings AIIB has been seen by many (Reisen 2015; Mathew 2015; Wolf and Rogarowsky 2015; Garcia-Herrero and Casnova 2015) as a competitor to the traditional Washington-based (Bretton Woods) financial institutions, namely the International Monitory Fund (IMF) and the World Bank (WB) including its member institutions such as International Bank for Reconstruction and Development (IBRD) and the International Finance Corporation (IFC).

However, since the China-led AIIB has not declared any ambition to operate beyond Asia-Pacific, the competition will be contained within this region. To restate, although AIIB may become a competitor for the above mentioned IMF, WB, IBRD and IFC, its impact will potentially be geo-politically limited. However, the same may not hold true when it comes to the Japan-USA led Asian Development Bank (ADB). Taking into consideration China's economic power, the surge for membership from major economies and China's growing geo-political influence, there is a serious question about the future relevance of ADB, perhaps signalling the end of the Japan – USA hegemony in the Asian development investment arena.

The Japan – USA hegemony governing the ADB enabled it to become an effective ally of the above mentioned Bretton Woods institutions and to operate alongside these in joint development aid agendas and geo-political self-interests of both, the USA and Japan's governments. Under the current governance and economic ideologies ADB became a significant player in the Asia-Pacific development aid arena, in particular Official Development Assistance (ODA).

There is widespread agreement among regional development specialists and commentators that since the establishment of the AIIB in 2015 China will assertively advance in the Asia-Pacific infrastructure aid arena (e.g. Raby 2015; Goodman, 2015; Chanda, 2015). Having established an international membership beyond Asia-Pacific, it is currently in the process of finalising its various structures, policies and procedures necessary for its administration.

In this article we will outline the background of AIIB formation, and canvas ADB's ability to change and adapt to the new situation, where it is no longer the dominant multi-lateral development bank (MDB) in the Asia-Pacific region. Against this background we will discuss the geo-political sphere of influence of the ADB and AIIB respectively with a focus on potential equilibrium between these two MDBs in the Asia-Pacific region. Subsequently this paper discusses factors that may impact on ADB's future relevance.

2. AIIB: An Introduction

The AIIB was officially launched on 24th October 2014 in Beijing. Its purpose is to provide infrastructure project loans to developing countries within the Asia - Pacific region. It will focus on energy, transportation, telecommunications and other infrastructures. The headquarters are to be in Beijing and is envisaged that AIIB will be operational by the end of 2015. However, much is still to be accomplished, such as establishing and agreeing on a Charter. The Articles of Agreement are expected to be ready for signing in June 2015 nd the Bank operational by the end of 2015 (http://www.aiibank.org/html/aboutus/AIIB/).

AIIB's founding membership consists of 57 regional and non-regional economies and includes 16 of the world's 20 largest economies. Conspicuously absent are first and third largest economies namely U.S.A. and Japan, and the 11th and 15th largest economies namely Canada and Mexico respectively (World Bank, 2015a).

Reportedly, founding members will initially contribute up to one-fifth of the AIIB's USD50 billion authorized capital. This will eventually be raised to USD100 billion, which is about 70% of ADB's subscribed capital of approx. USD 160 billion (see ADB 2015).

Non-regional countries will be restricted to hold a total of 25 % of AIIB shares. That leaves China and other Asian economies with 75%, which shall be distributed on a basis of the member economic size. This means that as China as the largest Asian economy and the absence of Japan as the second largest Asian economy, the former, by default will receive the single largest share quota. In other words although each Asian member would be allocated their share of 75%, China will hold power, whereas the Germany, UK, France and Italy would receive the largest share quota from the 25% quota allocated to non-Asian member economies.

The exact method to determine the proportional allocation of national shareholdings had yet to be agreed to. The distribution could be based on a country's nominal GDP or its GDP calculated on a purchasing-power-parity (PPP) basis, or a combination of these two. PPP would give more weight to developing rather than to developed. Since the majority of 75% of shares will go to developing countries it will make little difference as far as China is concerned.

The formation of the AIIB has to be seen in the context of discontent of significant economies, and in particular BRICS (Brazil, the Russian Federation, India, PR China and South Africa) countries with lack of reform within Bretton Woods institutions and the IMF in particular. In 2013 the Leaders of the BRICS approved the establishment of the 'New

Development Bank (NDB)' (informally the BRICS Bank). This operates on a more global platform and is therefore beyond the scope of this article. The AIIB is a further contribution to a significant shift away from the Washington domination of development funding and investment in infrastructure, and in the eyes of some, a direct threat to the hegemony of the US dollar system in world financial flows (Totten, 2015). However, either way China will have support, contribution and input from major Western European countries for the AIIB, as well as from all the founding members of the New Development Bank (NDB), and at the same time, China will have the largest shareholding.

On the basis of China's AIIB share quota, the significant number of important economies that have joined AIIB and the potential support from the NDB it could be argued that for all intentions and purposes, AIIB is an instrument for China's quest for its geo-political sphere of influence. As the second largest global economy it is positioning itself geo-politically as not only to compete with ADB and WB but also to prevent them from expanding further within China's primary geo-political sphere of influence, namely Asia - Pacific. (Rudolf, Huotari and Buckow, 2014)

3. Quest for the geo-political sphere of influence

Despite the strong pressure exerted by the USA on its allies to desist joining the AIIB, a significant number of countries have joined. Among the USA traditional allied countries who became AIIB founding members are Australia, France, Germany, Italy, UK, New Zealand, most of the Gulf countries, a number of MENA countries, and South Korea, to name but a few. The USA objections did little to curb the number of applications for founding membership of AIIB (Perlez, 2014). At the closure of application for foundation membership AIIB had accepted 57 countries and founding members. It is envisaged that other countries will join as ordinary members.

Furthermore, it is worth mentioning that 37 of 67 ADB member countries have joined the AIIB (see ADB 2014). The notable exceptions are Japan and USA. In addition there are 20 other non-ADB member countries that have joined AIIB as founding members bringing the total AIIB founding member countries to 57. (see Huang 2015). Given the significant number of dual membership the unanswered question of how long will there be a political, financial and economic incentive for individual countries to contribute to both the AIIB and ADB? There are two questions. Firstly, given the current 'aid-for-trade' and 'value-for-money' agendas amongst many donor countries, there is a question of whether existing and

future pledges of support to the ADB will be undermined by pledges to the AIIB and will support equilibrium between ADB and AIIB be established and maintained by dual member countries? In other words, will ADB member countries decrease their support to ADB, for example through co-financing of infrastructure projects and reallocate their funding towards the AIIB? The answers to these questions are to be seen.

Let us briefly turn to the membership issues. It may be noteworthy that Japan is virtually the only major Asian economy, which has not applied for AIIB membership. In fact Japan has pledged a whopping $110 Billion to Asian Infrastructure development (exceeding the capitalisation of the AIIB by $10 Billion) of which around half will go to the ADB (Kihara and Seig, 2015). Others, such as Taiwan lodged an application, but were rejected. There may be of course the opportunity for Taiwan and others to join at a later date as an ordinary member country. Other non-AIIB Asia-Pacific countries, which have not applied include Iraq, Syria, Afghanistan and Yemen (perhaps due to major political and civil unrests), and Turkmenistan, which has never aspired to be a member of any multilateral organization. In addition there are three Asian–Pacific countries which did not apply. These are Papua New Guinea, Fiji, Bhutan and Timor-Leste, ranking according to WB GDP tables as the worlds 116thth, 157th, 168th and 174th economies respectively (see World Bank 2015b). Absent from the AIIB membership are also Kiribati (ranked 191), Marshal Islands (ranked 190), Micronesia Federated States (ranked 187), Palau (GDP ranked 198), Samoa (ranked 181), Solomon Island (ranked 176), Tonga (ranked 186) and Vanuatu (ranked 180), all of which are ADB member countries. By not joining the AIIB, Japan and its allies may have isolated themselves from having any influence in the AIIB. Of course the counterargument may be that Japan may have strengthened its hold on the ADB.

However speculative, and as stated above it may be argued that AIIB is an instrument of intervention by China as the world's second largest economy to keep the traditional aid agencies such as ADB, WB and IMF at bay and to prevent them from expanding further within China's primary geo-political sphere of influence, namely Asia – Pacific. AIIB is also a potential instrument for China to receive strong support from the AIIB member economies to include the Yuan in the IMF's currency basket so as to reflect its economic strength on the world stage.

Thus the formation of AIIB is highly significant for China's geo-political influence in the Asia-Pacific region. The motives are both economic and political. The former is based on Asia's economic growth. That is to attain its full economic capacity Asia requires over the next 10 years infrastructure investment of about USD 1 trillion annually. It is questionable if

the WB or the ADB can begin to meet these targets due to a lack of capital and lack of expertise. On the other hand, there is a potential that China, based on the experience and achievement in building its own infrastructure in an unprecedented short period of time, may be able to do it. Furthermore, China has the world largest foreign exchange reserves, approximately four trillion USD (Trading Economics 2015).

As far as political motivation is concerned, China is cognizant of the advantages that may emerge from leading a regional infrastructure 'project' on such an enormous scale. China will gain massive strategic politico-economic advantages in terms of consolidating its position as Asia's economic centre as well as advancing its credentials as Asia-Pacific's geo-political leader. This has been a generally recognized as an important goal of China. (Pongsudhirak, 2014; Shambaugh, 2013) and is evident from the reaction of the USA and Japan to China's ambition to establish the AIIB. That is, USA is very much cognizant how much its leading role in the WB and its influence in the ADB contribute to its strategic and political interests in Asia-Pacific. Both USA and Japan understand fully that China, through AIIB, may challenge their economic and political primacy in Asia-Pacific and at the same time enabling China to take a greater share of regional politico-economic leadership. This is precisely, what the USA and Japan tried to avoid [Westergaard and Wade 2013].

Assuming that AIIB will challenge the Japan-led ADB supremacy as the major aid lenders in the region, the question is how will ADB respond not only immediately and in the medium term but also and more importantly in the future? More imminent is the question how the USA and Japanese governments will respond through their instrumentalities, namely ADB and what affect it may have on the developing nations in the region?

As an immediate response by refusing to join the AIIB both USA and Japan forfeited their opportunity to participate in the governance of this new institution. Subsequently they jeopardise their own and ADB's ability to shape the Asian-Pacific development agenda to the same extent as it was possible in the pre-AIIB era. Furthermore by refusing to join the AIIB, Japan and USA may have excluded their private enterprise to participate as contractors in AIIB funded projects. Given this situation, China, through the AIIB, appears to be well on its way to extend and strengthen its geo-political sphere of influence.

4. The Question of an AIIB - ADB Equilibrium in the Asia-Pacific Region

The ADB President stated that the ADB faces a number of internal and external challenges. (ADB News Release, 2015). Perhaps the biggest external challenge is the formation of the AIIB. In order to maintain equilibrium, ADB needs to make important strategic and

operational decisions. But most importantly ADB needs to focus on its relevance vis-à-vis AIIB. The important question is under what conditions can ADB retain its current relevance in light of the AIIB? To put it differently under which conditions can ADB and AIIB successfully co-exist?

Having recognized the importance of AIIB, the ADB took the initiative and announced that it is looking forward to co-operating with AIIB. (Pollmann 2015). There are two issues, which need to be taken into account. One, there is no clear indication what type of co-operation the ADB has envisaged and under which conditions. Two, whatever co-operation may be envisaged, it stands to reason that ADB will have to adjust by taking into consideration the political and economic agenda of the AIIB. In other words, it is highly unlikely that the AIIB will adjust to placate the ADB, thus the onus is on the ADB.

Our thesis is that although it could be argued that ADB will adjust and co-operate with AIIB, there are three assumptions speak against this. Firstly co-operation will require ADB to be flexible to accommodate AIIB development aid approaches. ADB may not be able to maintain its existing stringent aid governance structure. Second, ADB usually follows the Bretton Woods institutions' development aid agendas. These may not be acceptable to AIIB. Third, it is highly unlikely that a China-led AIIB will embrace a neo-liberal economic ideology embraced by the ADB.

Although the first assumption is an ADB internal matter, which may be resolved, the other two assumptions are externally governed ideological paradigms and thus inter-related. To harmonise these two with the ideological paradigms governing the AIIB may prove to be a difficult, if not an insurmountable problem for the ADB's desire to co-operate with AIIB.

The 'flexibility' factor

ADB's internal organizational and external aid governance structures do not well support an argument for flexibility. The ADB differs from other MDBs in many aspects. One important one is that ADB has distinct Japanese organizational features and culture. This is in stark contrast with most other MDBs, which ascribe to Western management and organisational culture. There is evidence that ADB (a) has a strong bureaucratic and rigorous hierarchical organisation structures modelled to a large extent on Japanese Ministry of Finance (Okano-Heijmans and Waardenburg 2014); (b) rigid lending terms and eligibilities; (c) intransigent engagement with those borrowers, whose economic achievements have not reached their full potential. In short there are signs of inflexibility within ADB's organisational culture, governance, management and administration (Birdsall, Morris and Rueda-Sabater 2015)

From this standpoint it could be argued that ADB lacks the flexibility required to coexist with AIIB. To put it differently, there is a need to acknowledge that ADB's principles and the objectives of its policies have served the developing countries in the region successfully. Its current strategies and structures, based on stringent sets of procedures may not be an effective way to co-exist with AIIB with its potentially less rigorous approaches and strategies.

ADB and the predominance of the Bretton Woods agenda

To be sure, the Bretton Woods system includes the WB, the IMF, and the World Trade Organization (WTO). Although ADB is not part of the Bretton Woods institutions, it has followed to a large extent the Bretton Woods agenda.

Our thesis is that over the last seven decades the Bretton Woods paradigms have significantly contributed to the advent and maintenance of political and economic positions in which developing countries globally verge on colonies of the global financial and corporate interests. Developing nations find themselves continually depend on economic and other ODA assistance that extend and enforce their dependency on the same institutions that impose conditionality to their own benefit, usually irrespective of the developing nations societal, economic and political needs. Such dependence may weaken the recipient countries relative economic position in relation to powerful MDB's. (Hudson 2005; Harvey, 1989).

Thus we maintain that since ADB is by virtue of the dominant Japan-USA hegemony lock-stepped with the WB, it follows, or needs to follow the Bretton Woods agenda. As such ADB holds significant and unfettered economic and politico-economic influence over the governments of borrowing countries. Like the Bretton Wood institutions, which have global monopoly, ADB has rarely, if at all, been confronted by competition. If this stands to reason than it could be argued that in light of the AIIB, there is a potential dilemma for ADB. The problem for the ADB is that AIIB could challenge the standards that the Bretton Woods' institutions have established over the last 70 years.

However with the emergence of the AIIB a competitive environment for ADB has been created. Not being used to competition, it is uncertain how ADB will react. The transition from a status of monopoly as a regional MDB to a competitive MDB organisation will be a challenging undertaking, which requires flexibility and change of the organisational culture.

The problematic as we see it is that although institutions that follow the Bretton Woods agenda impose the neo-liberal paradigm of competition and free-market enterprise on others,

they do not allow or at least resist any insurgence into their monopoly status. It could be argued that AIIB will challenge and provide alternatives to the Bretton Woods paradigm.

The clash of economic ideologies

If our argument, that the China-led AIIB will challenge and offer alternatives to the neo-liberal agenda of the Bretton Woods institutions and their followers, such as the ADB, it stands to reason then there is a potential of a clash of economic ideologies. To be sure, Bretton Woods institutions such as the WB, IMF and WTO, as well as ADB by association, are stalwarts of neo-liberalism.

In contrast China and some other S-E Asian countries such as Vietnam embrace a '*socialist market economy*'. Perhaps more to the point is the factor that some European AIIB member economies like Germany with its '*ordoliberalism*', and '*Regulation Theory'* (Labrousse and Weisz 2001; Doyle, Martinez Arranz and Winand 2015) can be seen as a basis for '*socialist market economy*', which are in stark contrast to the Bretton Woods' neo-liberalism.

Considering that ordoliberalism and regulation theory is essentially a theory about making a national economy work efficiently rather than about organising the global economy. This allows developing countries to pursue economic policies and developments, which are in their own national interests, rather than the MDBs neo-liberal global interests. To explain, the fundamental theoretical basis of ordoliberalism and regulation theory is that governments should, as necessary, interfere into markets in such a way that market outcomes mirror the theoretical outcome in a competitive market. In essence it is based on liberal state intervention.

Taking into consideration the above stated thesis that ADB is in lockstep with WB, which is the stalwart of neo-liberalism in the foreign aid and development, it is difficult to imagine that a useful collaboration between ADB and the AIIB will emerge, unless one or the other changes its economic ideology. Whilst ADB is unashamedly embracing a neo-liberal economic ideology, there is no indication that AIIB will follow suit. China and other member countries have embraced a '*socialist market economy*' and there is little indication that there is significant common ground.

The economic ideology of the Western aid agencies, especially those build in the image of Bretton Wood system, such as the ADB have shut out many aid possibilities, by making aid conditions rigid, inflexible and marginally efficient in delivering what the local population in recipient countries need. China's perspective is the exact opposite: Loan

decision should be readily and promptly attained if there is an authentic need on both, the donor's and the recipient's sides.

5. The ADB Relevance Factor

The above analyses raise the question about what ADB can do to retain its relevance in Asia-Pacific region, whilst it is stuck between the WB as its major partner and AIIB as the new competitor? AIIB and WB are after all two utterly different identities with different economic ideologies and agendas. There is no simple answer to this question. On the one hand ADB has already announced that it would like to collaborate with AIIB and on the other hand it remains locked in with WB as its main partner. Thus can ADB continue to live and retain its current relevance in a world of divided dependability? Is there a potential that one day in not too distant future ADB will be forced to reveal where its cooperation focus lies? Given the political constellation of the USA–Japan hegemony, which governs ADB, the most likely scenario is that ADB will remain within the WB and Bretton Woods campus.

Furthermore, the political reality underneath ADB's gestures of cooperation with AIIB remains a major issue. Japan's Finance Minister Taro Aso set, at the ADB annual meeting in Baku, Azerbaijan, a political agenda for the ADB, which has a direct impact on ADB-AIIB relations. Taro Aso foreshadowed new plans to increase Japan's funding for infrastructure development by championing Japan's plans for Asia-Pacific regional expansion. The proposed plan according to Taro Aso is for Japan to harness the resources of the bilateral Japan International Co-operation Agency (JICA) and resources from private enterprise, which together will collaborate with the ADB by providing syndicated loans. (Bermingham 2015)

ADB cannot and will not move against the will of its political masters and thus such a situation may well be encoded in the political atmosphere of possible competition, rather than cooperation between ADB and the AIIB. After all ADB's alliance with the WB and the USA–Japan hegemony has served it well. Thus it is foreseeable that the status quo will most likely be maintained. ADB's dominant strategy to be the junior partner to the WB will be potentially upheld. The notable change may be ADB's access to JICA and Japanese private enterprise funds. Reinforcing the vision for the ADB, Taro Aso, was quoted as saying '*We're going to promote a new initiative to encourage investments for quality infrastructure. We'll also aim to expand investments in infrastructure quantitatively.'* (Aso cited in Bermingham 2015) This very much leads to the conclusion that ADB-JICA alliance will pursue competition rather than cooperation with AIIB.

Thus ADB is now entering a period of harsh realism facing the question of relevance from within as much as from without. On the one hand the rhetoric from within its ranks espoused by its President Takehiko Nakao about co-operation with AIIB is in strong contrast of the plan championed by Japan's Finance Minister and Deputy Prime Minister Taro Aso.

Here ADB is wedged in between the vision of its President and the Chairperson of ADB's Board of Directors, and Japan's plan for future focus of the ADB. The former is at least rhetorically focusing on potential co-operation with AIIB the latter setting a scene for competition between ADB and AIIB. In addition there is also the third factor, namely China's realpolitik.

China's realpolitik seems to be focused on using the AIIB to advance its own political and economic interests. But this is nothing unusual in the multi-lateral lending. After all ADB is a witness to exploitation of power and a vehicle for strategic gains of Japan and USA. Let us take a step back. It could be argued that China is seeking increased importance in the world political and economic order. As such China requires and deserves geo-political space to shape its own approach to global politico-economic leadership. If this means to leapfrog and render existing agencies less relevant, so be it. If this stands to reason, then AIIB is just an instrument – and not necessary the only one - China is using to secure its legitimate interests as the second largest world economy.

There is another factor, which must be seen as problematic by the ADB, namely that China has over years provided money for the developing countries not only in Asia, but also the Pacific and Africa. However, since the focus of AIIB is on Asia-Pacific it enters into a direct regional competition with ADB, which in turn brings to the fore the question of ADB's place in the Asia–Pacific region. Whatever the situation may be, ADB will be forced to re-establish itself in this new Asia-Pacific aid 'market place'. This restitution will undoubtedly be influenced by the AIIB. To pretend that it will be 'business as usual' may well lead to ADB being rendered marginally relevant or even irrelevant. There are signs of such re-establishments. ADB President Takehiko Nakao, announced the merger of two of the bank's major financial instruments, namely the merger of the ADB's Asian Development Fund (DF) lending operations (i.e. ADB's concessional lending mechanism) with its ordinary capital resources (OCR i.e. lending mechanism for middle-income countries at quasi market-rates). This is in aid to better respond to the needs of a rapidly changing Asia-Pacific region as well as for better responsiveness by the ADB to the needs of a precipitously changing Asia-Pacific region. There is a full recognition within the ADB that there is a need for ongoing

transformation, including scaling-up *'…operations, and development of a new strategy beyond 2020.*' (ADB News Release 2015; ADB 2008).

Perhaps more to the point is the question is why ADB and indeed the WB are opposed to the AIIB and why China has formed the AIIB? Of course the answer to the latter part of the question is that China's motives are in part economic and in part political. If the above stands to reason, the geo-political and economic impact of the establishment of the AIIB cannot be disregarded nor can it be set aside as just 'another' development aid agency.

6. Concluding Thoughts

It is evident from the above discussion that the ADB is taking notice of the impact that AIIB may have on its future relevance. There certainly appears to be a wish within ADB for a change in the wake of the AIIB. For example, ADB is talking about increased flexibility, and less about changes to its alliance with the *Bretton Woods agenda* and almost nothing about changes to its economic ideological orientation. The question is perhaps not one of the 'wish' but more about the political 'will' to bring changes about – changes that will either allow the ADB to cooperate with AIIB on equilibrant footing, or even as a junior partner?

To put it differently, whilst ADB has adopted the rhetoric of a collaborative future with AIIB, which is challenging the USA-Japan hegemony as much as the Bretton Woods institutions, the reform announcements by the ADB can be interpreted as attempts to reaffirm it's relevance within the Asia-Pacific region – a proclamation of relevance at times when its influence and thus relevance seems to be declining. But as we have seen this is in direct opposition to the Japanese' government's vision linking ADB and JICA cooperation. Not surprisingly there is an uneasiness within the ADB that AIIB will be a rival and destabilise and even endanger both Japan's and USA's strong hold on the ADB as well as ADB's relevance in the Asia-Pacific region. (Chin 2014).

The question of ADB's cooperation with AIIB remains a vexed one. There is rhetoric to collaborate, and at the same time the merger of above cited DF and ORC ADB funds is in aid of improving lending for infrastructure development in the region. If this is the case, then a strong argument may be made that ADB will enter into completion rather than cooperation with AIIB. At best ADB and AIIB will enter a phase of 'co-opetition.'

The question is can ADB really become internally as well as externally more flexible? Given it Japanese organizational culture, where flexibility is not at the forefront of change management, only history will show. But does ADB have time on its side to enact new flexible procedures and processes? The answer is most likely in the negative. One of the

reasons is that after its success to attract a significant number of G20 countries AIIB is in a strong position to start operating by end of 2015. The G20 AIIB member countries have the know-how and the ability to overseas the setting up the AIIB and subsequently effective and efficient implementation of infrastructure project.

In the end, this raise sharp questions about what in the end ADB can do about this perennial problem of being stuck between two major but utterly different political and economic powers? Furthermore, can ADB continue to remain relevant in a world of competing economic ideologies, and will the day soon come when, like it or not, that ADB will be forced to reveal which way to turn? To answer these questions, we need to consider that China has no apparent fundamental reason to form the AIIB except to firmly establish itself as an economic and political power with the Asia-Pacific region. If this means to compete directly with ADB and the USA-Japan hegemony embedded within the ADB and the WB so be it. There are compelling arguments to suggest that ADB will lose at least in part its relevance as the major Asia-Pacific regional MDB, if for no other reason than AIIB has been successful in securing a membership of some very wealthy economies from MENA region, which are not ADB member countries. Thus the financial future for AIIB infrastructure projects seems to be secured – perhaps more so that the ADB's even with the merger of its two above-mentioned and JICA funds.

Against this background a question is will AIIB focus on competing with the ADB by duplicating the ADB agenda? The response, from our perspective has to be in the negative. Our reason for this assessment is that ADB as the regional MDB does not have the financial, physical or human resources to meet Asia-Pacific's entire infrastructure requirements. (Rachman 2015). It is also needs to be pointed out that ADB provides loans for infrastructure development at market rate (i.e. LIBOR plus a service fee). If the AIIB chooses to compete on the basis of rate charged then ADB's efficacy and relevance, as a lender, would be rigorously compromised. Thus the question if ADB will be able to compete with AIIB is superfluous. It will depend on AIIB how much ADB competition it will tolerate.

In addition to AIIB, China is pursuing other initiatives, which potentially will affect ADB's relevance. Here we are referring to the above-mentioned NDB, and the Silk Road Fund (SRF). Although the discussion concerning the potential impact of NDB and the SRF on ADB's relevance is beyond the scope of this paper, it nevertheless needs to be mentioned. Our thesis is that unless ADB seeks mutually acceptable cooperation with AIIB its relevance as the main regional MDB will be diminished. This may also affect future collaboration with the NDB and the SRF. However to seek and enact such collaborations ADB needs to secure the

support and agreement of its major membership countries, namely the governments of Japan and USA respectively. If the current stance of the USA-Japan alliance is any indication, ADB will be hard pressed to maintain its current relevance.

To put it differently, our thesis is that AIIB has a significant advantage by the virtue of its member economies, China's experience in infrastructure development of unprecedented magnitude, China's and AIIB member countries' financial capacity to fund huge infrastructure projects, and coupled with Japan's government apparent intransigency to co-operate with China-led AIIB. Therefore the existing relevance of ADB in the Asia-Pacific region will over time be significantly reduced.

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A Model to Measure SMEs Sustainable Procurement Implementations from a Study of Western European Food and Beverage Companies

Abstract:

Purpose: This study investigates the nature and type of daily sustainable procurement implementations of small- and medium-sized enterprises (SMEs) located in Western Europe including Switzerland to identify the state of their maturity.

Design/methodology/approach: The Empirical Study of Food and Beverage companies operating in 2012 and 2013 in Western Europe including Switzerland collected the data through the use of a quantitative web survey and qualitative interviews of respondents. The companies targeted for the survey came from the European Chambers of Commerce 2012 self-ranking database of their members (where members self-evaluated their companies as "Sustainable" for matching criteria such as "Having an Environmental Policy," "Reducing Energy and Water Consumption" and "Performing Recycling"), were the search was further restricted to companies belonging to the Food and Beverage industry operating in Western Europe and Switzerland having a total employee count of less than 250 and yearly revenue up to 50 Million Euros. (SME as defined by the EU commission). We had a response rate of 19,41% with 429 SMEs questionnaires received kept for further analysis.

Findings: 1) SMEs also practice sustainable procurement like large companies. 2) SMEs that have sustainable procurement tend to have tools and metrics to measure SP results and estimate they are profitable. 3) The best of these SMEs apply Total Quality Management (TQM) principles in their operations and invest in training of their sales and procurement staff. 4) A model of 13 questions reflects on the state of sustainable procurement in European Food and Beverage SMEs. The applicability of the resulting model inspired from the Guttman Scalogram should prove helpful for SMEs.

Research limitations/implications: Because we depend on self-reported information from the SME we accept responses as being accurate and truthful and use our judgment to identify trends and provide some meaning.

Practical implications: Presenting a new Sustainable Procurement Model
Inspired from the Guttman Scalogram allowing SMEs to:
1) Self-evaluate, and identify their current maturity level on that scale,
2) Compare their maturity levels with best in class higher rated on the scale leaders from Western Europe (where according to Eurostat Switzerland and Northern Europe lead the pack) and optionally use the information as a differentiator in their competitive advantage strategy for Niche and other Markets.
3) Enable management to improve their operational performance by gradually encompassing the not currently implemented processes and measurements of that model and taking corrective action in accordance with Deming's principles of continuous improvement.
This scale comprised of 13 questions may prove to be the most-critical catalyst at the SMEs disposal to capitalize on SME Sustainable procurement innovation efforts. The

research results provide answers for companies not familiar with the implementation of Sustainable Procurement into their business operations.
The Model: was developed for SMEs in the food and Beverage industry, helps compare their specific maturity with regards to their sustainable procurement implementation. We see no reason this model could not apply to other geographic locations or be adapted to check sustainable procurement maturity of SMEs in other industries. Our hope is that a Future research will improve and adapt this model to allow more followers and those SMEs who are new to the concept to implement Sustainable Procurement. The empirical study results suggest a need for SMEs entrepreneurs and their firms to upgrade their training and to increase their reliability on tools and metrics in order to enhance their innovation and Sustainable Procurement capabilities.

Originality/value: – This study unveils the Sustainable Procurement Innovation practices of this growing economy of SMEs and particularly focuses on the less explored of these in a Western-European context.

Keywords: Sustainable Procurement, Performance Scale, Small-to medium-sized enterprises (SME's), Western Europe.

Paper type: Research paper

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1. Introduction

The Academic literature has many published articles on Large companies and far less on Small and Medium-sized Enterprises (SMEs). The non-academic daily sources of information of the general public seem to ignore SMEs and circulate headlines on large companies about multi-billion Euro takeovers, global expansion plans or risks of mega bankruptcies, making believe that Europe has mainly large, multinational enterprises.

Official EU statistical data shows how SMEs represent the majority of companies across Europe yet their importance is not representative (less than 5% of the sources) in our western research databases and journals literature references. For illustration of this Academic injustice: Eurostat data of 2010 indicates that 99.8% of companies in Europe have less than 250 employees. They generate 66.9% of employment, 57% of turnover and 58% of value-added.

In the Food and Beverage industry SMEs account for over 68% of EU's exports. Observatory of European SMEs data of 2010 indicates that micro-enterprises with less than ten employees account for 92% of the total number of enterprises. They indicate that they account for 30% of employment and 18% of turnover and 22% of value-added. Finally, we are told that 'small' enterprises with less than 50 employees account for 97% of the total number of enterprises, 50% of employment across Europe, 37% of turnover and 39% value-added.

In recent years, most researchers that explain market trends focused on large companies primarily because data is widely available there and considered "reliable." SMEs are in general reluctant to accept interviews and answer surveys because research questions takeaway rare resources from critical operations activities. SMEs predominant management entrepreneur culture believes there are few short-term benefits and even fewer long-term benefits derived by the SMEs from participating in research.

Large companies are the natural starting source of researchers – because they are the accepted pioneers in implementing new technologies (innovation (Verghese, K. & Lewis, H., 2007)), they have established quality culture, and they develop best practices - new standards - for others to compete. So when we decide to look into sustainable procurement the main sources of information are large companies that benefited (profits from sales and environmental responsible public image with their customers) from that experience. Some of the associated benefits cost reductions,

economies of scale, improved brand image as an "ethical" company and increased customer Loyalty and in some instances increased market share.

SMEs are a source of innovation (Theyel, G. 2000), (Lacroix R., Stamatiou E., (2006), (Lacroix R. 2008) and R&D and provide over 2/3 of the private sector jobs (Harindranath et al., 2007). Therefore, the majority of the EU economy is made of micro-firms which generate work for two people (Observatory of European SMEs - March 2014), thus play a very important socio-economic role in the local economies. SMEs are the engine of growth with potential for a higher involvement in internationalization, because of their flexibility and the quick adaptation of their management, (Welford et al. 2003).

Most Academics believe that large companies because of several factors such as their size, operations management infrastructure and organization, and other factors have larger Research and Development budgets. It is believed that large companies have easier access to financing than their SMEs counterparts and because of that are in a better position to compete against SMEs (Sharfman et al., 2007). Some SMEs are highly specialized and focused in profitable "niche markets" and are leaders in sustainable procurement (Rao, P. et al. 2007).

According to some authors, SMEs competitiveness is dependent on the acquisition of tools or enhancement of existing performance monitoring and measurement (Sharma, Bhagwat and Dangach, 2005). Some authors suggest that SMEs have difficulties in finding external financing and sufficient internal owner investment capital, employee turnover, inadequate facilities, low technology use and face bureaucratic delays in dealing with numerous regulatory agencies/taxes/levies etc., (Jamil and Muhammed, 2011). Other authors indicate that SMEs have the right tools for performance measurement (Taticchi, Balachandran, Botarelli and Cagnazzo, 2008). Others still maintain that SMEs have an accounting system with limited capabilities for measuring the financial performance of SMEs (Fry, 1992), (Garengo P. et al. 2005), (Montabon F. et al., 2005), (Taticch P. et al. 2008).

Sustainable Procurement in SMEs is one of these new topics worthy of an empirical study. Our humble objective was to perform a study to identify the existing state of sustainable procurement in Food and Beverage SMEs, located in Western Europe, to measure their state of maturity, to develop a tool for that measurement and make recommendations for the tool's use for self-evaluation by SMEs. In this paper, we present never previously published findings of our sampled SMEs without which this research would not have been possible.

2. Literature Review

2.1 Approach to literature review

This review focused on searching for relevant articles predominantly in the English language academic literature, to find evidence to answer the research question. A review panel of two professors determined the approach, criteria and search words to enable the inclusion and exclusion of articles.

Table 1: Top-down Literature Review Process

Research questions	**Characteristics of SP in SMEs**	**Factors impacting SP in SMEs**	**Key Dimensions of SP Models in SMEs**
Strategy to Locate evidence	**Search Engines** (Blackwell Publishing, Business Source Elite, Emerald, Kluwer, Science Direct) **and Proceedings** from Supply Chain Management (SCM)/SP conferences		
Criteria for Inclusion	**Main Fields:** Sustainable Procurement (SP), Operational management, SCM, Organizational Management, Performance measurement, SMEs **Included Topic:** SP SMEs **Typology:** Academic Journals, conference proceedings and internal reports **Research Methodology:** Empirical Research		**Main Field:** SP & Performance Measurement **Included topic:** SP Model & Characteristics Excluded Topic Pre-2009 studies **Typology:** journal paper **Research Methodology:** Empirical Research

A structured literature review was conducted focusing on leading journals Databases as listed alphabetically in Table 2.

A two-step literature review process was performed to identify and reduce sources. We used sophisticated engine keyword and flag combinations searches for the periods 2007-2011 (prior to creating our hypothesis) and again in early 2014 for the periods 2009-2014 so as to ensure that latest post survey references, and developments would not be left out from our analysis.

In addition to the previously mentioned articles we included those with keywords such as green purchasing and procurement, green or environmental Supply Chain Management (SCM), sustainable SCM; corporate social responsibility (CSR) in supply chains, sustainability and Small to Medium sized Enterprises (SMEs) and excluded references to "public" procurement.

Table 2: List of Journals searched from the fields of Management, the Environment, Operations, Supply chain and Sustainable Procurement fields.

Management and Environmental Journals	**Operations, Supply Chain and Sustainable Procurement Journals**
Academy of Management Journal	International Journal of Business Performance Management
Business Strategy and the Environment	International Journal of Physical Distribution and Logistics
Corporate Social Responsibility and Environmental Management	International Journal of Production Economics
Greener Management International: The Journal of Corporate Environmental Strategy	International Journal of Production and Operations Management
Harvard Business Review	International Journal of Production Research
International Journal of Life Cycle Assessment	Journal of Operations Management
Journal of Environmental Economics and Management	Journal of Purchasing and Supply Management
Journal of Management Studies	Management Journal of Supply Chain Management
Management Science	Omega: The International Journal of Management Science
Sloan Management Review	Supply Chain Management: an International Journal

Table 3: Criteria for exclusion from the Literature Review.

Sources Evaluated	**Exclusion Criteria**
Book reviews, letters	Not pertinent
Ecological / Ethical perspective	Articles with highly ecological or ethical content as opposed to purchasing and supply
From other journals	Literature review needs to be kept focused
Logistics	Too many studies on greening logistics
Technical works	LCA, Inventory, Pollution prevention Recycling, Energy & water conservation, e-procurement. Too specific for inclusion.

This data search process identified over 38000 references: 26600 of these on sustainable procurement. 15500 of the results related to SMEs and 14200 referred to "public" procurement. We chose to exclude these last so as to focus only on the remaining 1300 sources for non-publicly owned "private" SMEs. This last retained category corresponds to about 300 per year on average that are adequate for further exploration. We estimate to see another 100-200 relevant articles published on the subject in 2014. Five people participated in that article selection process: 2 professors, one researcher and two post graduate students. We used a two-step data reduction procedure to retain only essential information. First the team excluded non-pertinent

articles e.g. on Life Cycle Assessment (LCA) (see Table 3), Second we included relevant articles based on the preliminary analysis of their abstracts. In 2011, we analyzed 650 abstracts and in 2014 another 1300, All were equally dived-up amongst the team for analysis and further recommendation as to their use.

2.2 Definition of SMEs

SMEs are defined either by their balance sheet or the number of their employees (Eurostat, 2014). In this article, we use the official European Commission definition with the predefined boundaries on employee count and annual revenues focusing on companies with less than 250 employees with a balance sheet not exceeding 50 million Euros.

2.3 Concept of performance Measurement

Performance Measurement is the means by which SMEs establish criteria which will help them measure and evaluate the performance and the quality of their activities based on pre-set organizational goals (Hall, 2013). The Business dictionary states this concept became very popular in 1982 after the publication of "In Search of Excellence" by Tom Peters and Bob Waterman, which describes the best practices of successful companies that collect information to measure production, demand and operating efficiency to assist decision makers (http://www.businessdictionary.com).

The Academic literature shows that SMEs are improving their capabilities in view of the complexities of the market; their management culture is improving, and they lack the technology to support decision making (Bernardi and Biazzo, 2003).

SME tends to have insufficient processes. SME employees predominantly learn with on the job training. The success of SMEs is believed to relate to its flexibility to change and quick decisions of its managers. Large companies in contrast with SMEs, focus more on performance measurement (Taticchi, Balanchandran, Botarelli & Cagnazzo, 2008). There is little research on that subject (Hudson, Smart & Bourne, 2001). Garengo, Biazzo & Bititci (2005) state that 25% of performance models used concern SMEs while the remainder 75% are for large companies.

European SMEs use two performance measurement models. Some SMEs use Laitinen's (Laitinen, 1996) others use Chennel's (Chennell, Dransfield, Saunders & Shaw, 2000).

Jamil and Mohammed (Jamil and Mohammed, 2011) state that all performance measurement models used by SMEs have internal (costs, production

factors, activities, products and revenues - to monitor the production process) and external (financial performance and competitiveness - to measure performance). The whole of these measures support decision making and quality and sustainability. (Jamil and Mohammed, 2011).

2.4 Concept of Sustainable Procurement

The Benefits of sustainable procurement vary from company to company but those from our survey who chose to implement sustainable procurement did so for various reasons, which included:

- Increased sales from greener food and beverage products
- Support for sustainability strategy and vision
- Improved, image, brand & market differentiator
- Customer perceived health benefits from greener food and beverage products or traditional or bio or organic labeled products
- Savings from energy, water, fuel and other resources conservation
- Cost avoidance with lower waste management and improved packaging
- Compliance with environmental regulations

Sustainable Procurement also known as “Green Procurement” (Lacroix R., 2010a) is "using procurement of suppliers and processes to deliver long-term social, economic and environmental value for products and services" (Lacroix R. et al. 2014). Sustainable procurement now requires suppliers to understand the sustainability drivers that SMEs are specifying in their procurement decision making (Lacroix R. et al, 2012). Most-leading suppliers now publish their sustainable procurement objectives. In spite of the challenges in SP most firms seem to uncover and to exploit new opportunities (Lacroix R. et al. 2010), (Lacroix R. et al. 2012).

It is now widely accepted that organizations who have successfully implemented sustainable procurement practices is just good procurement practice (Gonzalez-Benito, O. 2005), (Lacroix R. et al, 2011).

According to Helen Walker (Walker et al. 2009), the first major milestone in identifying the principles of sustainable procurement was reached in 2005 when a private sector led Procurement Task Force in the UK created the report "Procuring the Future" (UK National action plan for Sustainable Procurement, 2005). This particular report listed 5 phases for the initial implementation and the "Flexible Framework (tool)" created to evaluate the maturity of firms. With major revisions, it was published by BSI in 2010 as British Standard – "BS8903: Principles and framework

for procuring sustainably." This standard as we learn from the BSI website targets UK public and private sector organizations' procurement decision making. The standard offers recommendations in the procurement process and addresses areas like environmental policy & strategy, risk management, leadership, measurement, etc.

Unfortunately, the specific standard being very generic did not have much acceptance outside of the UK. For that reason of low acceptance practitioners located outside of the UK and a few UK SMEs suggested we look at their current practices to extract best practices that resulted into our proposed implementation maturity evaluation model discussed further.

While we found about 2500 articles in total from 2004-2014 on the general subject. One author discusses that trend (Srivastava, S. K. 2007) and an increasing number of special issues on sustainable procurement have been published according to Walker Helen (Walker, H. 2009) such as "in the Journal of Operations Management entitled ‘Supply chain management in a sustainable environment' (Jayaraman, Klassen, & Linton, 2007). By the mere variety of articles published in various journals, we see this area of research is important and timely for the academic community. Some examples include: In Supply Chain Management: an International Journal ‘Corporate Social Responsibility in the Supply Chain' (Lindgreen, Maon, Swaen, & Vanhamme, 2008), and in ‘Sustainable supply chain management: Theory and Practice' (Pagell, Krause, & Klassen, 2008).

Let us refer to two interesting articles from Walker Helen for illustration of definitions.

The first entitled "Sustainable procurement: a literature review" (Walker, H. 2009) with complete literature coverage, where she refers to (Pagell, Krause & Klassen, 2008), (Seuring, Muller, Rao & Sarkis, 2006), and (Carter, 2005).

The second "Greening Operations Management: An Online Sustainable Procurement Course for Practitioners" (Walker H. et al. 2008) where the authors explored suggestions to assist procurement professionals in "greening the purchasing and supply processes."

Implementing sustainable procurement processes has become an opportunity for many SMEs to create an infrastructure to support the Total Quality Management (TQM) processes and improve operations efficiency and expose any gaps between the SMEs objectives and observed performance. Some authors suggested (Hudson et al. 2001), Sustainable procurement becomes a driver for the SME, as in any performance

measurement system to set objectives and deploy processes, verify results and make adjustments as in best of class quality cultured large companies.

2.5 Definition of Deming's PDCA Wheel

The Deming PDCA wheel was the invention of his friend Shewart of Bell Laboratories (Shewart W.A., 1939). But Deming was the person who popularized it in Japan right after World War II (Deming W.E., 1993).

PLAN: The "Plan" Phase is used to identify and overcome any new obstacle blocking your progress towards your management set objectives.

DO: The "Do" phase is used to create a small-scale pilot to test your hypothesis to see if it resolves the obstacle.

CHECK: The "Check" phase is used to analyze the results to derive some lessons.

ACT: The "Act" phase is used to take some corrective action. If the result were positive, you would take measures to roll out the changes into your existing processes. Else, assuming the results did not confirm the hypothesis you need to create a new one and a new test to tackle that newer hypothesis.

Repeating the PDCA wheel produces process improvement. The inspiration at the root of this process improvement, methodology is the scientific method:

1. Set a hypothesis — a theory describing how things are believed to work, and how can impact it.
2. Experiment — to test your theory.
3. Observe and reflect on the results.
4. Act with the newfound knowledge:

a) If your theory doesn't work — change the hypothesis, and try again

b) If your theory works — apply it and publish the results.

5. Repeat the above recipe for even better results.

2.6 Concept of Innovation

No succinct definition is available (Amara and Landry, 2014); however, the many attributes help explain the concept such as "newness" which some authors debated as "new to whom" and "new in what way?" (Discussion in Johannessen et al., 2001) and, there are two archetypical ways to differentiate between the various "types" of innovation. Schumpeter in 1934 suggested the first as "objects of change" to refer to products, processes, markets, and organizational innovations. The second refers to

"the radicalness of some change" meaning that it brings about a revolutionary amendment. We focus on the second approach in our definition of "innovation."

2.7 Hypothesis

For all six hypotheses discussed in this section we used the correlations information generated by SPSS which is available in **Appendix C: SPSS 20 Table describing the correlations between variables used in the survey of 429 Food and Beverage SMEs.** For easier readability we highlighted the correlations in the table to paint the cells using three colors. Yellow indicates a high correlation between two variables, Green indicates a low correlation and Blue indicated that there is no valid correlation between two variables.

Because we are aware that Sustainable procurement is profitable and adds value to large companies, we wanted to confirm that some SMEs also practice Sustainable procurement like large companies. Further, we wanted to confirm that SMEs also derive benefits from their implementation of Sustainable procurement thus being profitable is not necessarily related to the company size.

In the most-recent literature, there are indications that SMEs are getting more integrated with global supply chains. When it comes to requirements compliance, you see multinational buyers imposing environmental and social requirements on SMEs (Jorgensen & Knudsen, 2006). SMEs in turn impose these requirements on their suppliers. This situation brings about social and economic benefits according to Helen Walker. "Buying from small businesses can make contributions in a variety of forms, ranging from a contribution to local economic development through providing innovative green products and services, particularly in the food sector" (Walker 2009). We wanted to identify the targeted population of "environmental conscious" SMEs – from an extended process which we describe in the methodology, we retained only SMEs that have an environmental policy. From these companies we wanted to learn the following answers to our six hypotheses listed as H1 through H6.

H1 SMEs that practice SP have an environmental policy and they contractually require their suppliers to abide by their environmental policy. Or the reverse – that SMEs that practice SP and have an environmental policy do not require their suppliers to abide by their environmental policy. The SPSS 20 spearman rho (sig. 2-tailed) correlations table with N=429 of variables P1 (Have an Environmental Policy), and

D2 (Supplier verified to conform to environmental policy) is 0,293** indicating that these are highly correlated at the 0,01 significance level. The preliminary hypothesis confirms that surveyed SMEs tell us they strongly agree and that they contractually require their suppliers to abide by their environmental policy and that they verify this at least once a year.

H2 SMEs verify at least once a year the conformity of their suppliers with their environmental policy requirements. Or the reverse – that SMEs do not verify at least once a year the conformity of their suppliers with their environmental policy requirements. The SPSS 20 spearman rho (sig. 2-tailed) correlations table with N=429 of variables P1 (Have an Environmental Policy), and D2 (Supplier verified to conform to environmental policy) is 0,293** indicating that these are highly correlated at the 0,01 significance level. The preliminary hypothesis that surveyed SMEs tells us they strongly agree and that they contractually require their suppliers to abide by their environmental policy and that they, verify this conformity at least once a year.

H3 SMEs are providing innovative green products. Or the reverse – that SMEs are not providing innovative green products. The SPSS 20 spearman rho (sig. 2-tailed) correlations table with N=429 of variables D4 (You practice SP Innovation) in relationship with variables D1 (Employees trained in SP) 0,403** and P3 (Employees have an SP Culture) 0,398** are linked to having deployed tools and Metrics to measure SP performance (Variable C2) 0,369**. They are also linked to performing R&D for future products (Variable A2) 0,352** and the SME estimation of increased sales (variable P4 SP increases sales) 0,295**. These variables are highly correlated at the 0,01 significance level, thus confirming the preliminary hypothesis that SMEs are providing innovative green products and that they those which do estimate they have increased sales.

H4 SMEs that practice Sustainable Procurement apply TQM principles in their operations and invest in training of their employees. Or the reverse that SMEs, that practice Sustainable Procurement do not apply TQM principles in their operations and do not invest in training of their employees. The SPSS 20 spearman rho (sig. 2-tailed) correlations table with N=429 of variables A1 (Have TQM innovation infrastructure), and C2 (have deployed tools and Metrics to measure SP performance) 0,482** and

D1 (Employees are trained in SP) 0,244**, and P3 (have a sustainable procurement culture) 0,296** confirm the preliminary hypothesis that the most advanced of SMEs, that practice Sustainable Procurement apply TQM principles in their operations and invest in SP training of their employees.

H5 SMEs, which to have tools and metrics to measure, SP results, estimate they are profitable. Or the reverse that SMEs, that do not tend to have tools and metrics to measure SP results estimate they are not profitable. The SPSS 20 spearman rho (sig. 2-tailed) correlations table with N=429 of variables C2 (SMEs have tools and Metrics to measure SP performance) in relationship to P3 (employees have an SP culture) 0,489**. Additionally variables A1 (use a TQM innovation infrastructure) 0,482** and D1 (employees were trained in SP) 0,389** and D4 (practice SP innovation) 0,369** and A3 (perform R&D for future products) 0,323** and P4 (Sustainable procurement initiatives estimated to have increased sales) 0,297** all confirm a high correlation amongst themselves. The preliminary hypothesis confirms that SMEs that have tools and metrics to measure SP results estimate they had increased sales. Some SMEs, which indicated they did not have tools and metrics for SP, indicated that they estimated they were profitable. All SMES claiming they have had tools and metrics to measure SP and which stated they performed SP innovation said they used common industry standards and estimate they were profitable (they answered four; five on lickert-5 scale converted to yes). These were also found to having also answered that they had previously trained their employees in SP (D1 with P4 relationship) 0,456** at the 0,01 significance level.

H6 SMEs, who estimated they had increased sales, also trained their employees in SP, and their suppliers received training in SP. Or the reverse that SMEs, who estimate they did not have increased sales and did not train their employees in SP, or their suppliers did not train their employees in SP. The SPSS 20 spearman rho (sig. 2-tailed) correlations table with N=429 of variables D1 (employees trained in SP) and D3 (supplier trained in SP) 0,497** and P4 (estimate they are profitable) 0,456** indicate strong correlations at the 0,01 significance level. These correlations confirm the initial hypothesis that SMEs which had trained their employees in SP and whose suppliers had done the same, they estimated they had achieved increased sales.

3. Research Methodology

3.1 Material and methods

While most-recent prior research has focused on SMEs from a specific country or describing aspects of a specific public sector in a specific geography (e.g. Swedish Military green procurement initiatives), this paper presents a partial study of a larger research project focused on privately owned non-government firms. Our search did not identify published similar large-scale research in recent years focused on SP in the food and beverage industry geographically covering SMEs in Switzerland and western European countries.

Obtaining systematic information from SMEs in Europe has been a significant challenge for researchers. Experience has shown that SMEs are in general reluctant to participate and respond to surveys because that means committing some of their limited critical resources from the immediate operational priorities of the firm. Also, while Management predominantly understands the benefits and occasional applicability of surveys results, to some employees assigned to procurement functions the Academic terminology of "Sustainability" as in "Sustainable Procurement" is a new concept the Glossary we created explains and answers we provide also to frequently asked questions.

To ensure sample representation we launched a major web-based questionnaire and telephone follow-up survey to collect the data of interest and verify the question items with a standard protocol. Our survey was sent to procurement management or management responsible for the procurement function in SMEs located in the western European geography. SMEs, which participated to the survey, operate in these countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden and the UK.

Traditional paper based surveys offer the advantage of being easy to use for respondents to reply. They also impose almost no time constraints to complete the printed questionnaire. as they need to look over the form, they have the definite disadvantage that the answers collected will need to be digitized for processing in a statistical package such as SPSS.

The telephone as a means for surveys far outweigh the disadvantages according to Frey (1989) and is cost efficient and gives the opportunity to control the quality of the data according to Lavrakas (1993). The major disadvantage according

to Lavrakas (1993) is that the average person will not stay online more than 20 minutes for the survey.

To address these limitations, we chose a combination of web-based survey and follow-up 15 minute phone interview, where the questions would not exceed 15 minutes to answer. We conducted two pre-surveys to detect potential problems, consulted with professors and procurement executives and after launching the regular web-based survey, used two MBA graduates familiar with the concepts to conduct a follow-up phone survey and answer the questions as they arose. All phone interviews have numbers, and data recorded to control the quality of the survey process (Groves R.M., 1990).

3.2 Sample and data collection

The target companies for investigation are SMEs.

The SME Definition as set out in the Recommendation of the European Commission adopted on 6th May 2003, defines small and medium-sized enterprises initially in relation to three size criteria: An SME has a staff headcount < 250 employees, with a turnover of <= 50 million Euros. It encompassed to additional definitions: first, that a small enterprise with a staff headcount < 50 employees and a turnover of < ten million Euros and second, of the Micro-enterprise with < 10 employees and a turnover of < two million Euros.

Based on the above **criteria** for the Year 2012, we selected data from the European Chambers of Commerce and Industry self-ranking database data of their members (where members self-evaluated their companies as "Sustainable" for matching some criteria such as "Having an Environmental Policy"), and further restricted the search to encompass companies from the Food and Beverage industry operating in Switzerland and Western Europe having a total employee number up to 250.

From the total population of 8560 SME companies matching these criteria, a set of 2210 (25,8 %) SMEs are selected by computer-assisted random sampling for use in the two pre-surveys and the one large final survey.

Pre-Survey 1 was sent to 200 companies where 67 (33,5% response rate)
(Cronbach's Alpha 0,8619 indicating a high correlation and reliability) were useable, no rejects. The feedback had the purpose to improve the clarity and reliability of the questions and contributed to improving the survey.

Pre-Survey 2 was sent again to the same 200 companies, obtained 76 (38%) valid responses (Cronbach Alpha 0,890 indicating a high correlation and reliability) (the same 67 and some additional which we exclude for the purpose of comparing and computing reliability and correlation for the same SMEs).

Pre-roll-out Improvements: The Appearance and Graphics of the Survey web questionnaire were made more appealing, more straightforward to read and required less time to complete (approximately ten minutes). Three months later after testing and incorporating the last improvements suggested by our advisors we rolled out the final Survey. The feedback helped us add German and French versions of the English Survey together with a Glossary and instructions and common answers to questions respondents might have.

Main Survey was improved and sent to a total of 2210 companies.

532 Surveys were received (23,16% of 2210), from which 83 were rejected (3,75%); 429 were kept with a response rate of 19,41% (25,8 % of total population) (Cronbach's Alpha 0,814 indicating a high correlation and reliability).

4. Measurement

In order to adequately answer the Hypothesis from our preliminary survey, we devised 33 questions organized in six thematic areas – demographics of the SME, organization, decision making, training, sales, R&D and Innovation. As mentioned in the previous section, these 33 questions applied to SMEs in Western Europe in the Food and Beverage industry. 18 of these original 33 questions addressed sustainable procurement. While running a Cronbach alpha test on these 18 questions and taking advantage in SPSS version 20 and taking advantage of the function "if item deleted" we obtained an optimum group of thirteen (13) variables. These 13 variables are the ones classified and are available in Appendix A: Guttman Scalogram for Sustainable Procurement in Western European SMEs. The details relating to the country of origin of these surveyed SMEs can be found in Appendix B: Table of SMEs surveyed on SP by country and Industry. The details of the correlations between these variables as generated from our survey data by SPSS can be found in Appendix C: SPSS 20 Table describing the correlations between variables used in the survey of 429 Food and Beverage SMEs.

5. Findings

While looking at the results of the 13 variables of appendix A, with the procedure as described in section "5.2.1 Model description" we realized they matched with the Shewart Wheel also known in the literature as Deming's PDCA cycle of Total Quality Management. Thus, variables 1-4 correspond to the "Plan" phase, variables 5-8 correspond to the "Do" phase, variables 9-10 correspond to the "Check/Study" phase and variables 11-13 correspond to the "Act" phase of the Deming Cycle. While summarizing the survey results, we observed that the data collected conformed to the accepted procedures of the Guttman Scalogram. The data showed that companies that reached the 4th and last phase also had reached the 3rd and the 2nd and the 1st. while those who reached phase 3 had previously answered yes to phases 2 and 1. Companies that reached phase 2 had also previously reached phase 1 without advancing any further. Finally, companies that did not complete all of phase 1 did not advance to complete any of the following steps while some of these having completed phase 1 partially completed some requirements of phase 2. In performing this analysis, we had to resolve a small problem, mainly that the data had been collected using Lickert-5 scale questions while the Guttman methodology requires dichotomies yes-no answers. So we made the decision to convert all our Lickert 5 data by converting the 3-5 answers into "yes" and the 1-2 answers as "no." Thus obtaining the final 13 variables of our Guttman –like Scalogram as seen in Appendix A and serving as a base for our model.

5.1 Limitations

There are several limitations to our empirical study and to our resulting model presented here; we sincerely tried to balance good research practices with the goals and pressures to complete a reproducible survey according to the highest academic standards.

First in selecting the data source: We consciously used the European Chambers of commerce database of member companies as a starting contact data source (over 86% of companies are registered there). Next we cross checked available information from that source with the larger Compass database (which has over 95 % of all companies referenced and considered most reliable). Then, we randomly selected candidate SMEs to be surveyed being listed in both databases. Eventually, the SMEs retained are considered more environmental conscious than the rest. The other method was to

use a more random and statistically larger compass database list as a starting point without the intentional environmental criteria bias. We did not choose that approach because while there would have been more companies to chose from in compass, much fewer of these listed would have responded and because most do not have an environmental policy, would have had something to tell us about sustainable procurement.

Two, in selecting the region of the data sample: Because of our being located in Western Europe, we decided to survey only companies that are in the same geography as the data is readily available and from sources considered reliable by the research community. We did not explore Eastern Europe because time did not permit. The Hartmann group was kind enough to grant us access and give us a written permission to reuse some of their questions and analysis from a US survey of 2012 on sustainability and to test these questions with EU companies. We never managed to undertake a comparative analysis of the EU and the US markets but keep this in mind for a joint publication.

Three, in the selection of the industry for our sample: Because comparisons are not evident between unrelated things (e.g., car industry versus food industry) we targeted food and Beverage SMEs which allow for comparisons within and across surveyed countries. We focused on private firms and excluded public firms because subsidies make their independence questionable. This approach enabled us to observe local/regional particularities. Had we selected the hotel industry or the construction industry, the comparisons would have been harder to establish between countries and regions. The auto industry was purposely put aside because it did not allow for country to country comparisons as not all European countries produce cars.

Fourth, as to answers based on demographics:

In recording the procurement experts' answers: we gave more strategic weight to the vision of well-known SMEs managers having the overview and decision making for Sustainable Procurement than to the narrower perspective of the "procurement function practitioners" which in many SMEs were not procurement professionals. The narrow yet accurate procurement professional’s perspective alone hides the larger perspective and aspects of TQM and a growing SME SP culture which are inseparable from SME operations, brand image and profitability.

Eighth, on the SME centric perspective of the answers: We asked SMES about themselves and about their suppliers and their customers. At no time have we cross

checked these answers directly with their suppliers or their customers, therefore the study has a voluntary bias centered around the SMEs vision of itself which may be quite different from the reality we might have obtained from asking the suppliers this question or asking customers to provide answers for the SME. The 360 degrees approach of interviewing and surveying all sources is the most perfect, but could have worked if the SME provided us with a list of suppliers and a list of customers to contact, but then one may have questioned if those answering were only "selected friends" of the SME with a bias to say good things while those not invited may have said bad things? We may never know the answer, and recognize this as a limitation to be resolved in future surveys on similar topics.

5.2 Discussion

In this section we present the main innovation from our empirical survey from 429 Western European, Food and Beverage SMEs surveyed in 2012 and 2013 for Sustainable Procurement. We also address possible uses and applications of that Model for SMEs located in Europe and other regions.

5.2.1 Model Description

The 18 of 33 original questions of our survey after performing an alpha Cronbach were reduced to the table of 13 final variables which constitute our Model as seen in Appendix A. The procedure for arriving at this classification encompassed the following steps:

1) Converting the 13 Lickert-5 responses data into dichotomous "bivariate" y/n answers (1-2 answers converted to "No" and 3-5 answers converted to "yes") in order to simplify the trend of answers.

2) Observing in the resulting data set that variable v1 ("Have environmental policy") has the most "yes" answers of all variables (420 of 429 SMEs).

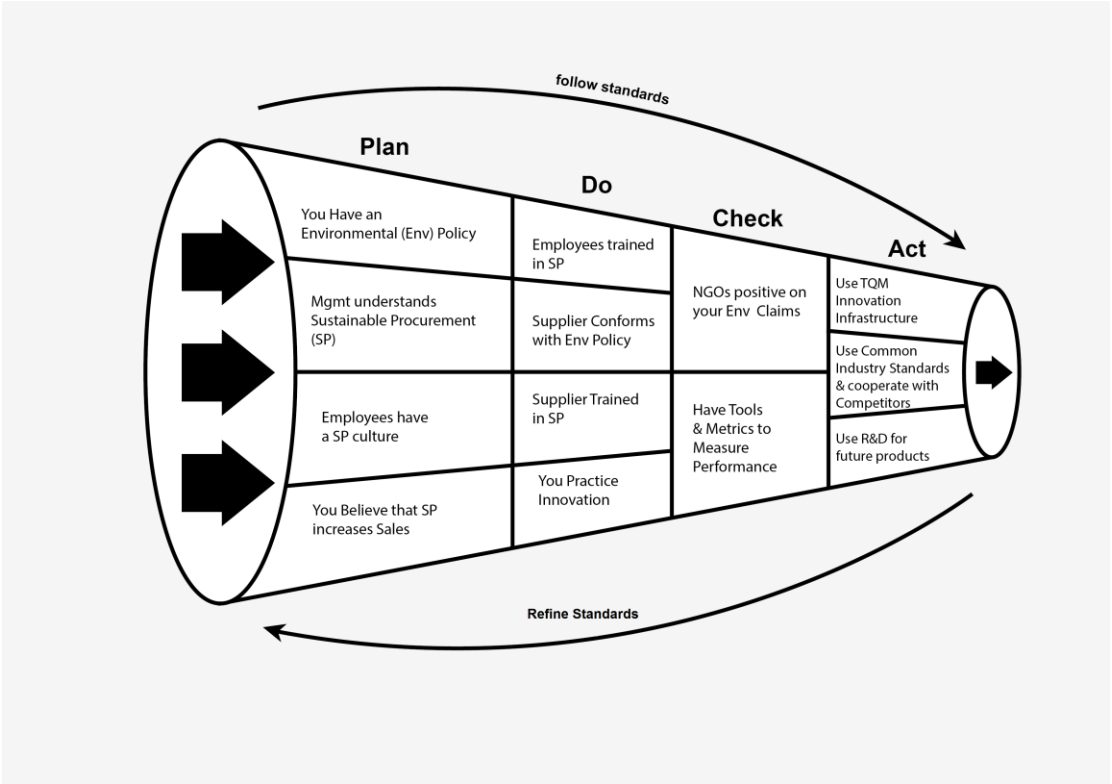
3) Checking inside this 420 data set to find for the next variable with the most "yes" answers, variable v2 ("SME understands sustainable procurement") with 409 answers.

4) Recursively repeating the procedure as seen in steps 2 and three above for the remaining 11 of the 13 variables we obtain the final ordered list as presented in the table of Appendix A.

5) Please note that while analyzing the ordered list of 13 variables of that Scalogram from step 4 above, our team noticed that these appear to match the Deming "Plan, Do, Check, Act" (PDCA) Model (also known as the Shewart Cycle).

6) Wanting to organize these variables into four (4) factors without altering the order, we arranged them into these final four phases as seen in Appendix A. The Guttman Scalogram Model we obtain is consistent with that methodology as shown in Figure 5.2A.

Figure 5.2A: Sustainable Procurement Guttman Scalogram Model for SMEs.
Source: Lacroix R., Laios L., Moschuris S. (2014)



The Model shown in Figure 5.2A is shaped like a funnel, with a large entrance to the left and a narrow exit to the right because many SMEs enter the process to implement sustainable procurement on the left and fewer in number have reached the highest levels of excellence.

As SMEs travel through that funnel they start on the left towards the other end of the funnel on the right, where they evolve through four phases of maturity labeled Plan, Do, Check, Act and corresponding to the four phases of the well known Deming Cycle. For the more advanced of these SMEs, the PDCA process is repeated several times (continuous improvement) to reach the highest levels of excellence desired by the SMEs management.

The top elliptic arrow is going from left to right over the funnel labeled «follow standards" applies to SMEs, that are new to sustainable procurement and

which follow the proven path of leading SMEs having developed these best practices. The other elliptic arrow going from right to left at the bottom of the funnel is for the best of SMEs that have already reached excellence and who refine the standards for other SMEs to follow.

By answering cumulatively yes to each question in each phase, an SME completes that phase and progresses right onto the next phase, and so forth until completing all four phases. Consistent with the Guttman Scalogram methodology, an SME, passing through some phase in the funnel has already cumulated yes answers on all previous steps encountered earlier in the funnel. Stated differently, an SME exiting the funnel on the right has answered yes in all four PDCA phases of the Deming cycle. An SME located in the A phase has already answered yes to all previous questions of the PDC phases. An SME in the C phase has answered yes to all questions in the PD phases. An SME in the D phase has answered yes to all questions in the P phase. Let us be clear that not all SMEs complete any given phase of maturity through that funnel. SMEs that remain stagnant at any given phase have failed to take appropriate steps enabling them to advance through that funnel.

Without a plan and management support (commitment and endorsement) of strategic decisions, nothing gets achieved in an SME. Thus, the first Stage of Maturity is Deming's Plan Phase, comprised of four questions answered in order from top to bottom:

P1 = Do you have an Environmental Policy?

P2 = Does your Management Understand Sustainable Procurement?

P3 = Do you have a Sustainable Procurement Culture for your Employees?

P4 = Do you Believe that Sustainable Procurement Increases Sales?

While Planning is essential, it is insufficient without the necessary follow-up of management to ensure their orders were carried through (implemented) by employees and business partners of the SME, and in the proper manner for the plan to have a chance to succeed. Thus, the second stage of maturity is Deming's Do Phase, comprised of four questions answered in order from top to bottom:

D1 = Have you trained your Employees in Sustainable Procurement?

D2 = Are your suppliers conforming to your Environmental policy?

D3 = Have your Suppliers been trained in Sustainable Procurement?

D4 = Are you more innovative in SP than others in your industry?

Good managers are anticipative. Hence, they do not leave many things to chance. SME management may want to get the timely feedback when something went wrong and enough information to make informed decisions to resolve problems short term and to prevent them from reoccurring long term. It is not good enough to have internal feedback when something leaks to the press; external feedback by neutral sources like Nongovernment Organizations (NGOs) are of great value to see short term how customers and the general public perceive the SME. Having tools and metrics in SP is a reliable source of information to measure progress and make informed decisions. The lack of tools and metrics is considered the major weakness of most SMEs. Thus, the third stage of maturity is Deming's Check Phase, comprised of two questions answered in order from top to bottom:

C1 = Would NGOs rate you positively on your environment policy claims?

C2 = Do you have tools and metrics to measure SP performance?

Because employees tend to repeat mistakes, management may resolve to endorse and facilitate the creation of a continuous improvement culture in the SME. Employees are required to Act and make all necessary changes to existing processes and corrections to the existing operational plan if the SME is to reach the peaks of excellence. While implementing standards represents a significant cost to any SME's it does guarantee that specific best practices steps are carried on, thus making the quality of the outcome more predictable as opposed to in not adopting standards. Further, R&D does represent a cost for SMEs but also promises innovation and permits to rethink from time to time and to refocus the SME on more profitable markets. Thus, the fourth- and final stage of maturity is Deming's Act Phase, comprised of three questions answered in order from top to bottom:

A1 = Do you use a TQM innovation infrastructure for SP improvement?

A2 = Do you use common industry standards and occasionally cooperate with competitors for SP?

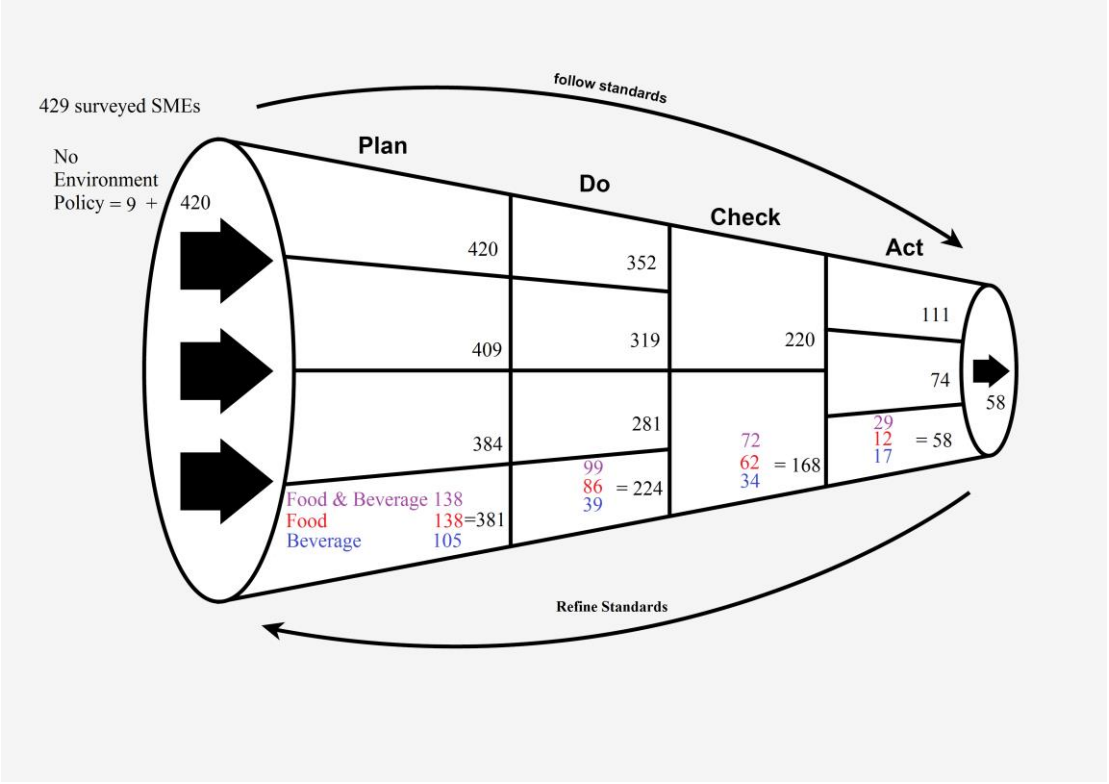
A3 = Do you use R&D to improve future products?

5.2.2 Preliminary answers to consider the validity of the Model

Some words of warning before reading the observed data. While we do not claim to have exhausted all possible criteria to describe sustainable procurement implementations in SMEs, we do not exclude the possibility that future studies may choose to focus on other aspects of this new research area. While this model is not the final word in this area of academia we consider it accurate until our colleagues

identify a better solution. The accolades for this pioneering attempt belong to these 429 western European Food and Beverage SMEs, which in the 2012-2013 timeframe, kindly and without pre-conceived barriers, offered us their candid understanding of what they practice, as shown in Figure 5.2B.

Figure 5.2B: Survey Results in SP Guttman Scalogram Model for SMEs.
Source: Lacroix R., Laios L., Moschuris S. (2014)



As you can observe in Figure 5.2B, of the 420 SMEs that enter the SP process, 381 completed the Plan phase, 224 the Do phase, 168 the Check phase and 59 the Act phase. We provided the breakdown in each phase to illustrate how many of these belonged to the food and beverage, or food or beverage industries. See Appendix B for the breakdown of SMEs by country.

5.2.3 Possible uses of the Model

The most-likely uses that we identified for the model are the following:

1) Be used in the market by Food and Beverage SMEs to Self-evaluate, and identify their current Sustainable Procurement maturity level on that scale. A company that wants to progress must first understand where it is and perform a gap analysis with regards to its objectives so as to devise the correct plan of action. This model is also useful to SMEs that are new to sustainable procurement in developing the plan of the

activities and infrastructure they require in order to benefit from sustainable procurement.

2) Be used by SME to Compare their maturity level with best in class higher rated on the scale leaders from Switzerland and Northern Europe and optionally use the information as a differentiator in their competitive advantage strategy for Niche and other Markets, or to gather capital from investors.

3) Enable SME management to improve their operational performance by gradually encompassing the not currently implemented processes and measurements of that model (particularly the D and A phases) and taking corrective action in accordance with Deming's principles of continuous improvement.

4) Be used for training purposes: while several SMEs lead the pack in sustainable procurement, there are still many which do not know how to capitalize on Sustainable procurement innovation efforts and others who are not clear as to how to integrate Sustainable Procurement into their business operations.

5) While the Model exists for use by SMEs in the food and Beverage industry, we see no reason this Model could not apply to other Geographic locations or be adapted to check sustainable procurement maturity of SMEs in other industries. The empirical study results suggest a need for SMEs entrepreneurs and their firms to upgrade their training and to increase their reliability on tools and metrics in order to enhance their innovation and Sustainable Procurement capabilities.

6. Conclusion & Recommendations

How Mature are Western European SMEs in sustainable procurement implementations? While the majority of SMEs especially the smaller ones are known to not be Mature, amongst those which have an Environmental Policy (estimate 10% of the General population of SMEs) that we chose to sample, 13% of these are very mature (58 of the 429 sampled SMEs in our model). While the percentage is estimated closer to 5% in the general population of SMEs, 13% it is still low in the specialized segment. We expect this percentage to increase significantly (almost double) over the next 10 years as there is a growing number of SME owners who believe in the importance of preserving the environment, and for that reason alone, decide to implement sustainable procurement because it conforms to their beliefs. The majority however of SME owners use Sustainable Procurement as a means to conform to the International and European Legal frameworks independently of the strength of the owner's beliefs (Zhu Q. & Sarkis J. 2007). The most-frequent reasons

for their investing in sustainable procurement are: 1) to achieve profits, 2) to improve their reputation with customers (as a Branding and Ethics differentiator compared to the competition), 3) for R&D purposes in order to develop niche products for exports markets.

The proposed model matching the Deming wheel is surely interesting and deserves further research exploration. Practically, SMES wanting to evaluate their SP maturity with this model will also be able to compare how they fare with other SMEs. Preliminary indicators are encouraging, but it is too early to draw conclusions on the model as we have no evidence of its use except for a fee companies that expressed their intent to experiment with this model. We believe the subject of sustainable procurement (and our focus on SMEs) is current and worthy of further academic research as indicated by a recent special issue by the Journal of Purchasing and Supply Management ,Volume 19, Issue 4, Pages 215-276 (December 2013), and of interest to practitioners. We would love to hear of similar findings being observed in SMEs also belonging to other geographies. We encourage other authors to contact us to assist them in reproducing our experiment. We also encourage discussions on related research on the subject of applicable models to measure the maturity of sustainable procurement implementations for SMEs.

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Appendix A: Guttman Scalogram for SP in Western European SMEs. (0.812 Cronbach Alpha for these 13 variables)

Variables	Guttman Phase in line with Deming's PDCA Wheel.	Item	SD 1 N	D 2 O	U 3 Y	A 4 E	SA 5 S
1	Plan	Do you have an Environmental Policy?					
2	Plan	Does your Management Understand Sustainable Procurement?					
3	Plan	Do you have a Sustainable Procurement Culture for your Employees?					
4	Plan	Do you Believe that Sustainable Procurement Increases Sales?					
5	Do	Have you trained your Employees in Sustainable Procurement?					
6	Do	Are your suppliers conforming to your Environmental policy?					
7	Do	Have your Suppliers been trained in Sustainable Procurement?					
8	Do	Are you more innovative in SP than others in your industry?					
9	Check	Would NGOs rate you positively on your environment policy claims?					
10	Check	Do you have tools and metrics to measure SP performance?					
11	Act	Do you use a TQM innovation infrastructure for SP improvement?					
12	Act	Do you use common industry standards and occasionally cooperate with competitors for SP?					
13	Act	Do you use R&D to improve future products?					

Lickert ordered Key: SD=Strongly Disagree, D=Disagree, U=Undecided, A=Agree, SA=Strongly Agree, Scale converted to Dichotomous, "No" (1-2) and "Yes" (3-5) for Guttman Scalogram.

Appendix B: Table of SMEs surveyed on SP by country and Industry.

Alphabetic list of SMEs' Country of origin	Total from all categories of country SMEs who responded to SP survey	Percent of all 429 SMEs who responded	Total of Food & Beverage SMEs	Total of Food Only SMEs	Total of Beverage Only SMEs
Austria	15	3,5	4	8	3
Belgium	43	10,0	11	10	22
Denmark	41	9,6	21	13	7
Finland	21	4,9	11	0	10
France	69	16,1	26	1	42
Germany	15	3,5	8	1	6
Greece	5	1,2	3	2	0
Ireland	12	2,8	3	9	0
Italy	24	5,6	10	1	13
Luxembourg	6	1,4	1	4	1
Netherlands	21	4,9	5	13	3
Norway	25	5,8	9	13	3
Portugal	19	4,4	8	5	6
Spain	47	11,0	21	15	11
Sweden	20	4,7	1	14	5
Switzerland	33	7,7	9	18	6
UK	13	3,0	6	1	6
Totals	N=429	100%	157	128	144

Of the 429 SMEs, 289 are either Micro (<10 employees) & Small SMEs (<50 employees), and 140 are Medium SMEs (<250 employees).

Appendix C: SPSS 20 Table describing the correlations between variables used in the survey of 429 Food and Beverage SMEs.

Spearman's rho correlations - with N=429															
High Corr.	**Low Corr.**	**No Corr.**	**Do you have an Environmental Policy ?**	**Does your Management Understand SP ?**	**Do you have a SP Culture for your Employees ?**	**Do you Believe that SP Increases Sales ?**	**Have you trained your Employees in SP ?**	**Are your suppliers conforming to your Environmental policy ?**	**Have your Suppliers been trained in SP ?**	**Are you more innovative in SP than others in your industry ?**	**Would NGOs rate you positively on your environment policy claims ?**	**Do you have tools and metrics to measure SP performance ?**	**Do you use a TQM innovation infrastructure for SP improvement?**	**Do you use common industry standards and occasionally cooperate with competitors for SP ?**	**Do you use R&D to improve future products ?**
			V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13
V1	**Do you have an Environmental Policy ?**	Correlation Coefficient	1,000	,311**	,189**	,251**	,264**	,293**	,163**	,100*	,332**	,182**	,048	,150**	,118*
		Sig. (2-tailed)		,000	,000	,000	,000	,000	,001	,039	,000	,000	,321	,002	,015
V2	**Does your Management Understand SP ?**	Correlation Coefficient		1,000	,262**	,279**	,220**	,250**	,130**	,204**	,261**	,127**	,022	,266**	,250**
		Sig. (2-tailed)			,000	,000	,000	,000	,007	,000	,000	,009	,643	,000	,000
V3	**Do you have a SP Culture for your Employees ?**	Correlation Coefficient			1,000	,339**	,401**	,167**	,397**	,398**	,207**	,489**	,296**	,197**	,260**
		Sig. (2-tailed)				,000	,000	,001	,000	,000	,000	,000	,000	,000	,000
V4	**Do you Believe that SP Increases Sales ?**	Correlation Coefficient				1,000	,456**	,291**	,372**	,295**	,444**	,297**	,208**	,108*	,223**
		Sig. (2-tailed)					,000	,000	,000	,000	,000	,000	,000	,025	,000
V5	**Have you trained your Employees in SP ?**	Correlation Coefficient					1,000	,229**	,497**	,403**	,260**	,389**	,244**	,148**	,265**
		Sig. (2-tailed)						,000	,000	,000	,000	,000	,000	,002	,000
V6	**Are your suppliers conforming to your Environmental policy ?**	Correlation Coefficient						1,000	,192**	,154**	,291**	,298**	,198**	,093	,132**
		Sig. (2-tailed)							,000	,001	,000	,000	,000	,055	,006
V7	**Have your Suppliers been trained in SP ?**	Correlation Coefficient	,163**	,130**	,397**	,372**	,497**	,192**	1,000	,252**	,259**	,308**	,139**	,129**	,200**
		Sig. (2-tailed)								,000	,000	,000	,004	,007	,000

V8	**Are you more innovative in SP than others in your industry ?**	Correlation Coefficient								1,000	,137**	,369**	,375**	,203**	,352**
		Sig. (2-tailed)									,004	,000	,000	,000	,000
V9	**Would NGOs rate you positively on your environment policy claims ?**	Correlation Coefficient									1,000	,130**	,016	,066	,083
		Sig. (2-tailed)										,007	,749	,172	,086
V10	**Do you have tools and metrics to measure SP performance ?**	Correlation Coefficient										1,000	,482**	,303**	,323**
		Sig. (2-tailed)											,000	,000	,000
V11	**Do you use a TQM innovation infrastructure for SP improvement ?**	Correlation Coefficient											1,000	,222**	,412**
		Sig. (2-tailed)												,000	,000
V12	**Do you use common industry standards and occasionally cooperate with competitors for SP ?**	Correlation Coefficient												1,000	,545**
		Sig. (2-tailed)													,000
V13	**Do you use R&D to improve future products ?**	Correlation Coefficient													1,000
		Sig. (2-tailed)													

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Regional Disparities in Resource Allocation of Hospital Care in Greece

Abstract:
The objective of this report is to explore and identify the regional disparities and variations both in the distribution and in the efficacy of resources allocated to the Greek NHS for hospital care, by comparing the population of each region, its needs in terms of health care, and available resources in terms of personnel, medical equipment, services offered, etc.

From the data analysis of 123 hospitals in this study, arise significant regional disparities in the allocation of resources (beds, hospital personnel and basic equipment) which are also reflected in the divergence of the existing financing in relation to the optimal financing of hospitals among the regions. For example, the hospitals of the National Health System in the Region of Attica —according to the expressed demand and the epidemiological profile of the population— are underfunded and significantly below the optimum allocation. This deficit in money terms approximates 0.5 billion euro. These inequalities have a direct impact on the access and use of health services and on the quality of care to the population of the country. It should be noted that the low mobility of production factors to the health sector is not a Greek phenomenon as they are usually expensive investments.

However, in Greece the contradictory and constantly changing institutional context, the timeless entanglements and the high political cost creates additional difficulties in the decision making process. Nevertheless, the current socio-economic situation requires immediate action with emphasis on enhancing the mobility of medical and nursing personnel and equipment as well as changing the use of available infrastructures in order to cover the timeless and constantly changing needs of the population. The optimal allocation and management of available resources in hospital care and their systematic evaluation can contribute decisively to the improvement of the organization and performance of health facilities and strengthen the sustainability of the NHS.

Keywords: Resource allocation, Regional Disparities, Hospitalization, Health Indicators, Hospital Beds, Personnel, Medical Equipment, Funding

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1. Introduction

Nowadays, hospital care (secondary and tertiary) makes up the largest subsystem of every health care system over the entire world. That fact reflects the long-time orientation of the medical science —and consequently also of the medical systems that provide health services— towards the direction of treating illnesses. That orientation, which is largely still applicable at present, resulted in the creation and organization of technology-intensive hospital units, which require more resources for their construction, equipment and operation (Sigalas, 1997).

Modern hospitals are highly complex units that incorporate health services, training and research. In Greece, the efficacy and effectiveness of the public hospital sector has come under intense criticism that tends to focus on four considerations (Kyriopoulos, Oikonomou, Polyzos, & Sissouras, 2000, p. 63):

- Public "enterprises" resist or refuse to base their planning upon the satisfaction of their "clientele" (patients).
- They do not allocate their resources efficiently and equitably, according to established criteria and objectives, which take into account the populations' needs for health.
- They over estimate and over allocate the production cost, as they have no incentive to change such behavior.
- They resist, or at least delay, modernization and change, afraid that these might eliminate or reduce their established authority.

What they mostly lack is internal and external planning, and also auditing, which results in a situation where decisions appear to be made more on the basis of "public sector authority" rather than "social deliberation and choice", which is what the public sector ought to express instead (Stretton & Orchard, 1994).

The population perceives hospitals to be at the apex of the health care system, the prime institution protecting health. In spite of possible scientific objections concerning the hospitals' real contribution —when compared with primary health care— to addressing modern morbidity and to reducing mortality caused by chronic illness, people regard hospitals with very high expectations, as the principal paragon of modern health care (Zilidis, 2005).

Optimum resource allocation and management in the hospital care sector is today one of the most important matters that Greece needs to address.

In normal conditions, the allocation of resources for health care (infrastructure, personnel, medical equipment, etc.) among the different regions of any country ought to result from broader strategic planning, which would take into account a variety of factors that determine demand for health care: geography, social-economic factors, demographic and epidemiological profiles, etc. (Asefzadeh, 1996). Unfortunately, in Greece the evolution over time of resource allocation to the Greek NHS has sometimes been the result of central planning, while at other times the result of radical *ad hoc* decisions aiming to solve immediate problems under the pressure of public opinion, financial impasses, or spectacular aggravation of public health indicators. Under such conditions, there is a very obvious absence of rational criteria and mechanisms for the regional allocation of resources (Oikonomou, 2012).

It is worth noting that the existing side effects and operational shortcomings evident in the field of hospital care —and more generally health care in Greece— concern more specifically the organization and management of resource allocation, and mostly the absence of adequate means to orient and channel patients according to their needs, at the various levels of health care (Kyriopoulos, Oikonomou, Polyzos, & Sissouras, 2000, p. 230).

A parallel concern involves the continuing delays in the implementation of crucial structural interventions in the hospitals of the Greek NHS (ESY), including implementation of Diagnosis-related groups (DRGs), full interconnection of computer systems, allocation of medical and other personnel, modernization of the hospitals' organization and operating models, etc. Those continuing delays have kept the cost of hospital operation at extremely high levels, in spite of the methodic reduction that was accomplished in the last five years as a result of the country's adherence to the terms of the so called "Memoranda" between the Greek government and certain European institutions (Greek Ministry of Health, 2013).

2. Actual allocation of hospital health care resources in Greece

The evaluation of health care systems and services can be performed at various levels, applying a great variety of criteria. According to Donabedian (1996), there are four levels of evaluation in health care: inflows, procedures, intermediate outflows and results. Cochrane (1973) proposed a different set of evaluation criteria: equitability, effectiveness and efficiency. Our evaluation or resource allocation shall be based on the criteria of (horizontal) equitability, in other words the potential of equal access and use of health care services and quality care for the entire population of a geographical area.

The basic unit considered in this report is the public hospital under the Greek NHS. We examined the activities of all hospitals in the thirteen Regions of Greece —a total of 123 hospitals— not including psychiatric hospitals, because of their particular character. We have also not included military hospitals and the Aretaieion hospital due to lack of data. Much of the data was drawn from the Health Services Map and the database of the General Secretariat of the Ministry of Health at esy.net.gr. We would like to note that the data concerning available hospital beds and human resources are from the year 2011 (the latest available), while the data concerning medical technology (equipment) are from the year 2010.

2.1 Distribution of available beds

To determine the size of available hospital infrastructure, we considered the hospitals' capacity to provide health care, basically expressed in the number of available hospital beds. The Table that follows indicates that the largest ratio of available beds to population can be seen in the Epirus Region, followed by Crete, and Central Macedonia. Conversely, the lowest ratio of available beds to population is found in the Central Greece Region and the Southern Aegean Region.

Table 1: Available Beds in the Greek NHS Hospitals, per 1,000 Population in Each Region of Greece

Region	Beds per 1,000 population	Variation from national average
Eastern Macedonia & Thrace	3.01	1%
Central Macedonia	3.23	9%
Western Macedonia	2.74	-8%
Epirus	4.88	64%
Thessaly	2.52	-15%
Central Greece	1.60	-46%
Ionian Islands	2.70	-9%
Western Greece	2.53	-15%
Peloponnese	2.29	-23%
Attica	3.09	4%
Northern Aegean	3.18	7%
Southern Aegean	2.09	-30%
Crete	3.73	26%
National average	**2.97**	

Source: ESY.net (2011) and authors' calculations

2.2. Distribution of available beds in the medical specialties

The distribution of medical specialties available in hospitals, in terms of their capacities in the different regions of Greece, highlights the lack of an overall operational framework that would take into account the needs of local populations and would make relevant

adjustments to available infrastructures. Based on that consideration, Greece can be subdivided into three categories:

- Regions where the capacity of the majority of hospitals is significantly higher than the national average.
- Regions where the capacity of the majority of hospitals is significantly lower than the national average.

The first category includes Central Macedonia, Western Macedonia, Epirus, the Ionian Islands, Crete, and the Northern Aegean, where the ratio of hospital beds to population is above the national average. An exception to that is the number of beds in Intensive Care Units. The second category includes the Eastern Macedonia and Thrace region, the Western Greece region, the Peloponnese and the Southern Aegean, where the number of beds in each medical specialty is not significantly different from the national average for each specialty. Finally, the third category includes Attica (the wider region of the capital city Athens), Thessaly and Central Greece, which in this respect lag significantly behind the national average.

Table 2: Distribution of Available Beds in the Medical Specialties, per 1,000 Population (2011)

Region	Pathology	Cardiology	Pediatrics	General Surgery	Obstetrics-Gynecology	Orthopedics	Urology	Intensive Care
Central Macedonia	0.50	0.19	0.20	0.45	0.22	0.25	0.13	0.08
Western Maccedon	0.51	0.25	0.22	0.42	0.25	0.32	0.11	0.02
Epirus	0.57	0.32	0.39	0.51	0.44	0.40	0.15	0.17
Ionian Islands	0.72	0.25	0.24	0.42	0.26	0.24	0.01	0.02
Northern Aegean	0.72	0.22	0.21	0.54	0.30	0.31	0.13	0.19
Crete	0.52	0.26	0.25	0.39	0.25	0.29	0.13	0.09
Eastern Macedonia & Thrace	0.46	0.22	0.21	0.39	0.29	0.26	0.13	0.04
Western Greece	0.48	0.13	0.19	0.31	0.22	0.16	0.07	0.03
Peloponnese	0.55	0.21	0.16	0.33	0.22	0.21	0.13	0.02
Southern Aegean	0.49	0.19	0.18	0.37	0.25	0.22	0.08	0.01
Thessaly	0.39	0.15	0.18	0.30	0.18	0.25	0.11	0.06
Central Greece	0.34	0.15	0.07	0.24	0.16	0.16	0.06	0.01
Attica	0.44	0.16	0.16	0.34	0.11	0.19	0.11	0.10
National average	**0.48**	**0.19**	**0.18**	**0.37**	**0.19**	**0.22**	**0.11**	**0.07**

Source: Public Health Chart (2011) and authors' calculations

Our data analysis also revealed the interesting fact that that the hospital services offered in several regions do not correspond to the actual needs of the population in terms of medical specialties. For example, certain regions, such as the Peloponnese, Western Greece, and Central Greece, which feature a proportionately high number of road traffic

accidents, nonetheless are among the lowest regions in the number of Orthopedic and Intensive Care hospital beds, compared with their population.

2.3. Distribution of medical and nursing personnel

The organizational efficacy and administrative effectiveness of the health system depend to a major extent upon the sufficiency, quality and rational distribution of health care personnel (Polyzos, 1999). The distribution of medical personnel in proportion to the population exhibits significant variation among the regions, a fact that to some extent may be attributed to the low mobility of medical personnel. The largest proportion of physicians per 1,000 population is encountered in the Epirus region (near double the average for the entire country), followed by Crete and Attica. At the other end of the spectrum, the lowest percentage can be found in the Central Greece, Southern Aegean and Peloponnese regions. The data for nursing personnel reveal similar tendencies, with the Epirus region and the Crete region rating the highest numbers of nursing personnel compared with the region's population, and the Western Greece region in position number three. Again, at the other end of the spectrum, the regions of Central Greece and the Southern Aegean exhibit large shortages of nursing personnel, deviating significantly behind the national average.

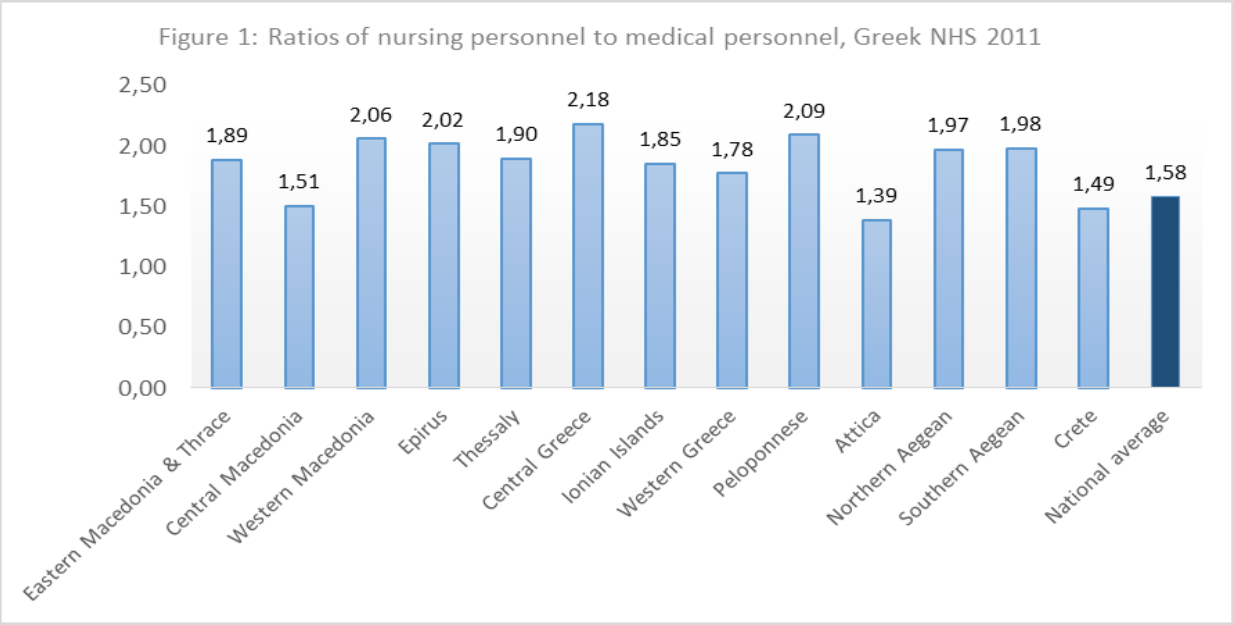
Table 3: Medical, Nursing and Total Personnel in the NHS hospitals, per 1,000 Population (2011)

Region	Medical personnel	Deviation from national average	Nursing personnel	Deviation from national average	All personnel	Deviation from national average
Eastern Macedonia & Thrace	1.8	-9%	3.3	7%	7.4	-1%
Central Macedonia	2.0	4%	3.1	-2%	7.4	-1%
Western Macedonia	1.2	-38%	2.5	-20%	5.7	-24%
Epirus	3.0	52%	6.0	92%	13.4	79%
Thessaly	1.5	-21%	2.9	-7%	6.6	-12%
Central Greece	0.9	-54%	1.9	-39%	4.3	-43%
Ionian Islands	1.4	-30%	2.5	-19%	5.9	-21%
Western Greece	1.9	-4%	3.4	7%	8.0	7%
Peloponnese	1.1	-43%	2.3	-25%	5.5	-27%
Attica	2.4	20%	3.3	6%	8.4	12%
Northern Aegean	1.5	-23%	3.0	-4%	7.0	-7%
Southern Aegean	1.0	-52%	1.9	-40%	4.3	-43%
Crete	2.4	20%	3.5	11%	8.9	19%
National average	**1.96**		**3.12**		**7.5**	

Source: ESY.net (2011) and authors' calculations

Another interesting fact that emerged from our data analysis reveals that the personnel of the Greek NHS in general, and specially the medical and nursing personnel, are unevenly distributed (Figure 1). This is a notable peculiarity of the Greek health care system, whereby the numbers of medical personnel are overwhelmingly larger than those of nursing personnel, with the respective ratios lagging far behind international and European figures [the average ratio for OECD countries in 2012 was 2.8 nurses per physician (OECD/WHO, 2012)]. That peculiarity has given rise to serious problems in the normal operation of many hospitals, leading to the closure of Intensive Care Units or other crucial hospital departments. It also is one of the principal causes of burnout among nursing personnel in the busiest hospitals. Our analysis of respective data indicates that this problem is most severe in the hospitals of the Attica region and the Central Macedonia region (around the two largest Greek cities), which must accommodate the largest patient loads. One possible measure that ought to be examined would be to move personnel from neighboring regions, in order to reduce nursing workloads where necessary.

Figure 1: Ratios of nursing personnel to medical personnel, Greek NHS, 2011.



Source: ESY.net (2011) and authors' calculations

2.4. Distribution of Medical Equipment

Medical equipment is of crucial importance for normal and effective operation of health care units, and also for providing reliable quality of health services while at the same time reducing the need to transport patients from one region to another.

We shall focus on the operation of CT and MRI scanning facilities, because they are of great importance for health care and also because they involve a high investment cost for

the hospitals of Greece. Table 4 underneath indicates the ratio of MRI and CT scanners per 100,000 population in the thirteen regions of Greece. Existing variations among the regions are of special significance, as is the fact that about half of all regions of Greece (Western Macedonia, Central Greece, Ionian Islands, Western Greece, Northern Aegean, Southern Aegean) did not have an MRI scanner at the time. Despite all that, the respective national indicators (including medical equipment of the private hospital sector) are among the highest in Europe.

Table 4: CT and MRI scanners in NHS hospitals per 100,000 population (2010)

REGION	Number of CT scanners	Number of MRI Scanners	CT scanners per 100,000 population	MRI scanners per 100,000 population
Eastern Macedonia & Thrace	4	1	0.7	0.2
Central Macedonia	16	3	0.9	0.2
Western Macedonia	4	0	1.4	0.0
Epirus	5	1	1.5	0.3
Thessaly	5	2	0.7	0.3
Central Greece	4	0	0.7	0.0
Ionian Islands	2	0	1.0	0.0
Western Greece	4	0	0.6	0.0
Peloponnese	5	2	0.9	0.3
Attica	39	10	1.0	0.3
Northern Aegean	4	0	2.0	0.0
Southern Aegean	1	0	0.3	0.0
Crete	8	2	1.3	0.3
Total / National average	**101**	**21**	**0.9**	**0.2**

Source: Public Health Chart (2011) and authors' calculations

3. Applying RAWP to assess optimum resource allocation

We have presented the situation of existing resource allocation in the NHS hospitals according to the criterion of horizontal equitability. In this section we shall apply the well known method RAWP (Resource Allocation Working Party) in order to attain a more comprehensive view concerning optimum resource allocation. RAWP employs a multiple-criteria model that has already been applied in a study titled "*Rational resource allocation among the regions of the Greek Health System*", performed by the Health Policy and Operational Management Unit at the University of Patras, Greece (Sissouras & Mitropoulos, 2004). The multiple-criteria resource allocation model itself was elaborated specifically for hospital health care in a special research programme performed at the Department of Operational Planning and Information Systems of the Technical Institute of Patras under professor I. Mitropoulos.

Applying the model elaborated at the Technical Institute of Patras, we shall use the most recent published data from 2011, which indicate deviations of fund allocations among

hospitals at that time, to calculate the optimal regional allocation of resources among hospitals under the Greek NHS. Our goal is to achieve equitability among regional hospital units, according to their needs, together with optimum yields from the resources allocated.

The model examines resource allocation for each Administrative Region of Greece, and includes the following criteria:

❖ Demand and utilization of health care services offered by the hospitals according to age group and gender: This criterion shall take into account the basic values that follow:

- *Population*, balanced by age group and gender, including related future projections.
- *Actual number of patients* who received health care, grouped by diagnostic class, gender, age group and length of hospitalization.

❖ Health Condition Criterion: To refine this criterion, the overall health condition of the population is approached by means of Standard Mortality Rates (SMR) for each diagnostic class.

❖ Health Service Coverage Criterion: This criterion takes into account the allocation of resources among public hospitals under the NHS, in terms of personnel (medical, nursing and other) and the number of available hospital beds, in conjunction with the number of patients discharged normally by each hospital.

The final resource allocation for health care in each region is obtained by combining the three aforementioned criteria, also applying specific coefficients of importance that had been determined for each criterion. Those coefficients were defined by the group at the Technical Institute of Athens in collaboration with the Health Analysis and Planning Team at the University of Patras (criterion A: 25%, criterion B: 40%, criterion C: 35%).

Table 5: Existing conditions versus optimum resource allocation per region (2011)

Region	Total operating cost of all hospitals (2011)	% Resource allocation	Optimum % funding based on multiple-criteria decision analysis	Optimum funding based on multiple-criteria decision analysis	Deviation from optimum funding
Eastern Macedonia & Thrace	278,574,675	5.59%	4.36%	217,329,062 €	61,245,613 €
Central Macedonia	893,196,164	17.92%	17.19%	856,854,723€	36,341,441 €
Western Macedonia	88,533,013	1.78%	1.57%	78,258,401€	10,274,612 €
Epirus	240,364,512	4.82%	2.80%	139,569,123€	100,795,389 €
Thessaly	293,692,900	5.89%	5.30%	264,184,411€	29,508,489 €
Central Greece	144,108,470	2.89%	3.12%	155,519,879€	**-11,411,409 €**
Ionian Islands	75,778,728	1.52%	1.13%	56,326,110€	19,452,618 €
Western Greece	324,875,613	6.52%	4.69%	233,778,281€	91,097,332 €
Peloponnese	169,656,408	3.40%	3.71%	184,929,087€	**-15,272,679 €**
Attica	1,943,181,384	38.98%	49.00%	2,442,459,652€	**-499,278,268 €**
Northern Aegean	95,333,097	1.91%	1.20%	59,815,338€	35,517,759 €
Southern Aegean	90,309,724	1.81%	1.45%	72,276,867€	18,032,857 €

Crete	347,006,849	6.96%	4.49%	223,809,057€	123,197,792 €
Total	4,984,611,536	100.00%	100.00%		

Sources: ESY.net, Greek ministry of Health (2011), and authors' calculations

Our data concerning resource allocation from central government to each region is based on the existing operating cost of NHS hospitals. When we compared the said operating cost with the optimum resource allocation based on the multiple-criteria method, we noted substantial deviations from optimum allocation in several regions of Greece. Of particular interest is a great deviation of resource allocation in the Attica region (around the capital city of Athens), contrary to an often heard notion that resources are over-concentrated in Attica. When we factor-in existing demand and the epidemiological profile of the region's population, our model demonstrates that NHS hospitals in Attica are under-funded, lagging behind optimum allocation by an actual amount of the order of €500 million. Conversely, the majority of Greek regions, led by Crete and Epirus, appear to be over-funded by €123 million and €100 million respectively, even though the patients served by those regions' hospitals come entirely from the population of the regions themselves.

4. Conclusions

Optimum allocation and management of resources to hospitals is one of the most crucial matters that Greece is called to address today. In normal conditions, resource allocation to health care (infrastructure/facilities, personnel, medical technology, etc.) ought to result from broader strategic planning, which would take into account a variety of factors that determine the demand for health services: geography, demographics, socio-economic factors, epidemiological profiles, etc. Unfortunately, in Greece the overall balance of resource allocation appears to have resulted more from circumstantial processes and less from an integral strategic operational plan. Having analyzed data from 123 hospitals for the purposes of this study, we note significant regional disparities in the allocation of available resources (beds, personnel, basic equipment), factors that are also reflected in the differences between existing and optimum funding of hospitals among the different regions. Those disparities produce direct effects upon the accessibility to health services and the quality of hospital care available to the population. We ought to note that the small mobility displayed by production factors in the health sector is not a strictly Greek phenomenon, as it usually concerns high-cost investments.

To that we must add that in Greece, the contradictory and constantly changing institutional context, perennial entanglements and high political cost, bring about additional difficulties to the decision-making process. Considering all that, the current socio-economic

situation demands immediate action with emphasis on enhancing the mobility of medical and nursing personnel, and of crucial medical equipment, and also in modifying the use of existing infrastructure and facilities in order to cover the long-term and constantly changing needs of the population.

The optimal allocation and management of available resources in hospital care, and methodical evaluation of their performance, can contribute decisively to the improvement of the organization and performance of health facilities, and strengthen the sustainability of the Greek NHS.

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Spatial Planning & Economic Development of the islands: A Benchmarking Study for Lesvos, Rhodes & Crete[1]

Abstract:

Economic Development is closely related not only with solely economic growth, but also with the intercalations between a great number of economic determining factors, such as productivity, economic environment, investments and competitiveness, introducing a major shift from the traditional economic factors of production. The term of 'economic development' is nowadays used in order to illustrate not only economic growth, but also social and environmental sustainable development, pursuing, on the one hand, the improvement of economic indicators, and on the other hand the improvement of social and environmental indicators. Economic and social data could present and illustrate the framework of spatial, economic and social conditions, as well growth and development prospects of a country or region. Nevertheless, comparative analysis of economic, spatial and social data is considered crucial for any future planning procedures, as well as for any consideration of the determining factors of both economic and social development. This paper attempts to analyze spatial planning framework and its contribution towards sustainable regional development. More precisely, this paper analyses the case studies of the region of the North Aegean and South Aegean, especially the islands of Lesvos, Rhodes and Crete.

Key Words: Regional Development, Economic Development, Social Cohesion, Lesvos, Rhodes, North Aegean, South Aegean, Crete

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1. Introduction

In order to statistically illustrate the interrelationships between economic growth and economic development, along with regional development level, the paper analyses, both inter-temporal and inter-regional data, describing the evolution of the core socio-economic indicators. More precisely, according to economic literature, here is a large amount of indices, which could be used as socio-economic indicators, with the most widely used those of production, income and growth. As far as the core variables are concerned, following a value added approach, our analysis comprises:

- Employment level, namely those in employment are people above a specified age who, during a specified period, were in paid employment or self-employment. People in paid employment during the reference period performed some work for a wage or salary, in cash or in kind, or they may have been temporarily not at work during the reference period, but did have a formal job. Those who were self-employed during the reference period performed some work for profit or family gain, in cash or in kind, in an enterprise such as a business, farm or service undertaking, or they may have been temporarily not at work during the reference period, but did have an enterprise.
- Gross domestic product (GDP), as the monetary value of all the finished goods and services produced within a country's borders in a specific time period. GDP includes all private and public consumption, government outlays, investments and exports minus imports that occur within a defined territory. Put simply, GDP is a broad measurement of a nation’s overall economic activity.
- GDP per capita, as a measure of average income per person in a country. GDP per capita divides the GDP by the population. Per capita GDP is a measure of the total output of a country that takes the gross domestic product (GDP) and divides it by the number of people in the country. The per capita GDP is especially useful when comparing one country to another because it shows the relative performance of the countries. A rise in per capita GDP signals growth in the economy and tends to translate as an increase in productivity.

This paper will analyze the above mentioned indicators, on regional level, focusing on the islands of Lesvos, Rhodes and Crete.

2. The Framework of Urban and Regional Planning

Spatial Planning within sustainable development planning is essential for spatial sustainable development across space (regional, national and international space). Within this analysis, it is important that different regions are not moving within the same developing path, due to

different geographical, social and economic conditions. Under this spectrum, spatial planning is an important driver in enabling coordination of services, infrastructure and authorities, towards a harmonious sustainable development widely provided to citizens.

Within this framework, 'space' is considered to be as one of the major elements, determining the interrelations between socio-economic conditions and production, both in regional and sectoral level. Until the end of 1980 decade, when the term of 'sustainable development' emerged, development has been mostly referred to economic growth. Sustainable development has been established as a scientific term comprising a three-dimensional meaning: namely economic, social and environmental. Developments in the theory of sustainable development sets as prerequisites the improvement of economic indicators, namely economic growth, also combined with improvements in social indicators, namely social development, also including the environmental sustainability. Basic aim resulting from sustainable development policies implementation is the enhancement of welfare and living standards, the efficient management of available resources, pursuing not only present welfare, but also welfare regarding future generations.

Within this framework, regional development and regional planning policies, in order to be effective, they must take into account the different structural characteristics, related to each region, as well as their development trends, in order to meet the specific needs of each region (Gazette: 128, 151, 1138 & 2464). Mainly, regional development requires main economic and institutional reforms and adaptations so that they may strengthen the innovative activity. This means, among others, that encouraging the development of knowledge-based economic activities and innovation and that particular attention needs to be given to:

- developing new innovation promotion policies which focus much more on the provision of collective business and technology services to groups of firms which can affect their innovative behavior, rather than direct grants to individual firms which tend only to reduce costs temporarily.
- developing new policies to strengthen the capacity of enterprises to innovate through business networks and clusters and improving their links with the knowledge base, including with universities and research centers.
- encouraging the development of the indigenous R&D potential of weaker regions and their capacity to adapt technological advances made elsewhere to local circumstances and needs.
- facilitating access of researchers, businesses and others in less favored regions to international networks of excellence, sources of new technology and potential R&D partners.

These conditions are largely related to economic competitiveness and include, among others, the capacity of a regional economy to generate, diffuse and utilize knowledge and so maintain an effective regional development planning system

3. The Framework of Urban and Regional Planning in Greece

In order to analyze the development trends of each region, this paper analyses different economic variables, aiming to meet both the analysis and the data availability requirements. As defined above, among the core economic variables, this paper uses Gross Domestic Product, Gross Regional Product (as production proxies), Domestic and Regional Income (as income flows proxies), as well as the contribution of each regions to the national GDP of the country.

As mentioned, according to the Law 1622/1989, Greece has been divided into its administrative divisions, namely, regions, prefectures, and municipalities. Kallikratis project (2010) further divided Greece into thirteen regions and 325 municipalities.

Table 1: Core indicators for Greek regions, 2013

	Region	Region Capital	Land (km²)	Population (Inhabitants)	Population Density (Inhabitants/km²)	GDP (mil. €)	GDP per capita (€)
1	Eastern Macedonia & Thrace	Komotini	14.157	606.170	42,82	9.265	15.272
2	Central Macedonia	Thessaloniki	18.811	1.874.590	99,66	32.285	16.559
3	Western Macedonia	Kozani	9.451	282.120	29,85	5.506	18.786
4	Epirus	Ioannina	9.203	336.650	36,58	5.079	14.221
5	Thessaly	Larissa	14.037	730.730	52,06	11.608	15.772
6	Ionian Islands	Corfu	2.307	206.470	89,50	4.130	17.726
7	Western Greece	Patra	11.350	680.190	59,93	10.659	14.332
8	Central Greece	Lamia	15.549	546.870	35,17	10.537	19.007
9	Attica	Athens	3.808	3.812.330	1001,11	110.546	26.968
10	Peloponnese	Tripoli	15.490	581.980	37,57	9.809	16.580
11	North Aegean	Mytilene	3.836	197.810	51,57	3.330	16.638
12	South Aegean	Ermoupoli	5.286	308.610	58,38	7.646	24.828
13	Crete	Heraclion	8.336	621.340	74,54	11.243	18.421

Source: Hellenic Statistical Service (2015)

Regarding primary sector of the economy, Greece produces a set of agricultural products, well-known worldwide for their nutritious value, and in considerable quantities. It is third in the world in olive oil production and table olives, and also a major European producer on orange, wine, grapes, cheese, alcoholic beverages, grapefruit, raisins, peaches, lemons, kiwis, pistachios, fish, tobacco and other foodstuffs. The main problem in developing this sector is the lack of management and marketing regarding the establishment of well-known

brands. Such brands could be delivered in the world's retail markets instead of being sold in bulk quantities, as is too often the cause today. This is coupled with extensive state interference and numerous regulations that prohibit newcomers. The heavy taxation on industry further obstructs investments. Moreover, the agricultural sector and food industry lack a coherent bond with the tourism industry- developing one could create obvious synergies in the long-term.

Regarding secondary sector of the economy, considerable infrastructure needed for new technologies has been developed in Greece and a significant rise of specialized professionals has been noted. Nevertheless the lack of capital and the deficiencies of the local market (bureaucracy, over-taxation, lack of managerial skills) have burdened the expansion of the sector, being worsened by the extremely high unemployment in the country, present day high taxation, irrational and numerous bureaucratic regulations and lack of sustainable business models and leaders prohibit growth.

In the tertiary sector, which constitutes almost 82% of the GDP, tourism constitutes a large segment of Greece's GDP and is an integral part of the local economy. Despite high figures (23 million visitors expected for 2015), the Association of Greek Tourism Enterprises (SETE) estimates that the tourist industry could be tripled, since the country currently uses only 35% of its capacity. The main issue regarding the under-exploitation of the local tourism project is that it is concentrated heavily on the summer period, as it still is based on the principles of sea, sun and entertainment. Failing to adequately diversify its offerings, Greece has thus neglected to significantly develop other expanding segments of international tourism that could be very easily adopted to the local environment. In regional level, most Greek regions lack in entrepreneurial activities, mainly regarding the following aspects:

- lack of infrastructure
- administrative and bureaucratic problems
- regional imbalances in development and entrepreneurial activities
- limited innovation capacity of the enterprises

Within this framework, the role of Special Framework of Urban Planning and Sustainable Development, has been significantly important regarding reconstruction of the above mentioned economic sectors, towards sustainable development, along with the three dimensions of: environment protection, social equality, as well as economic welfare ad cohesion. For this purpose, Urban Planning Framework includes initiatives which comprise macro-economic and regional economic reconstruction.

Table 2: GDP per Capita change (%), 2008-2009

Regions	GDP	GDP per Capita
Eastern Macedonia & Thrace	0,1	0,1
Central Macedonia	-0,4	-0,8
Western Macedonia	-1,7	-1,7
Epirus	-0,5	-1,5
Ionian Islands	-0,9	-2,1
Thessaly	-0,02	0,0
Central Greece	-0,3	-0,2
Western Greece	-0,3	-0,8
Attica	-1,3	-1,9
Peloponnese	-0,6	-0,4
North Aegean	**-0,4**	**-0,3**
South Aegean	***-0,4***	***-0,8***
Crete	**-0,8**	**-1,2**
Greece	**-0,8**	**-1,2**

Source: Hellenic Statistical Service (2011)

The economic crisis effects on regional development level, are extremely considerable, especially following 2009 (the first crisis year), affecting all the Greek regions. The regions of North and South Aegean have been also severely affected by the in-going economic crisis, as illustrated in the following tables 3-20, presenting the main economic indicators for the Aegean islands and Greece.

Table 4: Gross Value Added, Agriculture (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	**7,652**	**7,892**	**8,092**	**8,975**	**8,417**	**8,595**	**7,038**	**7,078**	**6,624**	**6,647**	**6,501**	**6,367**	**6,326**
Aegean islands, Crete	**922**	**1,001**	**1,111**	**1,181**	**1,235**	**1,120**	**1,051**	**985**	**916**	**893**	**848**	**803**	**820**
North Aegean	**158**	**197**	**158**	**235**	**172**	**161**	**173**	**127**	**122**	**134**	**130**	**127**	**125**
Lesvos	73	114	74	141	87	105	110	71	73	77	73	72	68
South Aegean	**138**	**152**	**152**	**166**	**157**	**167**	**170**	**171**	**164**	**164**	**155**	**159**	**155**
Rhodes	76	82	78	86	78	81	82	84	82	75	77	80	81
Crete	**626**	**653**	**801**	**781**	**906**	**792**	**707**	**687**	**631**	**595**	**562**	**517**	**540**
Heraclion	259	261	331	298	365	264	295	295	255	274	276	244	267
Lassithi	89	107	110	138	121	146	139	142	148	108	105	99	106
Rethimno	129	129	171	167	211	216	98	89	79	82	71	72	64
Chania	150	155	189	178	210	166	176	160	149	131	111	102	104

Source: Hellenic Statistical Service (2015)

Table 5: Gross Value Added, Mining, Electricity, Natural Gas (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	**15,398**	**17,404**	**18,469**	**19,329**	**20,050**	**20,859**	**23,049**	**23,923**	**24,045**	**23,036**	**19,398**	**17,583**	**17,031**
Aegean islands, Crete	**722**	**770**	**922**	**952**	**949**	**1,041**	**1,131**	**1,153**	**1,172**	**1,199**	**1,015**	**933**	**878**
North Aegean	**78**	**77**	**98**	**114**	**117**	**121**	**156**	**152**	**146**	**144**	**121**	**115**	**104**
Lesvos	46	43	55	64	62	62	73	73	74	72	60	58	55
South Aegean	**231**	**242**	**299**	**312**	**284**	**324**	**332**	**319**	**322**	**306**	**247**	**237**	**219**
Rhodes	101	103	134	144	133	152	159	160	175	167	127	122	111
Crete	**413**	**450**	**526**	**526**	**548**	**595**	**643**	**682**	**704**	**749**	**647**	**581**	**555**
Heraclion	218	247	301	295	279	292	331	350	347	359	317	282	276
Lassithi	58	60	70	70	73	86	90	91	103	111	87	79	72
Rethimno	43	44	47	43	46	57	54	54	52	55	58	52	49
Chania	94	99	107	119	150	160	167	188	201	224	184	169	157

Source: Hellenic Statistical Service (2015)

Table 6: Gross Value Added, Construction (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	9,323	9,857	10,083	13,800	15,638	10,878	16,984	14,024	12,095	9,483	8,699	6,274	4,428
Aegean islands, Crete	1,022	1,170	1,161	1,414	1,566	1,153	1,837	1,521	1,360	1,180	1,129	826	625
North Aegean	123	136	137	186	208	149	233	208	167	133	149	110	84
Lesvos	67	65	63	99	94	75	111	91	79	55	58	43	27
South Aegean	388	421	422	468	578	396	578	467	391	348	393	329	285
Rhodes	228	255	213	241	297	236	401	316	264	188	209	144	135
Crete	510	613	602	760	780	608	1,026	846	802	699	587	386	256
Heraclion	242	282	258	339	297	281	435	341	343	302	271	170	97
Lassithi	54	73	90	93	113	101	170	168	140	132	79	44	37
Rethimno	84	87	75	94	114	84	147	93	116	109	78	63	46
Chania	130	170	179	233	256	142	273	243	202	156	160	110	76

Source: Hellenic Statistical Service (2015)

Table 7: Gross Value Added, Wholesale, Retail, Motor Vehicles Repair (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	**20,633**	**20,789**	**22,040**	**23,468**	**23,991**	**23,467**	**23,933**	**26,064**	**27,846**	**27,131**	**25,449**	**22,241**	**19,598**
Aegean islands, Crete	**2,050**	**2,066**	**2,186**	**2,328**	**2,380**	**2,332**	**2,313**	**2,574**	**2,695**	**2,564**	**2,227**	**1,857**	**1,644**
North Aegean	**300**	**302**	**316**	**337**	**344**	**341**	**336**	**394**	**373**	**355**	**306**	**256**	**240**
Lesvos	173	173	184	183	172	169	169	192	186	178	157	133	126
South Aegean	**627**	**631**	**669**	**713**	**729**	**713**	**707**	**778**	**812**	**774**	**702**	**571**	**501**
Rhodes	416	423	448	457	436	437	430	482	505	475	429	328	289
Crete	**1,124**	**1,133**	**1,201**	**1,279**	**1,307**	**1,279**	**1,269**	**1,402**	**1,510**	**1,434**	**1,219**	**1,030**	**903**
Heraclion	638	636	648	693	684	671	661	741	816	745	624	510	445
Lassithi	113	109	110	111	126	123	128	130	139	155	143	131	115
Rethimno	133	136	149	158	156	157	155	174	182	180	155	128	116
Chania	240	253	294	317	342	327	325	358	372	354	297	262	228

Source: Hellenic Statistical Service (2015)

Table 8: Gross Value Added, Transport and Inventory (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	8,197	7,623	7,834	9,994	12,089	13,301	13,943	15,809	17,042	14,383	13,182	12,197	13,221
Aegean islands, Crete	1,207	1,087	1,127	1,417	1,786	1,963	1,989	2,237	2,547	1,978	1,760	1,451	1,545
North Aegean	129	118	123	153	189	209	214	262	307	236	201	188	205
Lesvos	57	53	55	68	84	93	95	115	136	101	87	84	77
South Aegean	657	579	597	748	975	1,070	1,072	1,220	1,366	1,000	881	704	837
Rhodes	198	180	189	244	297	324	327	345	412	316	279	232	460
Crete	421	390	408	516	621	683	703	755	874	743	679	559	504
Heraclion	219	204	215	275	325	355	365	383	471	413	391	333	258
Lassithi	25	24	25	32	37	41	44	46	56	44	40	35	35
Rethimno	25	23	24	30	37	41	43	57	49	33	33	30	31
Chania	152	138	144	179	223	246	251	270	298	253	215	161	179

Source: Hellenic Statistical Service (2015)

Table 9: Gross Value Added, Hotels and Restaurants (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	5,623	7,319	6,741	7,654	8,129	9,391	9,906	10,247	10,625	10,040	9,716	8,073	7,774
Aegean islands, Crete	1,761	2,244	1,949	2,163	2,118	2,515	2,676	2,762	2,965	2,866	2,712	2,435	2,368
North Aegean	162	188	176	196	184	256	271	291	347	302	238	179	168
Lesvos	71	73	76	82	79	100	107	113	135	128	108	83	81
South Aegean	920	1,081	878	1,003	971	1,222	1,303	1,345	1,413	1,402	1,321	1,193	1,143
Rhodes	671	765	609	688	690	719	780	783	861	769	701	677	654
Crete	678	975	894	965	963	1,037	1,102	1,125	1,205	1,162	1,153	1,063	1,057
Heraclion	193	398	407	424	432	423	480	495	544	449	456	422	415
Lassithi	128	170	136	147	144	158	152	148	158	182	165	143	148
Rethimno	212	226	188	220	218	224	224	231	233	227	217	219	214
Chania	145	182	164	174	170	232	247	252	270	304	316	279	281

Source: Hellenic Statistical Service (2015)

Table 10: Gross Value Added, Information and Communication (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	4,653	5,159	5,975	5,976	6,297	6,841	7,836	8,163	8,131	8,391	7,286	6,619	5,951
Aegean islands, Crete	204	226	261	271	284	308	343	388	381	381	350	314	276
North Aegean	39	43	50	53	56	61	65	72	66	65	61	54	47
Lesvos	22	22	29	32	33	32	36	40	40	44	40	36	30
South Aegean	53	59	69	72	75	82	87	91	89	88	85	76	60
Rhodes	35	40	44	48	50	56	58	63	59	59	56	48	37
Crete	111	123	143	147	153	166	192	225	226	227	204	184	169
Heraclion	70	77	83	86	92	103	119	133	132	130	114	100	93
Lassithi	13	14	17	16	17	16	19	25	25	26	27	22	17
Rethimno	10	11	15	16	15	15	18	23	24	24	25	24	21
Chania	18	21	29	28	29	31	36	44	45	47	37	38	38

Source: Hellenic Statistical Service (2015)

Table 11: Gross Value Added, Financial and Security Services (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	5,903	5,332	5,905	6,661	8,261	8,564	9,093	9,201	9,402	9,819	9,347	8,762	8,293
Aegean islands, Crete	331	292	330	367	451	487	510	493	479	540	520	473	413
North Aegean	51	46	51	61	71	75	79	76	79	84	82	71	62
Lesvos	23	21	24	28	32	33	37	35	37	39	37	33	29
South Aegean	92	84	92	102	119	124	132	139	138	138	134	125	105
Rhodes	59	50	59	67	76	79	85	92	86	81	84	79	69
Crete	188	161	187	204	261	288	299	278	261	318	304	277	246
Heraclion	102	88	107	112	141	159	162	152	143	175	164	143	137
Lassithi	22	20	22	27	31	32	35	32	33	41	38	35	26
Rethimno	20	18	20	22	28	30	33	30	28	33	36	37	29
Chania	44	35	39	44	61	67	68	62	58	69	66	62	54

Source: Hellenic Statistical Service (2015)

Table 12: Gross Value Added, Property Management (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	14,777	15,718	17,167	18,374	19,858	21,468	21,211	25,871	29,343	30,497	36,389	34,967	33,413
Aegean islands, Crete	1,056	1,123	1,226	1,313	1,419	1,531	1,524	1,869	2,131	2,234	2,667	2,572	2,460
North Aegean	192	204	223	239	258	278	275	334	378	394	468	450	431
Lesvos	97	103	112	120	130	140	138	168	190	198	235	226	217
South Aegean	343	364	398	426	460	496	496	611	700	737	883	856	819
Rhodes	165	176	192	205	222	239	241	296	339	356	424	409	391
Crete	522	555	606	648	701	756	753	924	1,053	1,103	1,315	1,266	1,211
Heraclion	238	253	276	296	319	345	341	416	472	493	588	565	541
Lassithi	75	80	88	94	101	109	108	133	151	159	189	182	174
Rethimno	82	87	95	102	110	119	119	145	165	173	206	199	190
Chania	127	135	147	157	170	184	185	230	265	278	332	320	306

Source: Hellenic Statistical Service (2015)

Table 13: Gross Value Added, Professional, Scientific & Technical Activities (mill. €)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	3,831	4,230	5,117	5,596	6,059	6,472	7,962	8,928	7,979	8,318	7,583	6,630	6,115
Aegean islands, Crete	233	259	310	341	370	394	497	541	471	521	447	355	336
North Aegean	29	34	37	41	46	52	61	66	69	85	76	64	53
Lesvos	17	20	24	26	29	34	41	44	45	52	48	41	32
South Aegean	58	64	78	86	92	98	127	127	121	121	98	96	76
Rhodes	34	42	56	60	58	59	76	77	73	73	61	62	48
Crete	146	161	195	214	233	244	309	348	281	315	273	195	207
Heraclion	68	79	105	111	138	123	156	181	140	159	142	111	117
Lassithi	15	16	24	16	24	28	36	40	32	37	33	18	22
Rethimno	16	21	20	28	31	33	41	45	38	43	35	19	24
Chania	47	45	46	59	40	60	76	82	71	75	64	47	44

Source: Hellenic Statistical Service (2015)

Table 14: Gross Value Added, Administrative Support Services (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	2,220	2,335	2,659	3,359	3,585	3,889	4,010	4,420	5,592	5,185	3,096	2,763	2,293
Aegean islands, Crete	135	142	166	210	222	239	251	277	350	333	203	222	184
North Aegean	20	20	25	31	33	35	35	40	49	43	17	16	16
Lesvos	8	9	11	13	14	15	15	17	20	18	6	6	6
South Aegean	44	46	52	67	72	78	81	84	102	93	65	81	64
Rhodes	29	31	35	45	48	53	54	56	68	62	40	57	42
Crete	72	75	89	111	116	126	136	154	198	197	120	125	104
Heraclion	42	44	51	64	67	73	79	89	114	120	84	86	72
Lassithi	5	6	7	8	9	9	10	11	14	12	5	3	3
Rethimno	6	6	7	9	9	10	10	13	17	17	9	8	8
Chania	19	20	24	30	31	34	36	42	53	48	23	28	20

Source: Hellenic Statistical Service (2015)

Table 15: Gross Value Added, Public Management, Defense and Social Security (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	10,389	11,161	12,072	12,480	14,284	14,829	15,714	16,953	18,504	21,070	19,175	17,795	17,230
Aegean islands, Crete	191	194	206	247	304	367	397	445	482	543	529	501	488
North Aegean	107	116	126	151	186	241	274	296	305	330	308	280	267
Lesvos	35	34	35	42	51	58	56	70	78	97	102	103	102
South Aegean	286	298	330	345	407	408	406	452	519	626	530	502	472
Rhodes	193	204	220	234	293	308	298	325	364	452	390	379	350
Crete	528	568	618	613	671	637	652	704	753	852	746	704	662
Heraclion	242	250	272	291	328	328	335	374	387	425	362	302	291
Lassithi	57	67	73	73	73	64	66	66	77	81	75	65	62
Rethimno	52	54	57	52	62	62	62	67	71	87	82	72	68
Chania	177	197	216	198	208	183	188	197	218	259	226	266	242

Source: Hellenic Statistical Service (2015)

Table 16: Gross Value Added, Education (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	5,528	5,989	7,403	7,876	9,104	9,833	10,038	10,791	11,977	12,409	11,556	11,713	10,532
Aegean islands, Crete	80	85	98	125	141	164	176	193	221	230	201	213	200
North Aegean	44	45	56	70	78	87	95	106	118	125	112	114	109
Lesvos	14	16	19	23	25	35	33	36	46	45	36	41	39
South Aegean	139	136	183	197	251	278	281	313	354	383	329	343	311
Rhodes	93	85	117	123	160	174	177	197	225	254	216	225	198
Crete	264	287	364	390	446	485	519	555	620	651	597	613	570
Heraclion	131	147	169	187	210	223	242	264	294	325	289	294	274
Lassithi	24	23	35	35	40	44	47	53	61	61	59	59	57
Rethimno	36	41	57	56	68	76	81	88	95	100	102	103	95
Chania	73	77	103	111	128	143	149	150	170	165	147	157	144

Source: Hellenic Statistical Service (2015)

Table 17: Gross Value Added, Health and Social Support (mill. €, current prices)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	**4,755**	**6,117**	**6,842**	**7,902**	**8,633**	**9,648**	**10,562**	**11,610**	**12,004**	**12,018**	**11,704**	**10,831**	**9,241**
Aegean islands, Crete	**398**	**489**	**545**	**691**	**821**	**975**	**1,054**	**1,155**	**1,196**	**1,044**	**1,003**	**960**	**812**
North Aegean	**66**	**88**	**88**	**115**	**138**	**154**	**134**	**169**	**185**	**184**	**168**	**141**	**121**
Lesvos	34	45	45	56	65	79	66	84	90	91	86	72	64
South Aegean	**108**	**128**	**155**	**192**	**190**	**220**	**277**	**297**	**261**	**219**	**233**	**195**	**175**
Rhodes	72	86	110	134	132	154	199	208	188	155	170	141	127
Crete	**224**	**273**	**301**	**384**	**493**	**601**	**644**	**689**	**751**	**640**	**603**	**624**	**517**
Heraclion	125	151	170	211	257	338	380	403	445	388	368	386	317
Lassithi	27	33	36	50	70	74	65	68	68	62	57	56	48
Rethimno	20	26	28	36	50	57	56	60	68	57	52	53	44
Chania	51	62	67	87	116	132	143	159	169	133	126	128	108

Source: Hellenic Statistical Service (2015)

Table 18: Gross Value Added, arts, entertainment other services (mill. €)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	5,174	5,570	6,228	6,539	7,136	8,006	8,860	9,333	9,330	10,364	8,279	7,264	7,550
Aegean islands, Crete	416	438	473	527	595	665	725	762	739	825	733	706	714
North Aegean	60	56	70	67	66	68	65	65	72	82	82	79	87
Lesvos	25	25	31	28	31	34	32	36	40	52	51	50	53
South Aegean	123	139	156	193	196	206	236	257	254	285	218	205	210
Rhodes	81	66	93	93	86	85	120	152	148	151	130	101	102
Crete	234	244	247	267	333	391	424	440	413	459	433	422	418
Heraclion	103	130	133	147	184	203	260	252	226	230	235	213	226
Lassithi	26	21	22	26	35	47	36	51	51	46	36	39	46
Rethimno	48	38	38	42	39	51	44	55	49	65	63	54	46
Chania	57	55	54	52	75	90	84	83	87	118	99	115	100

Source: Hellenic Statistical Service (2015)

Table 19: Gross Value Added, per region, 2012 (mill. €, current prices)

Sectors	Agriculture	Mining	Water Supply, Electricity	Construction	Wholesale, Retail	Transportation	Hotels	Information, Communication	Financial Services	Property Management	Professional Services	Management and Support Services	Public Administration, Defense	Education	Health, etc	Arts, Culture, Other Services
Greece	**6,325.9**	**17,031.0**	**2,218.2**	**4,428.5**	**19,598.3**	**13,220.7**	**7,774.1**	**5,951.4**	**8,292.9**	**33,413.1**	**6,115.4**	**2,292.8**	**17,230.1**	**10,532.2**	**9,241.1**	**7,549.9**
Aegean islands, Crete	**820.4**	**877.8**	**169.0**	**625.0**	**1,644.2**	**1,545.3**	**2,368.5**	**276.0**	**413.5**	**2,460.4**	**336.3**	**183.6**	**1,621.6**	**1,081.6**	**812.0**	**15,949.5**
North Aegean	**125.4**	**103.7**	**24.2**	**84.2**	**240.2**	**204.9**	**167.6**	**47.2**	**62.2**	**430.9**	**53.3**	**15.6**	**488.0**	**199.9**	**120.7**	**2,454.7**
Lesvos	67.5	55.4	8.2	26.6	125.6	76.7	80.9	30.2	29.1	216.6	32.3	5.7	267.0	108.7	63.7	1,247.6
South Aegean	**154.5**	**219.1**	**70.6**	**285.1**	**500.7**	**836.7**	**1,143.4**	**59.8**	**105.2**	**818.5**	**75.8**	**64.3**	**471.5**	**311.4**	**174.6**	**210.0**
Rhodes	81.3	111.1	57.4	135.0	288.7	460.0	654.4	37.1	69.0	391.0	48.4	42.1	350.2	198.1	127.1	101.9
Crete	**540.5**	**555.0**	**74.3**	**255.6**	**903.3**	**503.8**	**1,057.4**	**169.0**	**246.1**	**1,210.9**	**207.1**	**103.7**	**662.1**	**570.3**	**516.8**	**417.7**
Heraclion	266.8	276.4	26.2	96.7	444.9	258.3	415.2	93.2	137.0	540.7	116.8	72.3	291.0	274.1	316.9	226.3
Lassithi	105.8	72.4	14.3	37.2	115.0	35.3	147.6	16.8	25.5	174.1	22.4	3.3	61.8	57.0	47.9	45.8
Rethimno	64.4	49.2	14.7	46.2	115.9	30.8	214.1	21.2	29.4	190.4	23.7	7.7	67.8	95.4	43.9	45.7
Chania	103.6	157.1	19.1	75.5	227.6	179.3	280.5	37.8	54.2	305.7	44.2	20.4	241.5	143.8	108.0	99.8

Source: Hellenic Statistical Service (2015)

Table 20: GDP, per region (mill. €, current prices)

Περιφέρειες και νομοί	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012*
Greece	**141,732**	**151,987**	**162,274**	**178,571**	**193,013**	**199,153**	**217,831**	**232,831**	**242,096**	**237,431**	**226,210**	**207,752**	**194,204**
Aegean islands, Crete	**13,606**	**14,724**	**15,405**	**17,045**	**18,463**	**19,228**	**20,938**	**22,220**	**23,326**	**22,483**	**21,246**	**19,330**	**18,091**
North Aegean	**1,901**	**2,032**	**2,101**	**2,473**	**2,613**	**2,804**	**3,042**	**3,307**	**3,494**	**3,403**	**3,230**	**2,954**	**2,784**
Lesvos	982	1,058	1,090	1,308	1,323	1,464	1,594	1,696	1,794	1,764	1,673	1,529	1,415
South Aegean	**4,803**	**5,075**	**5,159**	**5,771**	**6,270**	**6,646**	**7,190**	**7,672**	**8,062**	**7,607**	**7,220**	**6,549**	**6,240**
Rhodes	2,820	2,987	2,980	3,288	3,482	3,593	4,019	4,222	4,467	4,166	3,929	3,582	3,576
Crete	**6,902**	**7,616**	**8,145**	**8,802**	**9,581**	**9,779**	**10,706**	**11,240**	**11,770**	**11,473**	**10,796**	**9,827**	**9,067**
Heraclion	3,291	3,709	3,995	4,305	4,607	4,693	5,281	5,558	5,849	5,622	5,335	4,769	4,370
Lassithi	830	937	974	1,056	1,144	1,219	1,312	1,382	1,447	1,426	1,306	1,168	1,114
Rethimno	1,044	1,089	1,131	1,219	1,353	1,395	1,369	1,414	1,464	1,465	1,408	1,310	1,203
Chania	1,737	1,881	2,045	2,222	2,477	2,472	2,744	2,886	3,010	2,960	2,747	2,581	2,380

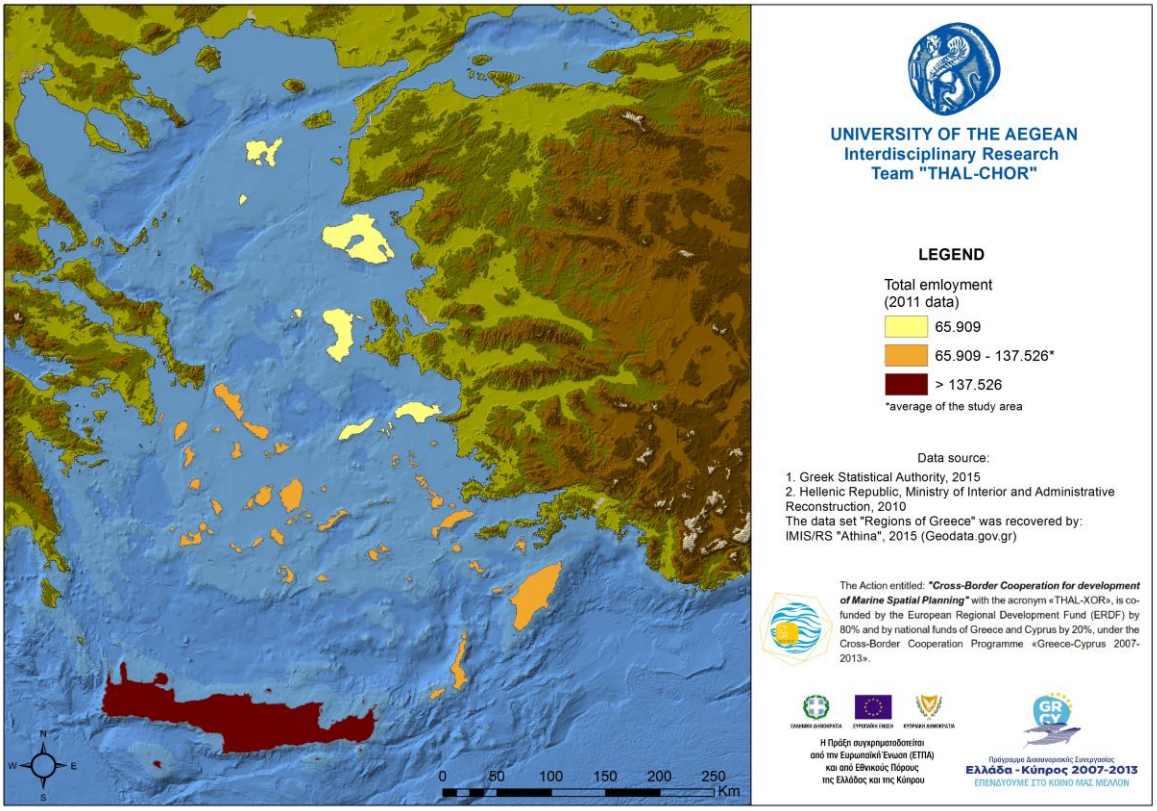
Source: Hellenic Statistical Service (2015)

Analyzing the main economic and social indicators for the islands of Lesvos, Rhodes and Crete, the following main points could be summarized:

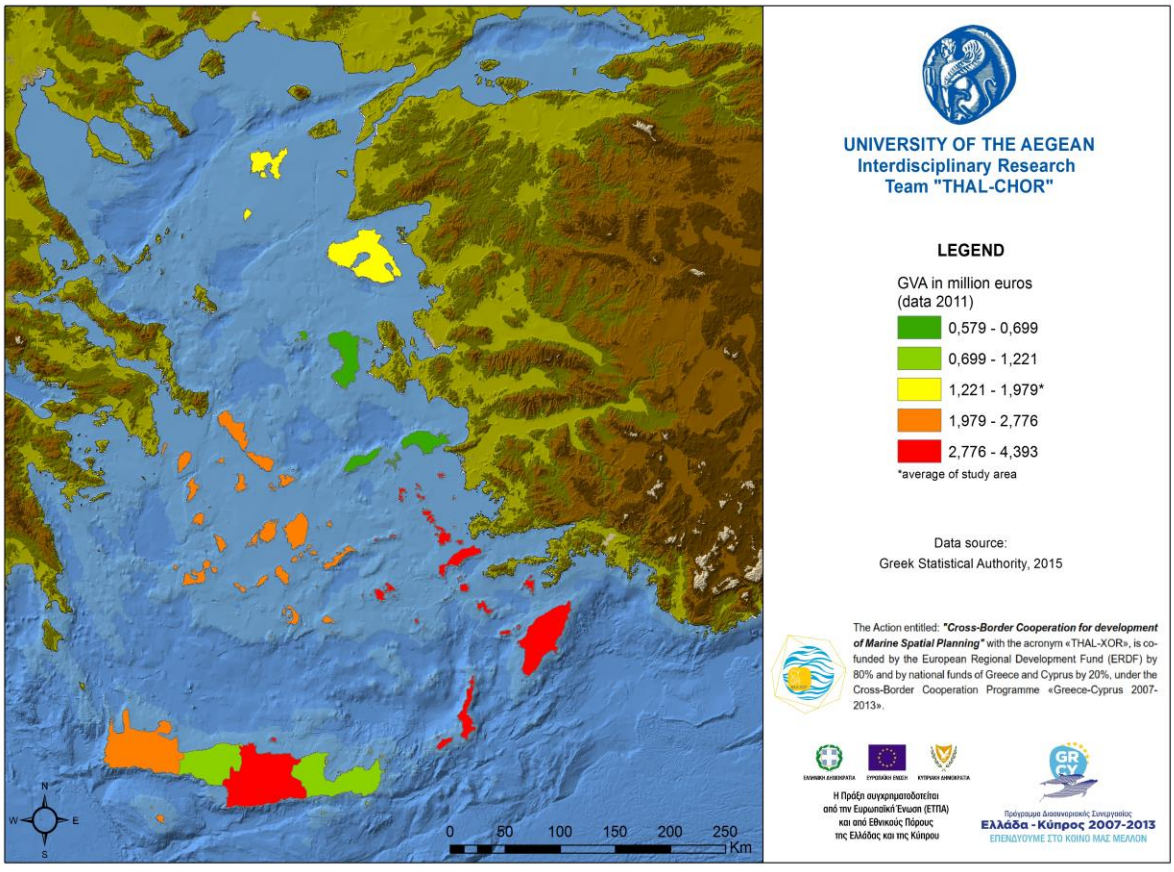
- Demographic stagnation is getting worse, intensifying the major problems caused by aging population.
- Unemployment, mainly amongst the youth, remains high, also combined with stagnation and rigidities in labor market, especially in peripheral areas, intensifying also social problems
- Agriculture, even though it has been considered as comparative advantage for a large number of regions, its exploitation remains of low value added activities and investments.
- The development cohesion is expected to be strongly related with regional comparative advantages exploitation, under the current trends of sustainable and ecologically friendly development.
- Especially for the Aegean regions, it is estimated that infrastructure investment, as well as the promotion of inter-regional, as well as inter-national cooperation networks, may render to be an important factor towards future development prospects.

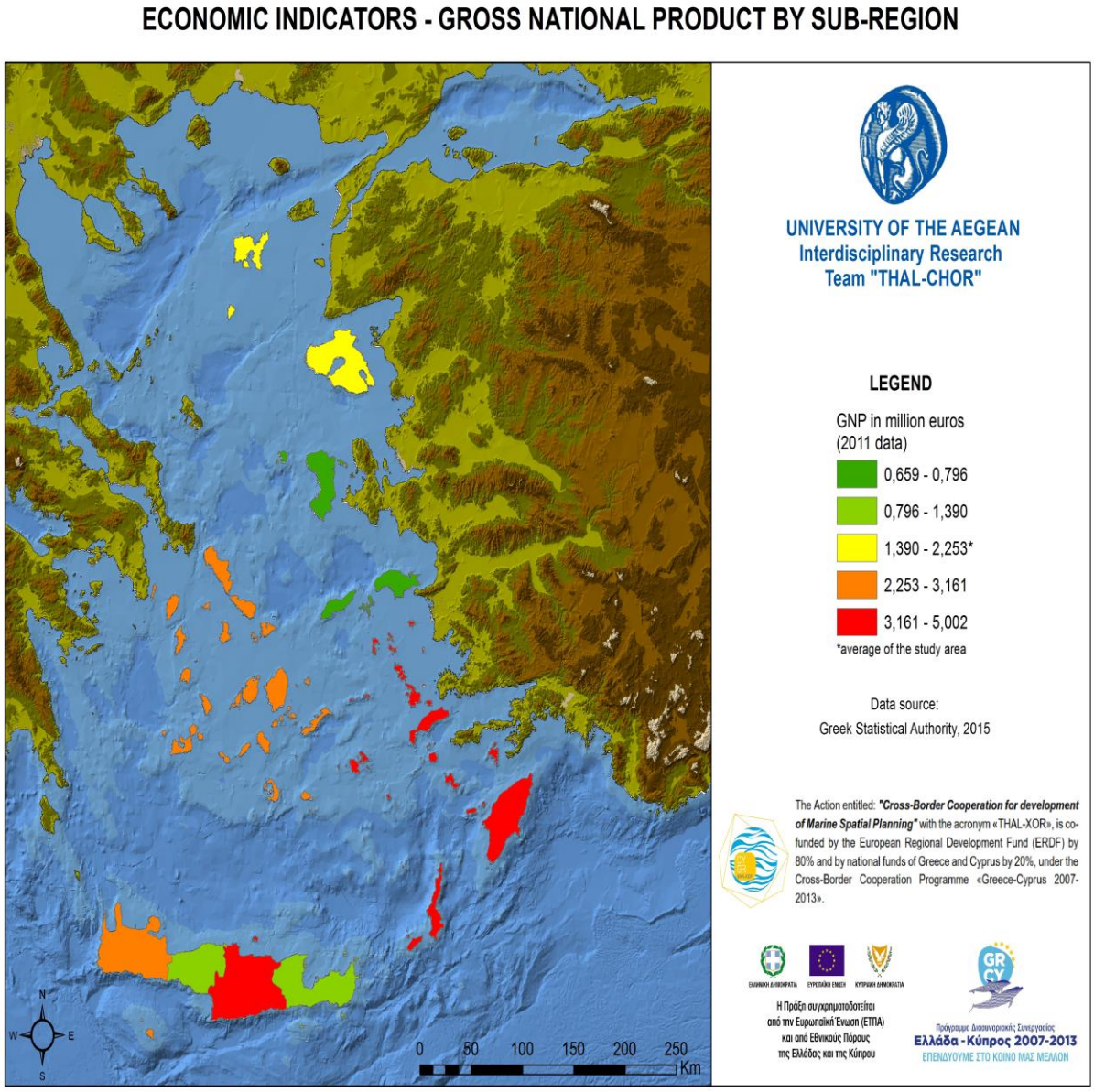
Moreover, the following figures-maps illustrate the main economic and social indicators at a regional level in Greece.

TOTAL EMPLOYMENT IN ALL SECTORS BY REGION



ECONOMIC INDICATORS - GROSS VALUE ADDED BY SUB-REGION





4. Region of North Aegean: The case of Lesvos island

According to the DG Regio (Urenio, 2015), the North Aegean region is composed of nine islands gathering 200,000 inhabitants (1.8% of Greek population in 2011) situated north-east of mainland Greece. Three key factors combine to pose a 'green growth' challenge for the island:

- First of all, while the economy of the islands has been growing during the decade (up to the 2008 crisis in any event) this has been at lower rate than the national or European average so there has been no convergence (and the GDP of the region is still only 76% of the EU27 average, i.e. 1.4% of the national GDP in 2009). The active population share is much lower and less educated compared to the national average, underling the effects of emigration. Traditional services (retail trade, public administration, transport and tourism) along with

agro-food are the major income sources. The services sector accounted for 83.5% of the regional added value in 2009 while the contribution of the sector of industry and construction was of 12.4% and that of the agricultural sector of 4.1%, declining over the past decade, but with a slight increase between 2008 and 2009 .

- Secondly, the region has a particularly rich natural environment with very important ecosystems and a considerable area is integrated in the NATURA 2000 network. However, due to their the small size, the islands tend to have precious few -if any- land resources for extensive agriculture, whilst they also regularly lack key natural resources, including adequate water supplies, fossil fuels but also nonfuel minerals. In cases where raw materials may have been available in the past, these have now often been exhausted.
- Thirdly, the region has a weak innovation performance, compared to the EU and, even, national, average. The causes of this weak regional innovation performance are to be found in the insular nature of the region, the small scale of firms in all sectors and the limited public research infrastructure (Urenio, 2015).

During 2000 -2008, the region accounted, on average, for just 1.1% of the national gross expenditure on R&D (GERD). At regional level, GERD accounted for 0.5% of the regional GDP in 2005, a share below the national and EU27 averages (0.6% and 1.83%), with the main activities to be originated from the University of the Aegean. In terms of human potential, only 1.3% of Greek human resources for science and technology (HRST) are located in the region, or 12.2% of the regions workforce, a share under the EU27 average (14.6%), mainly through the University of the Aegean (covering both the South Aegean and the North Aegean regions through its multiple campuses). The population of the region is of 1,9% of total national population, with the population of North Aegean declining by 14.951 inhabitants (decline of -7%), as illustrated in the following table:

Table 21: Inhabitants, Census 2011, Lesvos, Chios, Samos

	Lesvos		**Chios**		**Samos**	
Census	2001	2011	2001	2011	2001	2011
Inhabitants	109.118	101.786	53.408	53.004	49.595	42.380
		-6,7%		-0,7%		

Source: Hellenic Statistical Service (2015)

Regarding island of Lesvos, we could summarized into the following points:

- The reducing manufacturing activity is mainly located in the areas of Lesvos municipality, with only limited extensions in other parts of the island

- Lesvos island is a main tourist destination with potential of attracting high value added tourism, under the perquisite that rural areas, of areas with special interest (religious, environmental, etc) should be promoted under a tourism development strategy.
- Even though the environmental impact of previously flourishing manufacturing sector have been minimized, however, environment protection still remains a sensitive are which needs to be considered.
- According to socio-economic indicators presenting in tables 3-20, North Aegean region has been characterized by a certain growth potential, mainly due to tourism, natural environment and production of premium quality agricultural products, even though the production support mechanisms should be re-organized in order to be more efficient.
- The sustaining regional disparities are associated mainly with the small market size, as well as the priority of tourist development within specific parts of the region

In conclusion, North Aegean development strategy should be based on minimizing intr-regional disparities, exploiting comparative advantages, re-organizing urban centers, as well as networking between the development pillars of the region.

5. Region of South Aegean: The case of Rhodes island

The South Aegean region is composed of 79 islands (31 inhabited) divided in two prefectures, the Cyclades and the Dodecanese, covering an area of 5,286 km2 (4% of Greece) and with a population of 310,805 in 2011 (2.75% of the Greek population). According to the DG Regio (Urenio, 2015), The South Aegean region is endowed with a rich cultural and natural environment, the region is an internationally renowned tourism hot spot that however lacks conventional energy resources. The region is characterised by a large number of traditional settlements. The limited natural resources, its geographical fragmentation and relative isolation have been significant obstacles for the region's development. However these are gradually fading due to investments in tourism and infrastructures, including research and innovation, and a growing service sector. The region is relatively wealthy with a GDP per capita of €26,800 in 2009(114% of the EU27 average), ranking it 2nd, after Attica, in Greece (3.3% of national GDP). While constantly improving, the education level is low: 14.7% of the population aged 25-64 has tertiary education (25.4% in Greece, 26.8% in EU27), the lowest performance of Greek regions. Despite the strength of tourism, the region has been hit by the economic crisis and unemployment increased since 2008. Most small businesses, due to reduced demand and a simultaneous increase in taxation, face severe liquidity problems and limited access to finance to fund current operations never mind investments. Regional

manufacturing and services firms have found it difficult to switch from local to export markets.

The tertiary sector dominates the economy accounting for 84.9% of the regional GDP in 2009; industry and construction 12.8% and agriculture only 2.3%. Tourism is the most important sector followed by trade, transportation services and real estate activities. Within the manufacturing sector, dominated by small firms, the most important industries are those of food and beverages. However, local firms have not managed to exploit economies of scale due to their size and their relative isolation and so far have found difficulties in exploiting public funding for their modernization and incorporation into national or international value chains. Since 2008, private investments have most probably not improved given the liquidity crisis, with mostly any regional R&D activities concentrated in the higher education sector (essentially the University of the Aegean) (Urenio, 2015).

Regarding primary and secondary economic sectors, the activity levels are continuously decreasing, mainly due to small business size and the lack of any integration with other regional or national production networks. On the other hand, tertiary sector acticivity is constantly increasing, mainly due to tourism development, mostly in the most popular tourist islands of Rhodes, Kos, Santorini (Thira), Mykonos and Syros.

Regarding Rhodes island, we could summarized into the following main points:

- Rhodes island is characterized by important and distinctive both natural and urban environment. The tourism development has created a sustainable wealth creation channel. However, this tourism development is only one-sided developed, comprising mostly sea and sun tourism during the summer period, rendering alos significant negatice effects on the natural environment.
- Manufacturing activities are only of small scale, due to small size of islands and the lack of intra-regional networks among them.
- Primary sector activities are also of small scale, with no special regional identity, with lack of any high value added activities in agricultural production.

Rhodes island should take advantage and exploit the high quality, of not only its natural, but also its historically distinctive urban environment, with a broad coherent development strategy.

6. The region of Crete

Crete is the largest and most heavily populated island of Greece. It is the fifth largest island in the Mediterranean Sea, located in a key strategic position in Southeastern Europe. The Region of Crete covers 6.3% of the total area of the country with a total extent of 8,335 km2 ,

constituted by the Prefectures of Heraklion, Lasithi, Rethymno and Chania . The Cretan Sea boarders the island on the north and the Libyan Sea on its south. A number of small islands: Gavdos, Ntia, Koufonisi, Gaidouronisi or Chrysi, Dionysades, Spinalonga and Paksimadi, most of them uninhabited, also belong to Crete. The island has three major airports, Nikos Kazantzakis in Heraklion, the Daskalogiannis airport in Chania and a smaller one in Sitia. The first two serve international routes as the main gateways for travelers to the island 3 routes, as the main gateways for travelers to the island. Crete is also connected to mainland Greece by its 6 ports. Crete is the most populous island in Greece with a population of more than 600,000 people. Approximately 42% of the population lives in Crete's main cities and towns whilst 45% lives in rural areas. The Region produces 4,9% (€13 bn) of total GNP of the country. Main economic activities include agriculture and tourism services. As in many other regions of Greece, production of wine and olive oil is significant. Dairy products are also important to the local economy and there are a number of specialty cheeses. Crete is one of the most popular holiday destinations in Greece. Crete has almost 160 enterprises with export activities. Food and Beverage account for 56% of all exports, while all other exports account for the remaining 44%. Main exports include: olive oil, wine, bakery goods, citrus fruit, raisins, herbs, honey etc. The Prefecture of Heraklion holds a 77% share of total exports of the island (Greek Government, Invest in Greece Agency, 2015).

Regarding the development potential of the region of Crete, main points could be summarized as follows:

- Crete is producing 9,53% of value added in primary sector in Greece. However, due to the quality products, there is also major growth potential, taking into consideration the importance of exports enhancement, product standardization, marketing and promotion, etc.
- Crete offers a plethora of advanced business services to investors (banking, financial, legal, accounting, technical, advisory etc).
- Energy sector is one of the most developing sectors in the region, comprising major investment projects.
- Crete is a pioneer in modern telecommunications infrastructure, very important social infrastructure, such as those in health care, and continuously improving basic and transport infrastructure.
- In tertiary sector tourism and transportation are the dominant activities, with major investments in huge tourist hotels and hotel chains. However, tourism seasonality is one of the features, which could be re-considered.
- Tourism and agriculture constitute the main comparative advantages of the region.

- Economic growth dynamics are more significant around the two major cities of Heraclion and Chania.
- Investments and entrepreneurship is linked and aided with scientific research and technological development with the support of the local academic and research institutions.
- Crete is also a center of international interest in the energy sector, given its strategic location, the huge wind and solar resources, as well as possession of local experience and expertise (Greek Government, Invest in Greece Agency, 2015).

However, there is major need in forming and exploiting the linkages between clusters/ industries/sectors, in order to enhance activities towards the areas of regional specialization. An emphasis should be given to facilitating cross-clustering and the identification of innovation opportunities at the interface between different clusters, in order to increase competitiveness. Specific funding measures and support should be developed aimed at primary and secondary sector innovation and inter-linkages with tourism (for the primary sector to produce differentiated products and for the secondary to connect the primary sector with tourism (DG Regio, Urenio, 2015)

7. Planning a development policy: Implications and recommendations

Within the framework described above, all three regions of South Aegean, North Aegean and Crete have significant potential comparative advantages in order to move towards a sustainable, resource efficient regional economic development. Overall, these three regions have made significant progress in defining and implementing consistent initiatives for stimulating development. However, pparticular focus should be given to strengthening the cooperation of existing/emerging sectors/clusters to make connections to local, national and global value chains. In this respect and due to the fact that these regions are insular and have maritime borders with Turkey and other Greek regions, it should consider incentives for the development of transnational and trans-regional clusters.

The quality and availability of infrastructure (energy, transport, and broadband) make an important contribution to an efficiency promoting environment. However, all economic sectors need a modern public administration system, able to deliver efficient and high quality public services. Coordinating clusters and networks improve industrial competitiveness and innovation by bringing together resources and expertise, and promoting cooperation among businesses, public authorities and universities.

However, the pressure on public budgets adds to the urgency of this matter in different policy areas of policy implementation. A comprehensive approach can be achieved by

supporting markets for innovative goods and services and excellence in research in new technologies, including information and communication technologies (ICT), introducing a more focused strategy to facilitate the creation of areas for action, and in particular introducing a more focused strategy to facilitate the creation and marketing of new innovative products and services, directly through impact upon the promotion of efficiency and productivity.

An open, efficient and competitive business environment is a crucial catalyst for growth in regional context. Improving the business environment covers policies in areas of better institutional mechanisms, business environment and innovation system. There need to be strategic approaches, which not only promote closer interaction among sectors but also among policy-makers (from different policy fields and different levels of government).

A new generation of policies have to overcome the limitations and failures of past experiences, such as collusive practices between political and economic power, heavy bureaucracy, lack of accountability and entrepreneurship. They have to be creative and selective, with decision-making mechanisms that are more democratic and inclusive of different social interests. These new approaches to industrial and innovation policies could play a key role in pulling these promising regions out of the current crisis.

A greater coordination of policies at regional level can leverage scarce funds to foster innovation and growth in times of budgetary austerity. Towards this direction, the main measures suggested include:

- Set up an open process of co-ordination on actions in science and technology,
- Encourage diffusion of "good practice" and cooperation among regions
- Improve the effectiveness of public actions by designing policy mixes using in a coherent way various policy instruments
- Pursue or initiate necessary regulatory and administrative reforms, and support measures, to enable public research institutions to develop more effective links with industry
- Promote public research and technology transfer
- Pursue efforts to create a legal, fiscal and financial environment favourable to the creation and development of start-ups
- Support EU-level initiatives, such as networking and pilot experiments, to facilitate transnational technology partnerships, by encouraging clustering or integration of resources

The difficult fiscal environment sets limits to policy action, but robust growth will reduce the burden of public deficit and debt. For this an environment that favours new ideas

and new businesses is required. Innovation is the primary driver of a successful and sustainable development policy.

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Economic Development and Congress Tourism: How Could Greece be a Pole of Attraction

Abstract:
Conference tourism is a crucial field for development both for tourism industry and economy in general. Purpose of conferences is to enrich knowledge of people from business, social and scientific world, as well as providing information, training and strengthening of colleague spirit. Greece is a place of culture, art and science. Its long contribution to global affairs in combination with its unique natural beauty and its excellent infrastructure make it an ideal place for conferences but this is something which is not reflected in its current position in the world ranking of the tourism sector. Given the above mentioned characteristics it is necessary to revise congress tourism policy in Greece aiming at improving the business and institutional environment. Furthermore, it is necessary to improve general infrastructure giving emphasis on conference facilities and air transport, removal of barriers to attract foreign investment, continuous upgrading of human resources.

Keywords: congress tourism, economic development, tourism activity

Delitheou Vasiliki[1] **and Dimitris Tsalavoutas**

1. Introduction

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International tourism is one of the larger and most dynamic sectors of global economy, registering continuous growth and differentiation with the emergence of new countries-destinations in the world tourism map. This results from economic development and raise of living standards in several countries (which has as consequence the raise of income), on the one hand and improvement of infrastructure and transport on the other hand, which makes travelling cheaper and faster. Evolution of tourism in determinant of social and economic growth makes it an integral part of international trade, with income from foreign tourism to be classified in the 4th place globally, after income generated by exports of fuel, chemicals and products of car industry.

For Greek economy, tourism is a central pillar of development with significant contribution to the Gross Domestic Product (GDP), employment and investments. Rich cultural heritage, long coastline and the natural environment are some of the comparative advantages which make the country one of the most important tourist destinations worldwide. At the same time, contribution of aviation along with shipping are the most extrovert sectors of Greek economy making our country one of the most popular destinations, leading to a higher level of economic development.

Today, socio-economic crisis that Greek economy is experiencing indicates the need to adopt actions towards a new development model. It is generally recognized that this model should give emphasis to the exploitation of the country's advantages and stimulate extroversion and investments. The interest of the growth potential of Greek economy from the perspective of policies and tools to stimulate extroversion is reasonably directed to strategies for development of exports of goods and services as well as in the tourism sector which should play a more active role in the country's economic development within a highly competitive environment not only from the Mediterranean countries, but also from new emerging destinations.

2. General Characteristics of Congress Tourism

Congress is the heart and the main purpose of this huge industry. It is defined as a planned and organized event in which attendees are invited to discuss a matter of common interest. Congresses could be local, national or international. They could be held for several reasons, (medical, scientific, etc.) and some of them could be repeated every year or regularly. Congress tourism represents an important market at international level.

It is worth noting that the average expense of a tourist visiting a place for professional reasons is 4 times higher compared to the average tourist spending of a classic tourist (!). Generally, by the term *Congress Tourism* we mean movements or events which combine to a smaller or larger grade pure travel and holiday dimension with other interests or productive activities linked to the status of the participants as members of a profession, of a company or other organizations. It is considered as one of the most dynamic types of modern tourism. This is due to: 1) the fact that congress tourists spend much more than usual tourist in the place that congress is taking place and 2) the possibility that this kind of tourism gives to the destination place for time planning. Rise that has been achieved during the last years is the result of development of scientific and business knowledge which in turn is due to the rapid developments in the field of medicine and technology, acceleration of product development cycle and information revolution that modern world is experiencing. These factors have favored and will continue to favor corporate activity, joint action of organizations, larger globalization and the need for more congresses which will spread information and produce new knowledge according to the Chief Executive Officer (CEO) of International Congress and Convention Association, (ICCA) Martin Sirk (2006).

The main sources of demand for congress services are two: 1) the organization congresses (Association Market) (scientific, professional, political, educational, religious, charitable, military, etc.) and 2) the Business Congresses (Corporate Market) .The requirements sought to be covered in these two cases are partly common. The congress event as it is positioned away from the places of work and residence of the participants gives the chance for a more direct communication, exchange of views, information and training, acquaintance and interconnection, cultivating of team spirit and planning and development of solutions to problems that participants are facing. But also it gives the chance for leisure, away from many restrictions that are unavoidable in working and family environment. In the case of organizations more important seem to be interconnection and acquaintance as well as concentration of financial resources.

This market usually refers to visitors of high educational and economic standards, who are moving at high class accommodations, they are willing to spend enough money but they demand high quality from provided services and products. The time of their staying at tourist destination usually ranges from 3 to 5 days, while there is a possibility to extend their stay for longer within the framework of other types of tourism. A key role in this direction plays the ability of a place to attract the attention of congress visitor. The peak season is mainly during February to May and September to November when most congresses,

exhibitions etc. are usually organized. Congress tourism covers the 20% of worldwide tourism activity (Lagos 2005), while regarding revenue ICCA estimated that the total expense of congress participants in 2004 was more than $ 5.5 billion (Kravaritis N. K. & Papageorgiou N. A. 2007). As Mr. Abreu (2005) notes in some countries more than 60% of hotels of 4 & 5 stars depend primarily on their partnerships with businesses and congresses organized at them.

Important role for the development of congress tourism plays availability of necessary infrastructure and services, such as auditoriums, exhibition halls, accommodation, means of transport, places for coffee brakes, restaurants, and interpretation services. Additionally, easy access to the place that the congress or exhibition is held is a crucial factor for attracting customers.

3. The Effects of Congress Tourism to Global Economic Activity

Conference tourism has the potential to offer many economic and social benefits both to the primary and secondary increase in tourism resulting improvement of the economy and prosperity of each destination.

- Through congress tourism the image of the place that the congress is held is displayed and advertised to other countries.
- There is no cost advertising through congress participants who because of their high socio - economic status can act as opinion shapers affecting their wider environment. Satisfying this kind of tourist can work in favor of each destination. (Konstantinidou Ch. 2008).
- It creates conditions of repeating conduct of congresses but as well for new visits of congress participants at the same place with other status and company.
- It allows spread of tourism in wider time and geographical frames.
- According to the fragmented existing elements it seems that congress tourism covers 3 to 4% of the number of foreign tourist arrivals globally and the 6 to 7% of the total inflow of tourist foreign currency. However for many of European capitals or big cities the economic importance of congress tourism compared to the total tourist sector seems to be well above the averages mentioned above.
- Congress tourism presents a smaller rate of seasonality compared to tourism in general, smoothing out booking fluctuations, leading to seasonal complementarity with the great mass of general tourism. Probably, congress tourism is not expected to influence impressively the overall touristic activity as the relatively small number of additional visitors may increase in a

similar or greater extent the rates of occupancy of hotel units that benefit from congress activity. Because of the structure of the cost of these units improvement of this occupancy could be crucial for their financial results and their financial health. In turn strengthening the financial robustness of economic entities in the sector affects the prospects for further development and efficiency.

- Average expenditure per congress visitor is much larger, about four times, from the simple average visitor, thus increasing the financial scope, as congress tourism involves persons of high income standards who use "high class" services and infrastructure. However, since the average duration of stay of the congress visitors is between 4 and 5 days and generally is shorter than general tourism, average expenditure per congress visitor still remains higher compared to general tourism but to a smaller extend.

Relatively limited domestic demand for congress services, connected with the relatively low level of development of our economy and the lack of large companies, rather long distance between our country and the big centres from which most of the demand is coming and the not always good impression that organizers have for our country regarding the quality of the provided services lead to the conclusion that big effort will be needed for further development of the sector. On the other hand the possibilities for growth are large precisely because so far progress has been limited. Contribution to development of tourism from development of congress tourism may prove to be much greater than one might prima facie assume.

With reasonable assumptions, development of congress tourism can be expected to contribute to the average annual rate of development of tourist sector in the period up to 2017 by 0.5-0.75 percentage points and the annual turnover to range at $ 300 billion. per year, without taking into account the possible secondary increase in tourism, which generated from congress tourism.

4. Evaluation of the Current Situation in Accordance with the Past Information in Greece

According to ICCA (International Congress and Convention Association) information, in 1999 Greece was at the 23rd place in the world in organizing international congresses right behind Israel and one position above Thailand. Based on Yearbook of Tourism Statistics, 1999 of ICCA Greece has the 1,7 of the total number of congress activities in the world.

In 2003 Greece was in the 38th place in the world in organizing international congresses
In the 15th place worldwide regarding the number of scheduled international conferences until 2047.
+ 81% the movement of passengers arrived at AIA for congresses – exhibitions (April – September 2006)

During recent years there is a stable growth in the sector of congress tourism internationally, with America to have the "lion's share" regarding organizing of international congresses, while lately new destinations are entering the "game" such as Jordan and Ivory Coast, countries, which in near future are estimated to become worthy "opponents". At European level, Germany, Spain, France, the United Kingdom and rapidly growing Turkey are the most popular congress countries while Greece appears to have still enough way to go to be considered as a force that should be taken into account. These figures may seem surprising but taking a little look in the near past, we can see a "standing situation" as well as laziness from state mechanisms and political leadership to follow the galloping growth of European big cities.

Greece has just held 1.72% of the total market occupying, in 2007, the 22nd position in the world in organizing international congresses, meaning that there was almost no growth in the sector compared to 1999. Studying a period of 10 years (1997 – 2007) it seems that Greece failed to exceed the 2% of the total market (except in 2002). Today the situation is worse. According to recent surveys carried out in 2013 Greece is in the 38th position in the world rankings in organizing congresses behind Malaysia and Chile and in the same category holds just the 20th position in Europe behind countries such as Hungary and Poland. Of course it must be said that our country is in the 15th position globally regarding the number of the scheduled international congresses until 2017. Also, the figures of Athens International Airport are positive. According to them movement of passengers who arrived during summer period (April-September 2006) at "Eleftherios Venizelos" for congresses and exhibitions was raised at a percentage of 81%. Construction and operation of the new AIA and the new ultramodern Exhibition Centre may contributed to attracting, facilitating and providing of better services to congress audience but they are not enough for the development of the sector and attraction of more congress activity.

Speaking objectively, development of neighboring Turkey in congress tourism could be considered stunning. According to ICCA, in 1999, Turkey did not exist in the world rankings as an "opponent" that should be taken into mind. After 26 years the country reached the 18th position, 20 positions in front of Greece. Turkey holds the 10th position in European level, 10 positions in front of Greece and is capable to compete with giants like France and the United Kingdom.

In order to improve our position, we need to identify the reason. But even more important is to see together, each of his area of responsibility in a systematic and organized way what we should do to reclaim and take a share of the congress market. (Dimitris Mantzios - The future of congress tourism in Greece).

5. The Effects of Congress Tourism in Greece

According to data provided by the Bank of Greece for 2001 annual income from the congress tourism amounted to EUR 184 million, covering 10% of the total tourism revenue (Mantzios D. 2008). Given the raise of congresses in Greece during recent years we could easily assume that revenues will have been increased significantly since then. However, it is difficult to outline an accurate picture of the congress activity in Greece due to lack of sufficient official data for that market. This fact proves the lack of culture and the insufficient policy of the competent organizations. Data issued by the ICCA every year are the only reliable source for recording the conference demand in our country. However they are only a small part of the overall congress activity (Coutoulas D. 2009). According to latest data, in 2013 11. 685 congresses were organized globally of which only 100 took place in Greece. Greece's share in the global congress market is estimated at around 0.85% and 1.58% in Europe. Studying congress market from 1997 to 2013 according to latest official data provided by ICCA, it is found that Greece has almost double the number of congresses and participants respectively (52 congresses with 33,623 participants in 1997, 100 conferences with 76. 538 participants in 2013). From 2004 onwards there has been a slight increase in international congresses, a fact which is connected with the promotion of our country due to the Athens Olympics in the same year and the renovation of several hotel units that took place that period.

Athens is the most important congress destination in Greece. In 2013 from the 100 congresses organized in the country, 54 were held in Athens thus gathering the 50% of the total. According to ICCA, in 2013 Greece was at the 47th position globally. As mentioned in Mr. Athanasiou study, (2002) “Congress tourism in Greece”, Athens’ role should not surprise anyone because concentration of this kind of events at big centres is an international phenomenon which indeed in some countries takes character even more intense than in Greece (eg Portugal). This study also confirms the view that available data are not sufficient to estimate accurately the actual share of the Capital, since ICCA measurements do not include *internal conference activity.*

6. Perspectives for Greece to Emerge as a New Congress Destination

According to a view by Mr Dimitris Mantzios, President of HAPCO (Hellenic Association of Professional Congress Organizers) our country is in at an advantageous position compared to other congress destinations under development because it is an already recognized destination of vacation consequently there is plenty of product to satisfy the "pleasure" part of congress tourism. But we have to make important steps in order to satisfy the "business" part of congress tourism. In fact, congress and business tourism are complex and multifaceted forms of tourism with a large number of directly and indirectly involved stakeholders, individuals and organizations, resulting the final product to be depended on the proper functioning and the general image of those factors.

The need for wider promotion of congress tourism in international markets is one of their long-standing demand. Lack of adequate and focused promotion and the absence of a marketing plan are the basic reasons for the slow development of congress tourism in the country. The fact that Greece is not recognized as congress destination often brings to the centre of discussions the need to create and promote a country's congress identity abroad.

General development policy and in particular the creation and maintenance of a satisfactory level of economic and social infrastructure aiming at more efficient operation of state services will contribute decisively to the development of congress tourism by improving the overall image of the country.

Congress market today, being interdependent on the existing socio-political and economic conditions at international level has picked up (with single-digit growth rate), however at national level by mid-2010 to date has recorded a significant drop, which means reduction of events at least 50%. Main markets of interest for congress events in Greece are European countries due to geographical proximity and quick access through various air connections. Particular interest is also noticed from more distant countries, eg from America and China, due to the admiration of participants for culture and natural beauty of our country. The weaknesses of the congress product are many but they are of minor importance and they could easily be overcome even with minimal effort on behalf of the State. The greatest weakness that compensates all other and delay development is lack of support on the part of the State. Finally a targeted marketing plan must be applied which will show the advantages of Greek congress product. Without such a plan we cannot proceed to any action since any outcome will be ephemeral and not permanent. Congress tourism could become a lifesaving solution for the country in general and for each city separately. It constitutes a source of income for an indelible period with enormous economic benefits Actions that should be done are many:

- Developed transport network to and from the congress destinations but the surround areas also, highlighting the natural beauties, attractions, archaeological sites or even cultural identity which should be strengthened and separated from other competitive congress destinations. This is one of the most important characteristics that we should have in order our country achieve progress and be characterized as an important congress destination.
- Hotel service and expertise is an equally important parameter for congress level, which should be taken very seriously in mind in order to have a very high level of services and distinguish over others. Personnel who will staff congress centres should be efficiently qualified in order everything about congress proceeds with no problem providing thus services of high quality.
- Safety during congress is one more parameter that should be applied. Participants should move during congress without obstacles and any delinquency cases by external or even internal factors should be treated immediately preventing other similar actions in the future and creating a sense of security.
- Creation of a National Bureau of Congresses and Visitors with main tasks promotion and advertisement using Marketing sector in order to raise the number of congresses. Internet for example is an instrument which is increasingly used and tends to evolve as one of the most important and widely accepted means of advertising. Display cost is quite low and the impact is global. Promotion through special kiosks around the world is of course welcome but it is difficult to be applied due to its cost. Other promotion means are use of television even sponsorship of any events.
- A campaign should be created with the cooperation of GNTO, all competent ministries and private sector in order to draw new products of tour contributing thus to the county's promotion to the circles of entrepreneurs and scientists in order to consolidate Greece as a congress destination.
- Cooperation with neighboring countries and strengthening of the negotiating benefits this could bring. Good proximity and cooperation are considered today as necessary for development, especially in this sector.
- Use and promotion both outside and inside Greek borders of Olympic Properties and reopening of Airport at Elliniko because of its proximity to the facilities and attractions of Athens, only for VIP flights of congress character.
- Furthermore, it is necessary to improve the general infrastructure with emphasis on congress facilities and air transports, removal of barriers to attract foreign investments,

continuous upgrading of human resources and reopening of Athens CVB, and the creation of a National CVB with specific competences of promotion of congress destinations in Greece.

7. Conclusions

Congress tourism is a profitable form of alternative and special tourism due to high revenues that generates cancelation of seasonality and relative flexibility that seems to indicate during difficult financial conditions.

Other European cities that have invested in the sector of congress tourism already show a resistance to the problem of seasonality, providing in parallel, jobs, expertise and socio – economic development to local bodies and residents. Greece still has a small share in the global congress market although organization of congresses in the country is increasing during recent years, especially after Olympic Games of 2004. Athens and Thessaloniki concentrate around 70% of international congresses organized in the country. Nevertheless, the country has a number of disadvantages which are obstacle to claiming a larger share of the market.

Knowledge deficit of congress activity in the country is a major problem that prevents planning of an effective policy for its enlargement. Even if it is recognized, on a theoretical level, that congress tourism is very important for tourist product and Greek economy, both State and professionals in the market have made very few moves for a statistical recording and understanding of the problem in depth. Any moves that have been taken are fragmentary and result of private initiative. Consequently knowledge about congress activity in our country is extremely limited.

The above mentioned disadvantages are chronic problems of congress product in Greece, however efforts have started in order to confront and solve these problems. State's and Government institutions' interest, during recent years, create expectations for important development of congress tourism in the future and current economic conditions tend to a radical reshaping of the tourism product.

It is certain that all the above need vision, hope, work, effort and persistence but the result will justify as it has been already proven in other countries where it was applied. It is an investment that historically has proved to bring results. Clearly, needed financing for the above is a major obstacle under today's conditions but simultaneously is a smart investment with long-term economic and social benefits.

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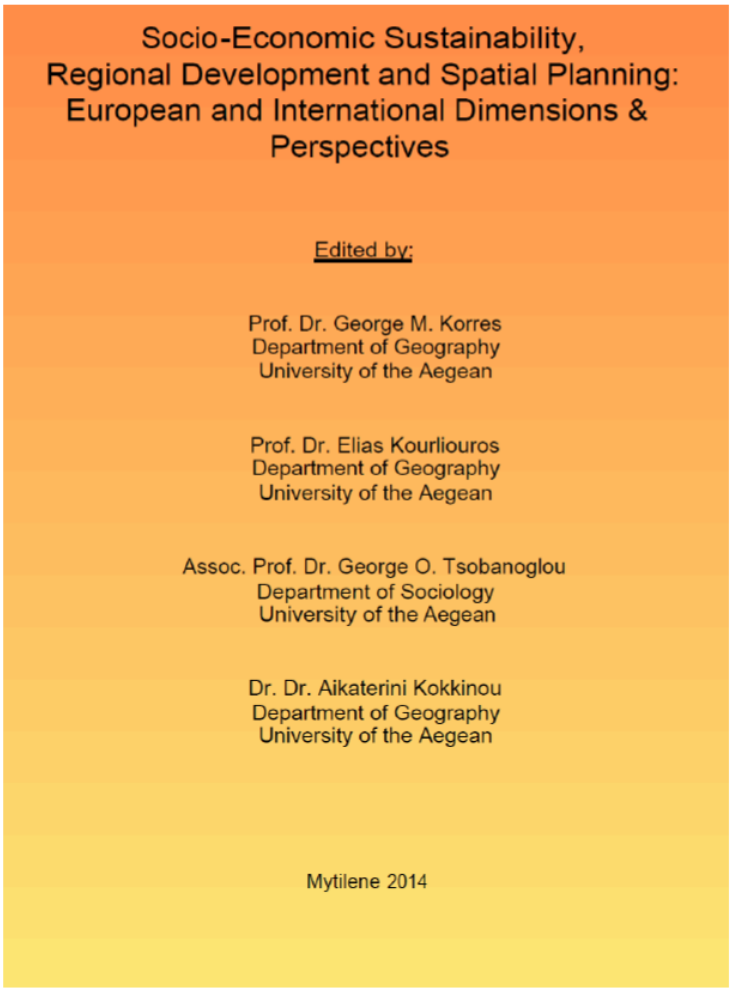

This Book of Proceedings, based on the International Conference on 'Socio-Economic Sustainability, Regional Development and Spatial Planning: European and International Dimensions & Perspectives', 4-7 July, 2014, Mytilene, Lesvos, Greece, summarizes the debate for the future and prospects of socio-economic and regional development of the European Union, under the fields of European, Economic-Geography, Sociology, Regional Development and Spatial Planning. This Book of Proceedings considers both an economic and social perspective to increase the information base and derive broader conclusions about the social consequences of the economic crisis, with this issue being of particular current research.

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The findings of this book aim to be of value for researchers, policy makers and academic community, with the value stemming for a better identification and understanding of the key elements and consequences of the current economic crisis, regarding socio-economic sustainability and development.

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Journal of Regional & Socio-Economic Issues (JRSEI)

Instructions to Authors

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Aims of the Journal:
Journal of Regional Socio-Economic Issues (JRSEI) is an international multidisciplinary refereed journal the purpose of which is to present manuscripts that are linked to all aspects of regional socio-economic and all related issues. The journal indexed by Copernicus Index, DOAJ (Director of Open Access Journal), EBSCO & Cabell's Index and welcomes all points of view and perspectives and encourages original research or applied study in any of the areas listed above. The views expressed in this journal are the personal views of the authors and do not necessarily reflect the views of JRSEI journal. The journal invites contributions from both academic and industry scholars. If you have any questions about the journal, please contact the chief editor. Electronic submissions are highly encouraged (mail to: **gkorres@geo.aegean.gr**).

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