Regional Science Inquiry

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RSI Journal, Volume III, Issue 1 – Editorial

'Europe 2020': A contradiction between growth and cohesion?

The Lisbon strategy, and its successor 'Europe 2020', aims to make Europe the most competitive and dynamic knowledge-based economy in the world capable of sustainable growth (promoting a more resource efficient, greener and more competitive economy) with more and better jobs and greater social and territorial cohesion (inclusive growth). The transformation to a knowledge and service economy is profound as the earlier changeover from agriculture to industry. It might be argued, however, that the aims of 'Europe 2020' are in sharp contrast to another major aim of the EU, that of regional cohesion/convergence. the EU has implemented a range of development policies and projects (and continues to do so) to achieve regional convergence, such as the Mediterranean Integrated Programs the direction of funds towards less-advanced areas of Europe from sources, such as the European Regional Development Fund (ERDF), the European Social Fund (ESF) – the two 'Structural Funds' – and the 'Cohesion Fund'; the structural funds are now the most important financial instruments for supporting the renewed Lisbon strategy and in some countries were able to increase their GDP by almost 4% (European Commission, 2004). The regional-geographical dimension is increasingly important for European policy-making by identifying and mobilising territorial capital in each region, by explicitly recognising it as a significant unit in policy-making. Cohesion policy aims to promote a more balanced territorial development; a policy broader than the 'conventional' regional policy, which is specifically linked to the ERDF. The Structural Funds cover a wide range of areas – technological Research and Development (R&D), the information society, support for business, infrastructure development (transport, telecoms, healthcare and education), energy, risk prevention, the environment, employment, tourism, culture, etc. There are many potential recipients, such as business (especially SMEs), associations, public bodies and individuals. It is up to each individual country to divide the funds between the EU's 'Convergence Objective' and regions covered by the 'Competitive and Employment Objective'. Countries then use the funds to finance thematic programmes covering the whole country (for instance on environment, transport, etc) or programmes channelling funds to particular regions. Regional policy in the EU has to tackle with an 'inconsistent triangle' (Mancha-Novarro and Garrido-Yserte, 2008): budget restrictions, the aspirations of the new member-states as the main beneficiaries of the European regional policy and the vindication of the cohesion countries (Ireland, Spain, Portugal and Greece) of maintaining their financial resources. The current economic crisis has revealed structural weaknesses in several European regions, irrespective of their level of economic and social or sectoral development. Some sectors are more vulnerable to crisis than others. For instance, regions with a high share of export-oriented activities, such as tourism, face the challenge of decreasing demand and job-losses. Consequently, the degree of vulnerability of the EU regions is unevenly distributed across Europe. This puts the issue of regional cohesion in Europe in a fresh premise. The enlargement of the EU to 25 Member States, and later to 27, together with the intensification of cooperation between the EU and Norway and Switzerland, presents an unprecedented challenge for the competitiveness and internal-regional cohesion of the Union.

'Spatial development is increasingly understood as a complex, multi-dimensional phenomenon and the illusion about the existence of simple, short-cut strategies is progressively abandoned' (Camagni and Capello, 2010, p. 12). Nevertheless, an explicit spatial aspect in 'Europe 2020' is rather unclear. To be more precise, this strategy is monitored by a set of indicators, covering the domain of employment, innovation, research, economic reforms, social cohesion, overall economic and environmental background. In 2004, the European Commission suggested a 'short list' of 14 structural indicators, allowing for a "concise presentation and a better assessment of achievement over time vis-à-vis the Lisbon agenda". These indicators include for example, gross domestic product per-capita and per-worker, employment rate, gross domestic expenditure on R&D, long-run unemployment rate, etc. Of these indicators only the 'dispersion of employment rates' has, by definition, an explicit spatial dimension. In accordance with the aims of 'Europe 2020', regional policies aim to promote high-technology activities, and R&D,

including universities, scientific and research institutions. Indeed, a target set is the EU as whole to reach R&D intensity above 3%, responding to the new world-wide division of labour and globalisation The EU should reach a level of R&D intensity, by 2010, above 3%. This target is set by the Barcelona Council in 2002 and maintained in the Europe 2020' strategy. R&D spending in Europe, however, is below 2%, compared to 2.6% in the US and 3.4% in Japan, mainly due to low levels of private investment. It would take more than 50 years for Europe to reach the US level of innovation performance. Only 10% of the EU regions were able to reach this target. In 2007, only 19 out of 287 NUTS-2 regions, about 6.6%, were able to meet the target set by 'Europe 2020'. These include regions Pohjois-Suomi, Länsi-Suomi and Etelä-Suomi in Finland, Stockholm, Östra Mellansverige, Västsverige and Sydsverige in southern Sweden, seven regions in Germany (Dresden, Oberbayern, Darmstadt, Karlsruhe, Unterfranken, Stuttgart and Berlin), two in France (Île-de-France and Midi-Pyrénées) and Austria (Wien and Steiermark) and one in the Netherlands (Noord-Brabant). In some of these regions, capital-cities are located (e.g. Paris, Vienna, Berlin, Stockholm and Helsinki). Overall, there is a tendency for R&D expenditure to be higher in urban parts of Europe. This is, to some extent, expected. Concentration of R&D expenditure and activities in certain places the EU as a whole to enjoy high rates of growth, though the operation of positive externalities. This mechanism, however, acts a sustaining factor of the existing regional disparities.

Nevertheless, an important point to grasp, from a policy perspective, is that it is possible to overcome this contradiction, if policy-makers implement appropriate and regional specific measures. To be more concrete, regional policies should support clusters, modernize the framework of copyright and trademarks, improve access of SMEs to Intellectual Property Protection, speed up setting of interoperable standards, and improve access to capital by reducing transaction costs of doing business. Policy makers should also identify bottlenecks and develop strong industrial and knowledge base, in conjunction with encouragement of 'knowledge partnerships' and links between business, research, innovation and education. Improvements in education will help employability and reduce poverty. A greater capacity for R&D as well as innovation across all sectors, combined with increased efficiency, will foster job creation and improve, simultaneously, aggregate growth and competitiveness.

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In the 1st Issue of Volume III of the RSI Journal

This issue includes seven papers, all written by academics and policy-makers from all over the world. It is the intention of the editorial board of the Regional Science Inquiry Journal to present in this issue a wide range of topics, such as economics, environmental, politics, theoretical aspects of regional development, empirical case studies.

Peter Nijkamp adds a new dimension to the issue of urban sustainability in the context of cosmonomic philosophy. The critical roles of the city are considered with respect the issue of urban sustainability. The use and choice of indicators in multi-criteria analysis for urban sustainability are analysed in a context of an integrative methodology.

The pattern of renewable energy developments in the Mediterranean Region is explored by Stratigea, A., Biska, A. and Giaoutzi, M. This paper offers important conclusions on the prospects of the Mediterranean countries in the context of the renewable energy targets for 2020.

Christos Dionelis and Maria Giaoutzi show how transport policies impact on sustainable tourism in the third paper of this issue.

Do factors, such as history, language and culture have an impact on foreign direct investment (FDI) of Brazilian companies in Portugal? Cristiano Cechella proves that cultural factors are particularly useful for a long-term comparative economic analysis.

The paper by Saleh Ahmed and Juan Manuel Pantoja Ypanaque compares the status quo of the access to universal primary education (UPE) and possible scenario by 2015 in Bangladesh and Peru.

In a technical analyis, Florian Mandija, Jozef Bushati, Piro Zoga and Floran Vila show that principal aerosol sources in the city of Shkodra are traffic and residential activities. From an environmental aspect, improvements require to order traffic, re-construct existing roads, and substitute old vehicles with new ones, in conjunction with moniroring fuel quality.

What is the concept of total economic value of an environmental asset? Paulo Nunes and Peter Nijkamp attempt to answere this question in the seventh paper of this issue. Apart from a purely theoretical interest, this issue has important policy implications. To be more precise, particular emphasis is placed on the link of contingent valuation method to standard economic theory.

The present issue of the RSI Journal concludes with presenting general news and announcements related to regional science research undertake, academic profiles of worldwide distinguished academic scholars in regional science together with the presentation of selected books, useful to regional scientists.

Dr. Alexiadis Stilianos
Dr. Kokkinou Aikaterini
RSI Journal

Papers

THE ROLE OF EVALUATION IN SUPPORTING A HUMAN SUSTAINABLE DEVELOPMENT: A COSMONOMIC PERSPECTIVE*

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Abstract:
This paper offers a new perspective on the issue of urban sustainability. Starting from a positive perspective on city life, it makes a typology of critical roles of the city that are to be considered with a view to urban sustainability. Next, it is argued that a sine qua non for a structured view on sustainable cities is the use of a more integrated perspective, as offered inter alia by cosmonomic philosophy. Then the paper argues that the use and choice of indicators in multi-criteria analysis for urban sustainability may usefully be based on this integrative methodology.

1. The City as a Human Construct

The modern city is not a recent invention. It has a long history and it has manifested itself in a great variety of appearances. The city has meant the centre of open democracy, as witnessed by the Greek concept of polis. But is has also shown its military significance, as exemplified by fortifications and walls around the city. At present, the city mirrors part of a global network society by acting as a nodal point in an interlinked information and communication configuration (see Castells, 1996). But whatever appearance a city may have had in the history of mankind, it has always formed the cradle of civilization. The key role of the city in ancient times is eloquently presented in a fascinating study of Tulleken (1988), when he argues:

"Yet by 3000 BC, an astonishingly different panorama was unfolding. Along the length of the valley, magnificent cities sprawled on the riverbanks. Around them, fields of grain spread like a tide of fecundity across the once desolated flatlands. Groves of date palms swayed in the wind, offering fruit and strade. Within the massive walls that ringed the cities, temples towered over both streetscape and plain. There were brick places and mansions and street after street of comfortable bouses. People thronged the avenues and marketplaces; in hundreds of workshops artisans turned out all manner of goods, from pottery to sparkling jewelry. On holy days, processions of the worshipful wound through the streets to the temples. What had happened in this land the Greeks later called Mesopotamia, 'between the rivers', was the most crucial event in human history: the birth of civilization" (p. 1).

Clearly, the city has also played a critical role in the economic development of a country or region. The grandfather of economics, Adam Smith (1776), has already drawn attention to the strategic position of cities, as exemplified by the following quotation on Italian cities:

"The cities of Italy seem to have been the first in Europe which were raised by commerce to any considerable degree of opulence. Italy lay in the centre of what was at that time the improved and civilized part of the world. The crusades too, though by the great waste of stock and destruction of inhabitants which they occasioned, they must necessarily have retarded the process of the greater part of Europe, were extremely favourable to that of some Italian cities. The great armies which marched from all parts of the world to the conquest of the Holy Land gave extraordinary encouragement to the shipping of Venice, Genoa, and Pisa, sometimes in transporting them thither, and always in supplying them with provisions. They were the commissaries, if one may say so, of those armies: and the most destructive frenzy that ever befell the European nations was a source of opulence of those republics" (p. 406).

Cities seem to be an open intrinsic part of society. And hence they carry all the evils and all the merits of human society. They are a centre of socio-economic interplay, human

* The author is indebted to Patrizia Lombardi who has provided the intellectual input for this paper.

confrontation, political dialectics, and birthplaces of civilization, centres of science and art, and a melting pot of cultures. According to Jane Jacobs (1969), cities generate economic growth inter alia from the disordered order of human interaction. In the urban economics literature, we find the concept of agglomeration advantages, which means that a spatial clustering of economic activities (industries, households, and public services) leads to various types of economies of scale, which cannot be generated elsewhere. Sometimes a distinction is made into localization advantages, urbanization advantages, scale advantages, urban externalities and the like. They all point at the fact that a geographic juxtaposition may lead to win-win situations for all actors involved.

In this paper we start from a positive perspective on the city as an appropriate spatial organization of human activities. On the basis of a typology of different roles of the city, we will then question whether and how the concept of a sustainable city can be employed and operationalized. Next, on the basis of the principles of the cosmonomic philosophy of the Dutch philosopher Herman Dooyeweerd, we will try to create an analytical framework for judging urban sustainability. This result will then be used to test whether multi-criteria methods are appropriate tools for urban sustainability planning. The paper will be concluded with some retrospective remarks.

2. Roles of Cities

Urbanization has become a common spatial organization of human activity world-wide, in both the developing and developed countries. A few hundred years back, only a small portion of a nation's population lived in the city, but at present we observe an average urbanization rate of about seventy percent. The geography of our world has clearly exhibited a major transition towards urban forms of life. Clearly, some authors have questioned this ongoing historical trend by referring to the phenomenon of suburbanization or even de-urbanization. It is of course an undeniable fact that a process of urban sprawl has taken place, but this phenomenon did not destroy urban functions, but on the contrary reinforced urban functions. This spatial distribution only meant that the action radius of the city was increasing, but the people leaving the city centre were in their economic activity still largely - directly and indirectly - depending on central urban functions.

It has to be admitted that city life does not only have positive benefits, but also several disadvantages. A discussion on city life is often witnessing uneasy feelings. O'Sullivan (2000) quotes two authors who express contrasting views on the merits of the city: *"Cities have always been the fireplace of civilization, whence light and heat radiated out into the dark"* (Theodore Parker) and *"I'd rather wake up in the middle of nowhere than in any city on earth"* (Steve McQueen) (p.1). Despite the existence of mixed feelings bout the city, the idea that the city is a 'blessing in disguise' is still prevalent. This has also to do with the great variety of roles cities are able to play. We will mention here a few of such important roles of cities, without striving for an exhaustive list.

Shelter role

The city is offering settlement facilities for numerous people, based on its scale advantages in housing many citizens. Shelter has even become a human right, and cities are able to care for the housing needs of people. From this perspective, cities offer a significant contribution to a sustainable human habitat.

Religious role

In the early biblical history the city was often regarded as the source of evil (Babylon, Nineveh). But in the later history we observe a more positive appreciation of the city. Jerusalem was the seat of King David and the New Jerusalem became even a metaphor for a total re-birth of mankind.

Cultural role

Historically, the city was the place where arts and sciences were flourishing. Venice, Bologna, Padua, Paris, Augsburg, Amsterdam and many other places offer an overwhelming

evidence of the favourable seedbed conditions of an urban way of life for the advancement of culture.

Political role

Democracy was a new type of governance which found its seedbed in the city. And still nowadays political power is largely concentrated in cities and governments have established their premises in cities. De-concentration of physical government facilities (e.g., premises) has never become very successful. Administrative functions are usually executed in capital cities of countries, or at least in cities with a critical political mass.

Economic role

The city is the market place for economic activity. It is also the place where usually products are designed and often manufactured. Furthermore, it is a marketplace where capital is supplied and advisory services are offered. In addition, the city is - as a result of various types of agglomeration advantages - a very efficient way of organizing production and consumption.

Social role

Cities house thousands of people who are through the associative nature of city life able to communicate with a great number of others, intensively or less intensively. But they have a social contact and communication spectrum which far exceeds that of a random distribution of people.

Engineering role

The city is of the cradle of technological inventions and innovations. It brings together craftsmanship, technical expertise, hardware, software and org-ware. As a result, cities are still the breeding places for the genesis of new products and services.

Network role

In an emerging network society cities become more and more the virtual centres of global network forces. The city brings together a triple-C potential: communication, competence and creativeness. Despite doomsday scenarios on the 'death of distance' and on the threats to city life, it is more plausible that cities continue to reinforce their role in local, regional, national and international networks.

The manifold strategic functions of the city have also attracted many negative forces which might erode city life. Congestion, pollution, poor health conditions and criminality are examples of phenomena which exert a threat for survival of the modern city. The world-wide concern on cities has led tot he popularity of the concept of urban sustainability. This will be further discussed in the next section.

3. The Sustainable City

Sustainable development as a general concept has already a long history and dates back to 1987, when the World Commission on Environment an Development (WCED) headed by Gro Harlem Brundtland, published its report under the title 'Our Common Future'. Ever since, a world-wide debate is going on, addressing the concept of sustainable development. Despite political consensus on the importance of this notion, there was no scientific agreement on the definition of this concept. Gradually however, it became clear that sustainability should incorporate at least economic, social and environmental dimensions. This has led to a distinction into economic sustainability (EcS), social sustainability (SS), and environmental sustainability (ES). The various characteristics and their linkages have been clearly outlined by Goodland (1994) and are represented in Figure 1.

Clearly, the distinction into three types of sustainability leads also to a distinction into three classes of objectives, viz. economic objectives (e.g., growth, equity, and efficiency), social objectives (e.g., social participation, cohesion, and cultural identity) and environmental objectives (e.g., biodiversity, carrying capacity, resilience).

It was in the past years increasingly recognized that sustainable development was not only referring to global issues, but also to more manageable policy directions, such as sectors or regions. Hence, notions such as sustainable agriculture, sustainable tourism, sustainable

transport, sustainable regions and sustainable cities came to the fore (see for a broader exposition also Giaoutzi and Nijkamp 1995, Capello et al. 1998 and Satterthwaite 1999).

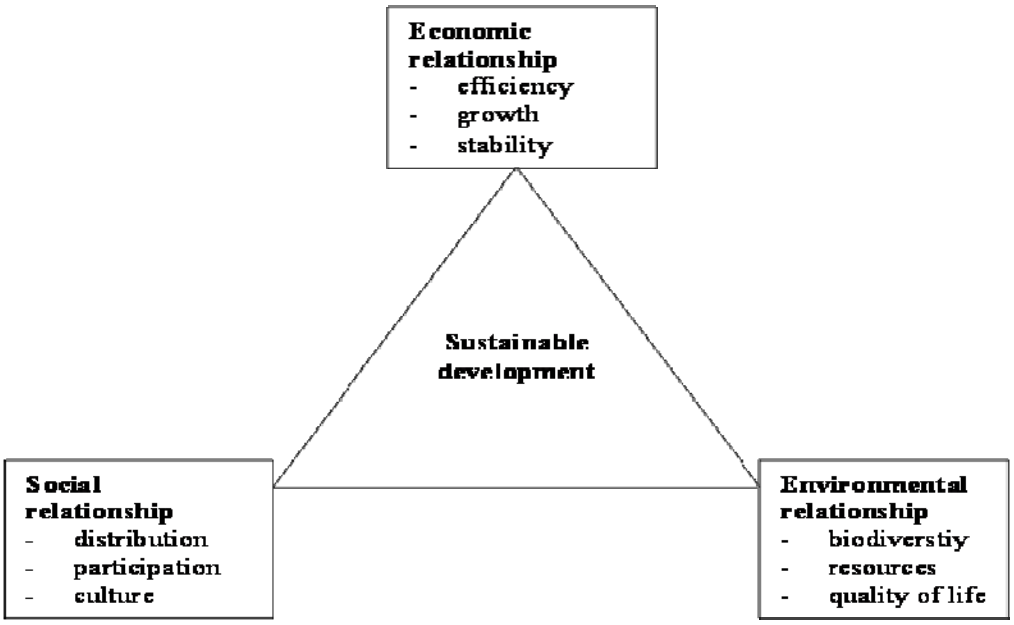

Fig. 1. Description of social, economic and environmental sustainability
Source**:** Goodland (1994, p.277)

In this section we will address in particular the concept of a sustainable city. A sustainable city is more than an environmentally-benign city; it should also fulfil economic goals and act as a home for man. Thus, a sustainable city is based on a symbiosis between various and sometimes conflicting objectives (see also Priemus 1999). It has been extensively argued in Capello et al. (1998) that a city - through its potential for agglomeration advantages - has far more opportunities for sustainable development than dispersed ways of living and working. Examples are environmental benefits from public transport instead of private modes, or energy efficiency for concentration of households. Clearly, there are also bottlenecks as a result of massive densities of people or economic activities.

From an environmental perspective, urban sustainability has also played an important role in recent discussions on urban spatial configurations, such as ‘the resourceful city’, ‘the green city’, ‘the garden city’, ‘the ecological city’, ‘the edge city’ and ‘the virtual city’. Thus far, no unambiguous concept has emerged and, in reality, we observe a parallel development of various contemporaneous urban policy concepts (Nijkamp and Perrels 994). Although it is likely that environmental quality problems may become more severe with urban size, there is no clear evidence that urban size as such causes environmental decay. This is also evident from new developments in smart growth and new urbanism.

Some authors have interpreted a sustainable city in a rather narrow sense by addressing predominantly urban form (for instance, in a compact city perspective, see Jenks et al. 1996) or urban transport (in relation to energy consumption, see Newman and Kenworthy 1989). It should be noted however, that the urban environment is a multi-faceted phenomenon ranging from ‘hard’ pollution indicators to ‘soft’ quality-of-life indicators. The urban environment is, in addition, the playing ground of many conflicting interests, institutionally, sectorally and geographically, so that the concept of the sustainable city is an interesting test case for the notion of ‘civitas’ or civil society (Selman, 1996). This paper will, therefore, adopt a broad perspective on urban sustainability.

It also ought to be recognized that the efficiency of the city in achieving sustainability goals is partly due to the ecological footprint of the city: a significant share of the environmental burden caused by activities taking place in the urban territory is exported to other areas (see also Wackernagel and Rees 1995).

An evident major problem in urban sustainability analysis is the definition and operationalization of proper indicators, e.g., on density, green areas, pollution emission, waste water, energy consumption, waste noise etc. (see also Finco and Nijkamp 2000). Many indicators are used and collected on an ad hoc basis and lack a clear policy and methodological foundation. In various planning evaluation studies, such indicators form the input for a multi-criteria analysis. There may thus be a need for a more rigorous and thorough basis for sustainability indicators. In the next section, we will present some ideas based on the cosmonomic philosophical school.

4. Towards a Methodological Underpinning

The design of a typological framework for mapping out the manifold dimensions of modern city life - and of urban sustainability in particular - is not an easy matter. The development of a theoretical, ontological system as a basis for classifying urban sustainability indicators is fraught with many problems, because of the multiplicity of characteristic aspects involved and the varied nature of all relevant aspects in modern city life. Such a classification should provide a relevant differentiation of key factors and an operational framework for multidisciplinary work in urban planning. The cosmonomic philosophy of Dooyeweerd (1953-1955, 1968), though theoretical in nature, may provide a useful framework for tackling more properly these issues. It is explicitly trans-disciplinary; yet it provides integration rather than fragmentation between disciplines. It may offer a very useful checklist to guide urban development planning, ensuring that not only one, but all aspects of the environmental system and human life, from the numerical to the creedal, be present in urban planning research (Lombardi and Basden 1997). It finally helps to understand the nature of a city in such a way that it not only presents a multi-faceted ideal, but also may be able to provide specific guidance in planning theory and practice (see also Lombardi and Nijkamp 2000).

The theory of Dooyeweerd has been postulated in a number of recent studies related to cybernetics, information systems and organizational learning (see also Basden 1996). It has been studied and developed by other contemporary authors, such as Clauser (1991) and Hart (1984), who illuminated some of its benefits in understanding and explaining how social systems and institutions work. Finally, it has been applied to urban planning and design for understanding urban sustainability in the built environment (Lombardi 1995, 1999, 2001; Lombardi and Brandon 1997; Lombardi and Basden 1997).

This theory proposes a pluralist ontology, in which temporal reality has fifteen aspects or dimensions (named 'modalities'), each of which has a kernel meaning (in brackets): Quantitative (amount), Spatial (continuous extension), Kinematic (movement), Physical (energy and mass), Biotic (life functions), Sensitive (sense, emotion), Analytical (distinction), Historical (including technological-cultural) (formative power), Communicative or Lingual (symbolic meaning), Social (social intercourse), Economic (frugality), Aesthetic (harmony, beauty), Juridical (rights, what is due), Ethical (self-giving love), Pistic-credal (faith, vision, commitment). Each modality in this sequence presupposes the existence of one or more previous modalities thus creating a hierarchical structure.

Each aspect provides a set of 'laws' (including norms and regularities) - e.g. laws of arithmetics, laws of physics, laws of aesthetics, laws of ethics, etc. - which not only guide but also enable entities or species (people, animals, etc.) to function in a variety of ways. The laws of the earlier aspects are more determinative, while those of subsequent aspects are more normative. Although each aspect is irreducible to each other, there are definite relationships between the modalities which define their position. For instance, the economic modality is dependent on the social, the social on the communicative, the communicative on the historical, and so on (Lombardi and Basden 1997).

These relationships between modalities allow an entity (or a system) to function in a coherent rather than fragmented manner. In other words, there are two ways a 'thing' or object may possess properties of a modality: ‘actively’ and ‘passively’. The two functions are not mutually exclusive. All 'things' function simultaneously passively in all the modalities, so that it is only the active functions of certain modalities that a 'thing' may lack and which exhibit the sequential order of appearance noticed above (Hart 1984).

Though each system is subject to the specific law(s) of every modality (either as subject or object), there is one modality that qualifies the system, i.e. it endows the system with its ultimate mission character and uniqueness, distinguishing it from other types of system. The way 'things' of a particular type are ‘qualified’ by its associated modality and are governed by the laws of their qualifying modality, is named their ‘qualifying functions’. The qualifying aspect of a 'thing' is the modality whose laws guide and regulate the internal organization or development of the 'thing' considered as a whole and which the highest aspect is also in the above mentioned sequential order in which the 'thing' functions actively. For example, a rock is qualified by the physical modality, a tree by the biotic, a dog by the sensitive, while a man having all the fifteen modalities active is qualified by the credal one (the highest in the list). It is noteworthy that there is no direct causal link between modalities, e.g. better lingual communication does not automatically bring better social relations (Lombardi and Basden 1997).

Finally, the correspondence between the orders of different modalities allows one modality (named ‘source’) to be used as a metaphoric representation of another or several other modalities (named ‘idiom’). For example, the quantitative modality is often used for explaining the functioning of other systems, such as the social system. Social scientists can then use the laws of mathematics to manipulate aspects related to the social modality or the economic modality and derive conclusions which have been difficult to arrive at without the aid of these laws. However, it is important to note that these conclusions rest upon the laws of the numeric modality and not on the basis of the spatial or social modality. Therefore, while they may be mathematically valid, they need not be necessarily valid in the other spheres. In particular, though every modality can be an ‘idiom’ for another, its effectiveness as an idiom varies and the degree of correspondence declines as the distance between one modality and another increases. Therefore, the numeric modality is not a very suitable idiom for the ethical modality and it would be better to use a closer modality such as the juridical modality.

In the context of spatial development, this ordered structure of aspects may offer a useful classification system for spatial development and a guide for the identification of potential barriers to interaction between regions. It may provide the theoretical underpinning of a new taxonomy of sustainable cities which is able to support decision-making processes and the mapping of qualitative factors in an urban sustainability context. This classification is concisely summarized in Table 1. It provides a systematic and logic design, which is comprehensive, but avoids an overload of unprocessed information. The various items may also constitute the basis for urban sustainability planning. The various elements of Table 1 can be re-grouped for sustainability purposes into 3 major clusters:

A. Spatial-physical: quantitative, spatial, kinematic, physical, biological

B. Socio-cultural: sensitive, analytical, historical, communicative, social

C. Institutional-behavioural: economic, aesthetic, juridical, ethical, creedal

If one takes for granted that this cosmonomic approach offers a comprehensive framework for scientific research, and then also our analytical apparatus should be tested on its ability to meet the above classification. This will be discussed in the next section with a particular view to multi-criteria analysis.

Table 1. **C**lassification of urban roles/functions by means of modality order

Modalities	**Nucleus of meaning**	**Taxonomy of urban roles/barriers (examples)**
Quantitative	Knowledge of 'how much' of 'things'	Low volume of resources Large population size
Spatial	Continuous extension/ expansion	Connectivity potential Spatial distance
Kinematic	Movement, flows	Missing links in traffic infrastructure Opportunities from telecommunication
Physical	Energy, mass	Natural obstacles Due access to energy sources
Biological	Life function	Overpopulation High environmental sustainability
Sensitive	Senses, feelings	Sense of safety Criminality
Analytical	Discerning of entities, logic	Educational and training backlog High skills of network actors
Historical	Formative power, technology and cultural development	Long-term isolated location Distinct evolution of human systems
Communicative	Informative, symbolic representation, linguistic	Language and vocabulary backlog Network externalities
Social	Social intercourse, social exchange	Ethnic segmentation Socio-economic harmony
Economic	Prudence in handling limited resources	Low entry cost to network participation Lack of monetary integration
Aesthetic	Harmony, beauty	Disparities in creative arts Abundance of cultural heritage
Juridical	Retribution, fairness, rights	Harmonization of legal system Administrative and bureaucratic rules
Ethical	Love, moral, code of conduct	Internal social group protection Political and ideological protection
Credal	Faith, commitment, trustworthiness	Cultural-religious segmentation Work ideology and trust

5. A Multiple Criteria Framework

Multi-criteria analysis has become a useful tool in evaluation and planning studies, also in regard to urban sustainability analysis (see Finco and Nijkamp 2000). In public decision-making, normally a wide range of decisions has to be made without a clear reliance on the market system. This is partly caused by the nature of choices in the public sector (with emphasis on multi-actor participatory democratic modes of decision-making) and partly by the complexity of government projects (with long-lasting and often uncertain implications). And it is indeed increasingly recognized that decisions based on market forces alone do not necessarily lead to optimal results. In the context of urban policy, structural market failures as well as

unexpected external factors may need a policy system that ensures an improvement of socio-economic and environmental conditions.

In the past, several methods have been developed and applied in policy analysis, in which a market evaluation played a prominent role. The most well-known example of such a market evaluation method is based on cost-benefit analysis (as an operational application of welfare theory). This method forms the foundation for many policy assessment methods and has been successfully applied in many case studies in the public sector. Despite its great many merits, it is increasingly recognized in modern policy analysis that is also has severe limitations, because not all relevant welfare implications of public sector initiatives can be expressed using the 'measurement rod of money' (Nijkamp et al. 1991).

Cost-benefit studies seem to be most applicable and appropriate if the decision concerns a well-demarcated and a priori precisely defined project which does not generate many unpriced or qualitative externalities. If however, the decision concerns a more general policy programme (of which the details and even sometimes the major features are unknown), then the translation of the impacts into precisely measurable and quantitative consequences and subsequently into monetary figures is often rather problematic. Similarly, if a public investment is likely to generate a wide diversity of social costs (e.g. landscape destruction, loss of safety, health effects, loss of biodiversity or rare species, destruction of archaeological sites); it is often a heroic research task to come up with reliable figures that are broadly accepted in the policy area. This does not mean that cost-benefit analysis would have to be discredited; but it would have to be complemented with more appropriate evaluation tools.

As a response to the shortcomings of conventional evaluation studies, a great diversity of modern assessment methods has been developed over the last 10 years in order to extend the range of and to provide a complement to conventional cost-benefit analysis and to offer a perspective for procedural types of decision-making in which various quality aspects are also incorporated. Many of these methods simultaneously investigate the impacts of policy strategies on a multitude of relevant criteria, partly monetary, partly non-monetary (including qualitative facets). They are often coined multi-criteria methods and are also known as multi-assessment methods (Nijkamp 1999).

It is noteworthy that, in the past few years, an avalanche of assessment and evaluation studies has been undertaken in the regional, transportation and environmental field, but unfortunately, an integral study and a systematic comparison of findings of previously undertaken assessment studies has proven to be difficult due to different analytical approaches and differences in presentation. Several problems underlying a decision-making process in an urban sustainability context have to be coped with, such as:

- the relevant urban information or available data always contain a component of uncertainty;
- the data or information may be stored in different statistical data bases that may be difficult to access, manipulate, compare and study;
- a large set of often conflicting urban objectives or targets has to be taken into account;
- the decision-making process itself might be influenced by power relations or selfish motivations of urban stakeholders; and
- a decision-making process has to take place within the shortest time possible to avoid countervailing effects from the side of various urban actors.

The above considerations highlight that the policy objective of urban sustainability is not unambiguous, but may lead to conflicting actions. Is it possible to devise a decision support system that is able to shed clear light on this difficult issue? The answer to this question may be given by referring to conflict management techniques development in the multi-assessment literature. The existence of multiple objectives means that, in a given societal setting, the best possible alternative or policy has to be determined that also creates sufficient public acceptability or at least social feasibility. In other words, the basic question is: how to determine the optimal policy?

It is generally accepted nowadays that most decisions - certainly in the public domain - can be typified as multiple objective or multi-criteria problems (Janssen 1991, Nijkamp et al. 1991, Beinat and Nijkamp 1998). This means that an optimal - or most acceptable - compromise

alternative from a set of competing alternatives has to be identified which best satisfies a number of - often conflicting - objectives or decision criteria. Another complicating factor is that usually in the public policy domain, besides a set of quantitative criteria, qualitative criteria must also be taken into account in a multi-actor decision-making process. Examples are the interest of the biotic and a-biotic environment, the protection of school children, accessibility conditions of the elderly generation, or the risk of criminality in public transport.

As mentioned above, cost-benefit analysis has severe shortcomings when it comes to an operationalization of intangible aspects, so that this theoretically elegant method has often limited applicability. In most public policy evaluation studies, especially the assessment of environmental impacts turns out to be troublesome, since all advantages and disadvantages of policy options would have to be translated into a common monetary unit. Hence, incommensurable criteria of an unpriced and intangible nature cannot be included a decision-making procedure based on a standard cost-benefit analysis. Furthermore, in the current policy practice in many countries there is hardly any applicable and meaningful way of including distributional impacts on welfare (e.g., through a weighting system for different groups) into policy evaluation. Therefore, a proper decision-making tool is needed that is able to handle qualitative and intangible information in a proper way. Consequently, for our analysis of urban sustainability initiatives, it seems useful to resort to multi-criteria analysis (MCA) as a modern decision support method in the public sector and elsewhere.

It also seems plausible that the great many aspects of urban sustainability can meaningfully be checked on completeness, consistency, duplication and internal logic by deploying the classes A to C (and its 15 constituents) from Dooyeweerd's cosmonomic methodology. Clearly, a more rigorous empirical test framework would be needed.

6. Concluding Remarks

Although the city forms the heartland in a modern network society, local or urban sustainability is seemingly a small-scale policy objective in a large world. But it ought to be recognized that it plays a crucial role in the wider context of international climate and environmental policy. Each city has a vast range of policy options ranging from the built environment to public transport, from waste management to energy policy, from information campaigns to efficient water use. The responsibility of local authorities far exceeds the boundaries of their city, as is witnessed by the urban ecological footprint indirect. But the challenge is to bring the issue of the global environment close to the citizen, as he/she is the key actor in any sustainability policy. Local instruments should, therefore, appeal to the individual household and at the same time refer to a broader environment. This idea is also convincingly reflected in the Local Agenda 21 (see also Selman 2000). Urban sustainability management is thus a complex undertaking, as it has to address a formidable number of aspects. In the paper we have tried to offer a novel approach to multi-criteria analysis of sustainability initiatives by referring to cosmonomic philosophical thoughts offering a systematic typology for multidimensional urban planning issues. They offer at least a coherent and rather complete framework for judging and designing a multi-criteria analysis by way of a meta-experiment.

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PROSPECTS OF RENEWABLE ENERGY PRODUCTION IN THE MEDITERRANEAN REGION

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Abstract

The focus of the present paper is on the renewable energy developments in the Mediterranean Region. In the first part is presented the EU policy framework for renewable energy and the targets set for 2020, both at the EU and the member state level. In the second part, are explored the patterns of renewable energy developments in the Mediterranean basin, against the 2020 targets. In the final part, conclusions are drawn on the prospects of the Mediterranean countries for reaching the renewable energy targets for 2020.

Keywords: renewable energy, policy, Mediterranean countries, RE targets for 2020

Introduction

The rapid exhaustion of conventional energy reserves together with the environmental impacts emerging from the combustion of fossil fuels (natural gas, diesel, coal etc.) threaten the sustainability of the whole planet, from an economic (e.g. economic stability due to high and volatile oil prices) but also an environmental point of view (greenhouse effects, global climate change, global warming, resource depletion, etc.).

In coping with the above issues, EU has undertaken certain initiatives, placing emphasis, among others, on the promotion of renewable energy share in the energy mix. EU in general and each member state in particular are committed to reach certain targets, relating to the share of renewable energy (RE) for the year 2020.

In the present paper the focus is on the renewable energy developments of the EU member states in the Mediterranean basin. More specifically, in the *first part* is presented the EU policy framework supporting the increase of RE share in the energy mix, together with the targets set for 2020 both at the EU but also at the member state level. In the *second part* are presented the patterns of renewable energy developments in the EU Mediterranean countries but also the policy impacts towards reaching the mandatory EU targets in 2020. Finally, in the *last part*, some conclusions are drawn as to the emerging prospects of the Mediterranean countries in this respect.

Conceptual Definitions

At this stage, it is worth clarifying certain concepts, used in the renewable energy context, that may promote communication among disciplines involved in the policy making process. More specifically, the following definitions are provided (Directive 2009/28/EC):

- *Energy from renewable sources*: energy produced from renewable non-fossil sources, namely wind, solar, aero thermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases.
- *Gross final energy consumption*: the energy commodities delivered for energy purposes to industry, transport, households, services (including public services), agriculture, forestry

and fisheries, including also the energy sector (electricity and heat consumption by the energy sector for electricity and heat production purposes) and the losses of electricity and heat during the distribution and transmission phase.

- *Gross inland (energy) consumption (GIC)*: the total quantity of energy needed to satisfy the inland consumption of a geographical entity (total energy demand). It is calculated by adding *primary production*, plus recovered products, plus net imports, plus stock changes, minus exports, minus bunkers (i.e. quantities supplied to sea-going ships).Gross inland energy consumption incorporates:
  - ✓ consumption by the energy sector itself;
  - ✓ gross final energy consumption by the end users;
  - ✓ distribution and transformation losses;
  - ✓ 'statistical differences' not already captured in the figures on primary energy consumption and final energy consumption.
- *Primary energy production*: refers to the extraction of energy from natural sources. The precise definition depends on the type of energy source involved. In case of renewable energy sources it holds:
  - ✓ Hydropower, wind and solar photovoltaic energy: quantity of electricity generated by hydro, wind and solar RES. Production is calculated on the basis of the gross electricity generated and a conversion factor of3600 kJ/kWh.
  - ✓ Geothermal energy: refers to the quantity of heat extracted from geothermal fluids. Production is calculated on the basis of the difference between the enthalpy of the fluid produced in the production borehole and that of the fluid disposed of via the re-injection borehole.
  - ✓ Biomass / wastes: corresponds to the heat content (NCV) produced by the combustion of municipal solid wastes (MSW), wood and other solid wastes. Incase of anaerobic digestion of wet wastes, the production refers to the heat content (NCV) of the biogases produced. In case of biofuels, the production refers to the heat content (NCV) of the fuel.
  - ✓ Biofuels: liquid or gaseous fuel for transport produced from biomass.
  - ✓ Bioliquids: liquid fuel for energy purposes other than transport, including electricity as well as heating and cooling, produced from biomass.
- *Tone of oil equivalent (toe)*: conventional standardized unit for measuring energy, defined on the basis of a tone of oil with a net calorific value of 41 868 kilojoules/kg.

Policy Framework for the Promotion of Renewable Energy in the EU

The impacts of human activities on climate change have raised the issues of environmental responsibility of states and the need for their active participation in the efforts to mitigate quantity of greenhouse gases, as being the key contributor to global climate change (Meyer and Koefold, 2003).

In this respect, two important initiatives have been undertaken, namely the United Nations Framework Convention on Climate Change and the Kyoto Protocol (1997). The later has been widely debated as *'a controversial initiative'* (Strachan et al, 2006:2), setting, to the states signing the protocol, quantitative targets for six greenhouse gases, in respect to the pollution levels of 1990, with CO_2being the most important among them.EU is considered to play a protagonist role in the global mitigation efforts along the lines of the Kyoto Protocol, undertaking the task to reduce greenhouse gases by 8%, during the period 2008-12, with base the 1990 levels.

At the same time, the *energy consumption patterns* in Europe are expected to raise in the future (EC, 2004). This entails a relative increase in energy imports (expected to reach 70% in 2020 – COM (2000)769], as Europe is largely dependent on outward resources in order to meet this demand. These increasing consumption patterns, apart from the environmental impacts and

their preventing role to the EU efforts to fulfil its international commitments, also put at stake the energy security and cost-competitiveness of energy production in Europe.

In order to meet the Kyoto commitments but also pursue the key objectives set for a secure, competitive and environmentally friendly energy production system at the EU level [COM (1995)682], EU has stimulated renewable energy production, by exploiting the abundance of renewable energy resources appearing in its territory (biomass, wave, tidal, solar and wind resources).

Towards this end, EU policy efforts are supporting technology programmes (e.g. ALTENER Program); set political targets (e.g. 12% RE in 2010); and enact sector-specific legislation (e.g. Directives for electricity, biofuels etc.).The *key steps* of the EU energy policy for promoting the key objectives set for a secure, competitive and environmentally friendly energy production system are presented in the following sections.

EU Renewable Energy Targets for 2010

The dependence of the EU states, on energy imports, is rapidly increasing and brings forward a number of issues, relating to the: geopolitical risks and security of supply; implications for balance of trade; economic instability; environmental consequences, etc. In order to deal with the above issues, is acknowledged by the countries the need to further exploit their renewable energy potential and increase its share to the Union's overall gross inland energy consumption. This will further enhance development perspectives of the European regions and their potential to combat the greenhouse effects [COM (1997)599].

The dependence of the EU energy system on external resources is, among others, also stressed in the Green Paper on 'European Strategy for the Security of Energy Supply' [COM (2000)769]. This affects, in a varying degree, the member states, according to the level of reliance, of their energy systems, on external energy resources.

In the Green Paper is also stressed the burden of both transport costs and transit requirements placed by the distance of the EU markets from the external energy suppliers, upon which it is based. This implies additional costs and involves certain environmental risks. As a result, by increasing the share of RE in the EU energy production systems the above problems may be reduced, while the proportion of RE in the energy balance will largely depend on their connectivity to the grid network and their competitiveness in the emerging decentralized production pattern [COM (2000) 769]. The key priorities, set in this respect, refer to both the control of energy demand and the management of supply, where renewable forms of energy are of first priority.

In 1997, with the adoption of the White Paper on the 'Energy for the Future: Renewable Sources for Energy, the EU strategy on renewable energy has been formulated. The aim of this strategy has been twofold: first to cope with the growing dependence on fossil fuel imports from politically unstable regions outside the EU; and second to de-carbonise the energy sector, for improving environmental performance [COM(1997)599]. Towards this end, emphasis is placed on both the strengthening of the share of renewable energy in the EU energy production systems, but also on the role of national efforts and respective strategies of the member states, pursuing renewable energy objectives in alignment with the EU objectives.

The formulation of indicative targets is of importance as a guideline but also as a policy tool, for both the EU and the member states, providing a *'clear political signal and impetus to action'* [COM (1997) 599: p. 10]. In this respect, it was set the target of doubling the share of RE in the total EU gross final energy consumption from 6% in 1997 to *12% in 2010*, and in particular with the *22,1% indicative share of electricity* produced from renewable energy sources in the total Community electricity consumption by 2010 (Directive 2001/77/EC) (see Table 1).

In Table 2 below are shown the targets set as well as the average annual growth rate of energy production from RES, needed for the EU-15, in order to meet the targets set by the Directive 2001/77. Each member state should propose its contribution to the overall EU target

by 2010; and define the related state strategy and national action plans that encourage the increase of RE share, based on the availability and potential of local RE sources.

Table 1: Energy production from RES in EU-15
Source: COM (2001)69 final

Year / Index (%)	1995	1996	1997	1998	Target 2010
Primary production of RES	10.0	10.0	10.8	11.3	-
Share of electricity of RES origin	13.8	13.5	14	14.2	**22.1**
Gross inland consumption of RES	5.3	5.4	5.8	5.9	**12.0**

Table 2: Targets for the promotion of RE-electricity set in the Directive 2001/77/EC
Source: EREC, 2008

Year / Type of Energy	1997 (Eurostat) TWh	2001 (Eurostat) TWh	AGR* (1997-2001) %	Directive Targets **2010** TWh	AGR* needed (2001-10) %
Total renewable energy (RE)	338.3	408.5	4.8	675	5.7
Total consumption of electricity	2426	2671	2.4	3068	1.6
Share of RE %	13.9	15.3	-	**22.1**	-

*AGR: Annual Growth Rate

National targets of the Member states for the share of RE in the overall electricity consumption are shown in Table 3 below for the EU-15.

Sectoral targets set for each specific RE sector are also presented in Table 4 below. As can be seen, it is clear that wind energy is far beyond the target, while the other types of energy (hydro, geothermal and photovoltaic) are in line with the expectations of the White Paper (EREC, 2008).

Table 3: Reference values for member states for fixing national indicative targets as to the share of RE to the gross electricity consumption[1] in 2010 (EU-15)
Source: Directive 2001/77 (p. 39)

Renewable Energy / Member State (EU-15)		RES-E[2] 1997*	RES-E** 1997 %	RES-E** 2010 %
1	Belgium	0.86	1.1	6.0
2	Denmark	3.21	8.7	29.0
3	Germany	24.91	4.5	12.5
4	Greece	3.94	8.6	20.1
5	Spain	37.15	19.9	29.4
6	France	66.00	15.0	21.0
7	Ireland	0.84	3.6	13.2
8	Italy	46.46	16.0	25.0
9	Luxemburg	0.14	2.1	5.7
10	Netherlands	3.45	3.5	9.0
11	Austria	39.05	70.0	78.1
12	Portugal	14.30	38.5	39.0
13	Finland	19.03	24.7	31.5
14	Sweden	72.03	49.1	60.0
15	United Kingdom	7.04	1.7	10.0
	EU	338.41	13.9 %	**22.1 %**

**National production of RES-E in 1997.*
*** Share of RES-E in 1997 and 2010 are calculated by dividing national production of RES-E by the gross national electricity consumption.*

Table 4: Renewable energy sector-specific targets for 2010
Source: EREC, 2008

Year / Type of RE	1995 (Eurostat)	2001 (Eurostat)	AGR* (1995-2001) %	Targets **2010** White Paper[3]	AGR* needed (2001-10) %
Wind	2.5 GW	17.2 GW	37.9	40 GW	9.8
Hydro	87.1 GW	91.7 GW	0.9	100 GW	1.0
Photovoltaic	0.04 GWp	0.26 GWp	36.6	3 GWp	31.2
Biomass	44.8 Mtoe	56.5 Mtoe	3.6	135 Mtoe	10.3
Geothermal	2.72 Mtoe	3.43 Mtoe	3.9	5.2 Mtoe	4.7
Solar thermal	6.5 Mio[4] m^2	11.4 Mio m^2	9.8	100 Mio m^2	27.2

*AGR: Annual Growth Rate

Emphasis is placed also by the EU on strengthening the presence of *liquid biofuels*, by increasing their share in the EU transport fuel market. The aim of this action is twofold:

[1] Gross (national) electricity consumption or consumption of electricity: refers to the national electricity production, including auto-production, plus imports minus exports (Directive 2001/77).

[2] 'RES-E' is the share of renewables in gross electricity consumption.

[3] Presents estimates of a particular RES development scenario towards achieving the indicative target of 12% share of renewables in 2010 in EU [COM (1997) 599 – White Paper "Energy for the Future: Renewable Sources of Energy'].

[4] 'Mio m^2' stands for million square meters.

- First to deal with the unpredictability of oil prices in the short/medium term and the finite oil reserves by reducing dependence of the EU countries on imported energy, and increasing the share of biofuels' production in Europe [COM(1997)599]; and
- Second, to deal with the reduction of environmental impacts from conventional transport fuels, taking also into account the increasing demand for transport and the respective emission patterns, in the EU. The intensified use of biofuels for transport refers also to the policy efforts required for complying with the Kyoto Protocol.In this respect, the *Biofuels Directive*(2003) has set the "reference values" of 2% market share for biofuels in petrol and diesel consumption in 2005 and 5.75% share in 2010 (Table 5below) (Biofuels' Directive 2003/30/EC). All member states have the same target.

Table 5: Targets for biofuels' share in 2010
Source: EREC, 2008

Year / Type of energy	1997 (Eurostat) Mtoe	2001 (Eurostat) Mtoe	AGR* (1997-2001) %	Directive Targets **2010** Mtoe	AGR* needed (2001-10) %
Biofuels	0.27	0.68	20.2	17	5.7
Gasoline & oil demand	237.7	256.5	1.5	295.8**	1.6
Share of biofuels (%)	0.1	0.26	-	**5.75**	-

*AGR: Annual Growth Rate
** Trends to 2030 - EC

The progress towards reaching the 2010 *target of 12%*share of RE in the total EU gross final energy consumption shows that the target will not be met, despite the fact that renewable energy from various sources has increased by 55% in absolute terms [COM (2011)31]. This is mainly due to the following reasons [COM (2006) 848, COM (2011) 31]:

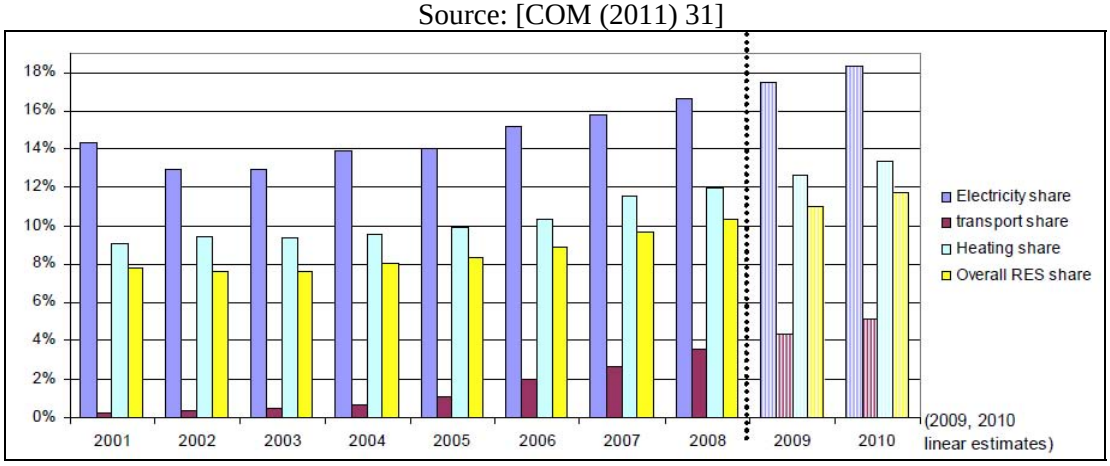
- Low cost-competitiveness of RE as compared to fossil fuels, due to limited internalization of external costs in market prices of fossil fuels;
- Unclear and discouraging procedures for planning, building and operating systems, mainly due to the inspected complexity, novelty and decentralized nature in RES;
- Opaque and discriminating rules for getting access to the grid but also limited information at almost all levels;
- Limited effectiveness of national efforts (policies) to contribute to the overall EU target;
- 'Loose' legislative framework and absence of legally binding targets at the EU level;
- Absence of legal framework as to the energy saving (energy efficiency) that has resulted to a certain increase of the overall EU energy consumption;
- Weak legal framework for the use of renewables in the transport sector;
- Complete absence of legal framework for the heating and cooling sectors;
- Vulnerability of national policies to changing political priorities, etc.

Nevertheless, the progress achieved during 2001-2008 indicates a small divergence from the 2010 targets (see Fig. 1 below).

The 2010 - *target of 22.1% share of RE* in the gross electricity consumption, is also not expected to be met, apart from a few member states, namely Denmark, Germany, Hungary, Ireland, Lithuania, Poland and Portugal [COM(2011)31]. Nevertheless, commitment of member states to national targets has led to partial achievements that contribute to the overall EU target. More specifically a 19% of RE share in the EU overall electricity consumption will probably be achieved by 2010, which is not far away from the EU target set (see Fig. 1 below).

The contribution of wind energy in electricity production exhibits considerable progress. The same holds for the contribution of biomass, which exhibits a considerable growth from 7% in the past years to 13% in 2003 and 23% in 2005 (EREC, 2008).

Fig. 1: Sectoral and overall growth of RE in the EU
Source: [COM (2011) 31]



As to the biofuels' share, only 1% is reached in 2005, representing half of the target set for this year (2% share) [COM (2006)848]. In respect to the 2010 target (5.75% share), it is very unlikely to be achieved, based on the present policy framework and the efforts of the member states (see Fig. 1above).According to the EC Communication of 2011 [COM (2011) 31], from all EU member states, Austria, Finland, Germany, Malta, Netherlands, Poland, Romania, Spain and Sweden are the only ones expected to achieve their targets for renewable energy in transport in 2010.

EU Renewable Energy Target for 2020

Until2008, the development of RES in the EU was driven by a loose legislative framework, setting indicative, non-binding targets that aimed at introducing a new spirit in energy production, in order to meet the objectives and global commitments of the EU. The basis of this framework was the "Renewable Electricity Directive" in 2001and the "Biofuels' Directive" in 2003. Based on the national targets, EU would have been able to reach, by 2010, a share of renewable energy of 12% in the total EU final gross energy consumption; of 22.1% in electricity generation and finally a share of renewable energy of 5.75% in replacing petrol and diesel in transport.

In 2006, EU sets out a *long term vision* for the EU energy future beyond 2010, based on further exploitation of renewable energy in its territory. In this vision, expressed through the EU Renewable Energy Road Map [COM (2006) 848], it is proposed the establishment of:

- *A mandatory, legally binding target* of reaching a *share of 20% of renewable energy* in total final gross energy consumption in EU for the year 2020. Fulfillment of this mandatory target was expected to affect positively greenhouse gas emissions; increase security of the EU energy system by decreasing dependence on imported energy; motivate private investments in the RE sector, but also support regional development at a European level. For reaching this target it is required that all member states undertake action for the increase of their contribution to the EU overall target, by promoting renewable energy in the electricity, transport, heating and cooling sectors in their territories.
- *A mandatory, legally binding target* of *10% share of biofuels* in the overall consumption of petrol and diesel in transport in 2020. This can be seen as a minimum target, taking into account the availability of sustainably produced feed stocks, car engines and biofuels production technologies [COM (2006) 848].

The above targets seem to be rather realistic as it is exhibited, by renewable energy projections to 2020, for the member states (Fig. 2 below). In almost half of the Member States (Austria, Bulgaria, Czech Republic, Denmark, Germany, Greece, Spain, France, Lithuania, Malta, Netherlands, Slovenia and Sweden) targets seem to be exceeded, while a certain surplus

is also calculated. Italy and Luxembourg seem to lag behind, with the remaining demand to be covered by "imports". These are in the form of 'statistical transfers' from Member States with surplus or other third countries [COM (2011)31]. If all these production projections are met, the overall share of renewable energy in the EU will exceed the 20% target in 2020 [COM (2011)31].

Fig. 2: Development of renewable energy in electricity in EU up to 2020 (projections)
Source: COM(2011)31

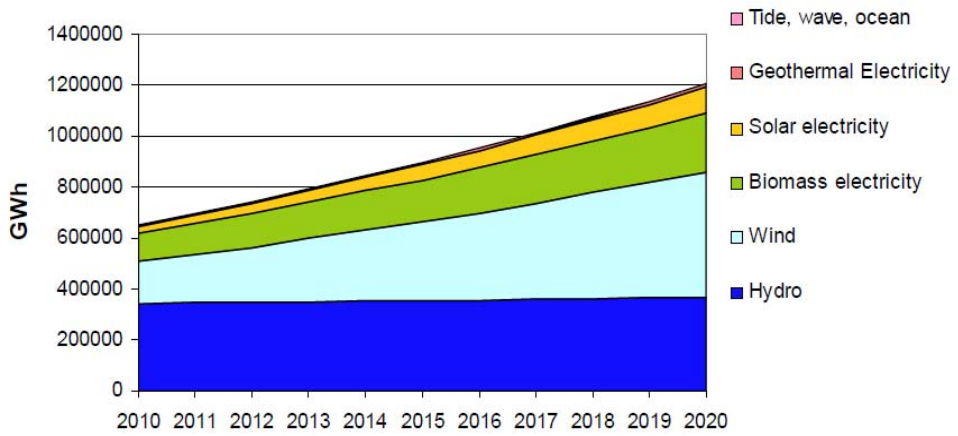
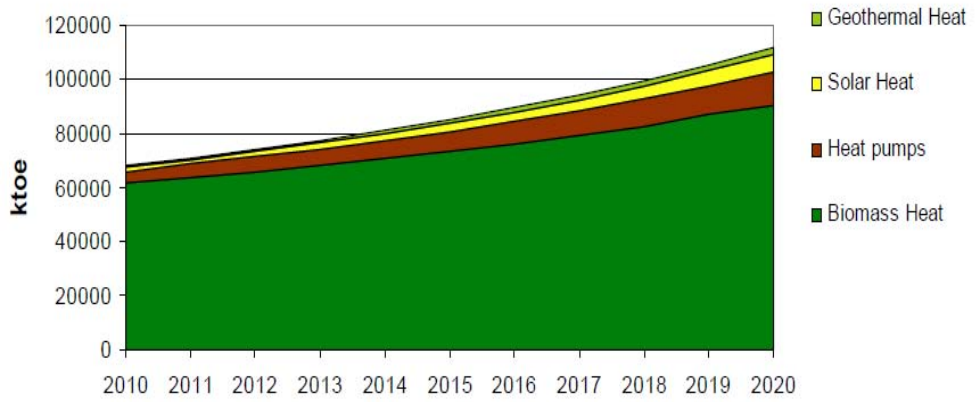


Fig. 3: Development of renewable energy in heating and cooling in EU up to 2020 (projections)
Source: COM (2011) 31



Moreover, projections to 2020 of renewable energy in heating and cooling in the EU show that biomass technology exhibits 50% contribution in energy production up to 2020(Fig. 3) (half for heating, one third for transport and the rest for electricity) [COM(2011)31].

The failure of many member states to reach the EU 2010 targets and the experience gained so far, has motivated the shift of the focus of the EU energy policy framework beyond 2010. Based on the vision expressed through the EU Renewable Energy Road Map [COM (2006) 848], the Renewable Energy Directive of 2009 (Directive 2009/28/EC) has been enacted. In this Directive it was set the EU energy policy framework towards 2020. The key issue in this Directive, is the shift from 'indicative targets for the electricity and transport sectors' to 'legally binding, mandatory EU 2020 targets', as it was proposed by the EU Energy Road Map, supported by a comprehensive legislative frameworkincorporating 'electricity, transport, heating and cooling sectors'.

In the new EU Directive for renewable energy, member states are enforced to develop specific National Renewable Energy Action Plans (NREAPs) and take responsibility for

contributing to the overall EU mandatory renewable energy targets in 2020, based on their specific potential and starting point of RE production.

In the NREAPs, each member state shall set out national targets for the share of renewable energy in transport, electricity, heating and cooling in 2020. Moreover, they are committed to reform their energy planning regimes; further develop the electricity gridsin order to accommodate renewable energy produced; and support innovative actions in order to further facilitate the development of the renewable energy sector [COM(2011)31]. Also, they have to ensure that the share of renewable energy, calculated in accordance with the 2009/28 Directive instructions, is at least equal to the national overall target set in 2020 (Directive 2009/28/EC).

The new Renewable Energy Directive, put in force in 2009, represents a strong and stable regulatory framework for the development of renewable energy in Europe. It lays down legally binding rather than indicative national targets, such that the EU achieves a *20% share of renewable energy* in gross final energy consumption and *10% share of biofuels* in transport by 2020 (Directive 2009/28/EC). Moreover, it lays down rules relating to 'statistical transfers' between member States, joint projects between Member States and with third countries, guarantees of origin, administrative procedures, information and training, access to the electricity grid for energy from renewable sources, etc., while it establishes sustainability criteria for biofuels and bioliquids (Directive 2009/28/EC). Finally, it introduces the enforcement of National Renewable Energy Action Plans, presenting the legal requirements of member states in support of renewable energy production, which constitute the cornerstones for a more promising RE future of the EU, reaching the ambitious targets set for 2020.

Patterns of Renewable Energy Developments in the Mediterranean Basin

The present paper elaborates on the patterns of renewable energy development in the EU member states of the Mediterranean basin. The scope of the study is to identify trends by exploring past developments in the sector as well as planned renewable energy development patterns, reflecting the efforts of member states in the period 2010-20 to reach the 2020 mandatory RE targets.The countries considered are Greece, Spain, France, Italy, Cyprus, Malta and Slovenia(see Fig. 4 below).

Fig. 4: The Mediterranean basin study region (Cyprus, France, Greece, Italy, Malta, Slovenia and Spain)
Source: http://www.res-legal.de/index.php?id=1&L=1

Based on their NREAPs, the following mandatory national targets per sector for 2020 are set (Table 6):

Table 6: National targets for 2020 based on the NREAPs of the member states
Source: Member States' NREAPs

Type / Country	Electricity		Heating & Cooling		Transport		Share of RE Overall targets in gross final energy consumption in 2020 (%)
	2005[5] share (%)	2020 NREAP (%)	2005 share (%)	2020 NREAP (%)	2005 share (%)	2020 NREAP (%)	
Cyprus	0,0	16,0	9,1	23,5	0,0	4,9	13,0
France	13,5	27,0	13,6	33,0	1,2	10,5	23,0
Greece	8,03	39,8	12,76	19,7	0,02	10,1	18,0
Italy	16,29	26,39	2,80	17,09	0,87	10,14	17,0
Malta	0,0	13,8	0,0	6,2	0,0	10,7	10,0
Slovenia	28,5	39,3	20,0	30,8	0,3	10,5	25,0
Spain	18,4	40,0	8,8	18,9	1,1	13,6	20,0

The variables used in this context are the following: gross final energy consumption; share of renewables in gross final energy consumption; primary renewable energy production; share of renewables in the electricity production; and the share of renewables in the transport sector. The main data *sources* used are:

- EUROSTAT: data on the past developments of the above variables,in the Mediterranean countries, for the period 1990-2009; and
- The National Renewable Energy Action Plans (NREAPs) for the study region, for the period 2010-20(projections based on the 'additional energy efficiency' scenario[6]).

Sectoral analysis includes the study of past and planned (NREAPs) developments in the EU Mediterranean countries on the following energy-related topics:

- Gross final energy consumption for exploring developments of consumption patterns;
- Share of renewables in the gross final energy consumption (overall EU target for 2020: 20%).
- Primary renewable energy production in the Mediterranean;
- Share of renewables in the electricity production;
- Share of renewables in the transport sector that explores the contribution of renewable energy in biofuels' production in the study region (EU target for 2020: 10%).

Gross Final Energy Consumption in the Mediterranean

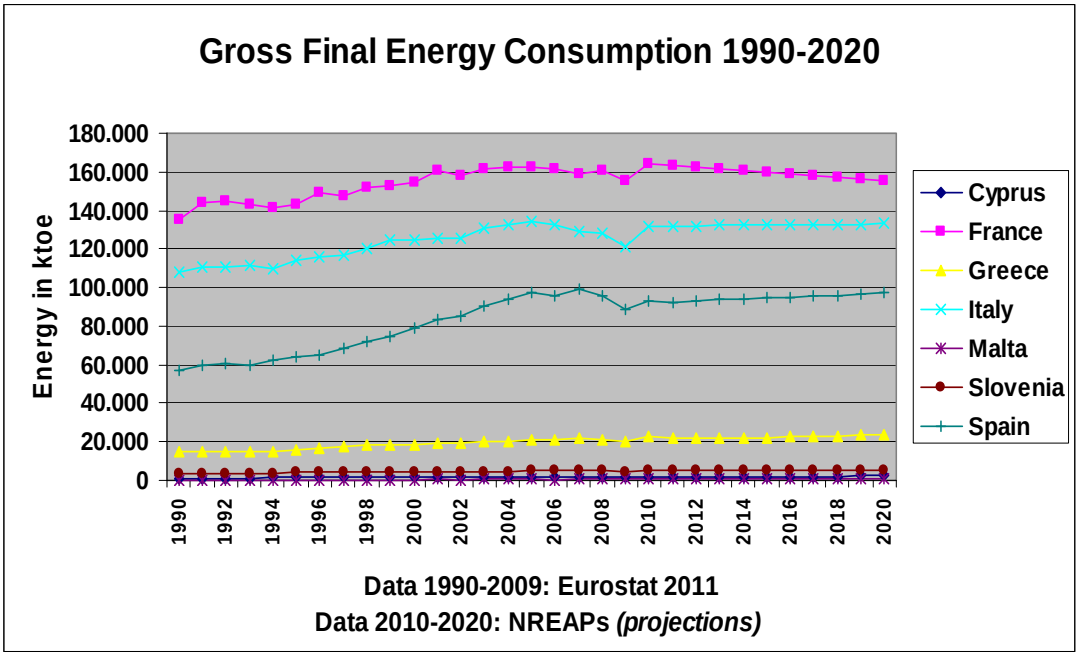
EUROSTAT data shows that the gross final energy consumption in the study region exhibits a diverse pattern of development over the period 1990-2009 (Fig. 5). Most of the countries present both upward and downward trends. France, Italy and Spain exhibit higher fluctuations from 1990to2009, while for the period 2010-20, a certain stabilization or even decrease in energy consumption pattern is planned (e.g. France). Greece and Cyprus, with a few exceptions, exhibit a steadily increasing trajectory in energy consumption, although this tends to stabilize in the period 2010-20, as predicted in their NREAPs. Malta is also exhibiting several ups and downs in the period 1990-2009, while in the decade 2010-20 an increasing pattern of energy consumption is planned in its NREAP.

[5] Year 2005: renewable energy base year for scenario building towards meeting the mandatory targets in 2020.

[6] '*Additional energy efficiency' scenario*: scenario based on the projection of various energy-related issues, common for all EU member states, in order to estimate the development of the renewable energy sector in 2020in the EU member states, taking into account all additional energy efficiency measures to be adopted from 2009 onwards.

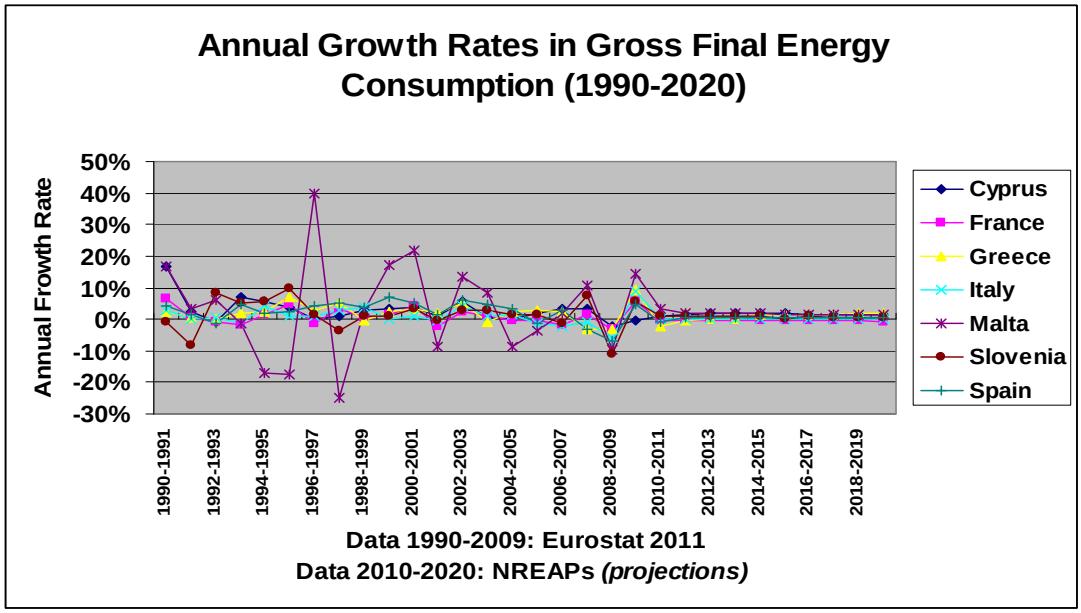
In general, all NREAPs of the Mediterranean countries are heading to stabilized energy consumption patterns for the years 2010-2020, based on policy interventions for rational use and saving of energy (see Fig. 5).

Fig. 5: Gross final energy consumption 1990-2020
Source: EUROSTAT and NREAPs data, own elaboration



As to the annual increase rates in gross energy consumption, most countries exhibit certain stability, with converging among countries ups and downs, apart from Malta, which exhibits irregular patterns of average annual rates in gross final energy consumption, with considerable peaks (Fig. 6). More specifically, during 1990-2009, Malta, Cyprus, Spain and Greece exhibit the highest average annual rates in gross final energy consumption (3.21%, 2.95%, 2.56%, and 2.21% respectively), followed by Slovenia, Italy and France (1.54%, 1.06% and 1.01% respectively).

Fig. 6: Annual growth rates in gross final energy consumption (1990-2020)
Source: EUROSTAT and NREAPs data, own elaboration

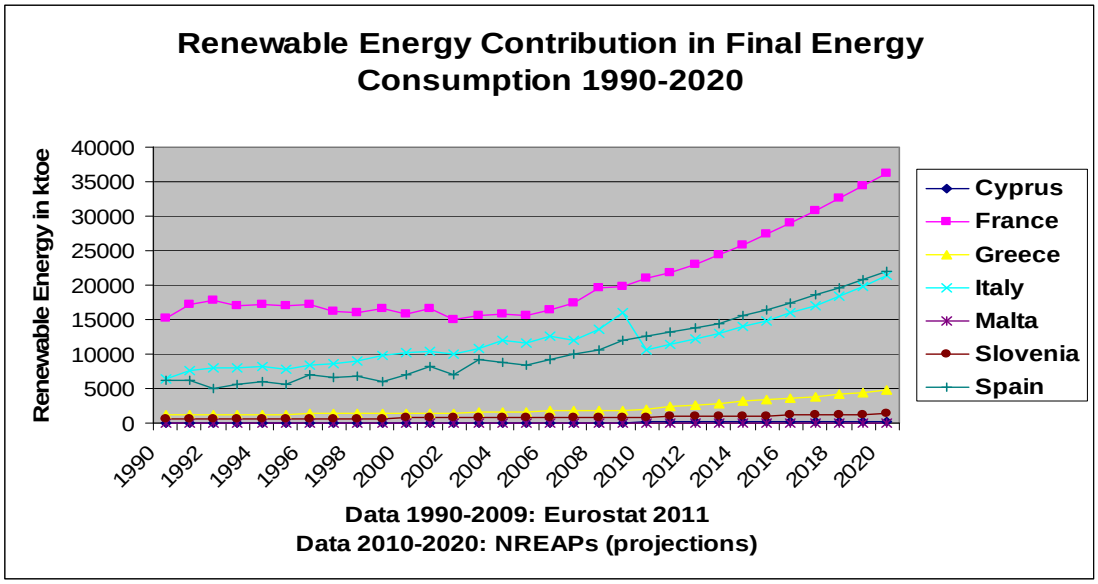


During 2010-20, average annual growth rates in gross final energy consumption exhibit a steadily decreasing trajectory in all Mediterranean countries, reflecting their efforts for rational use of energy and energy saving. Only France exhibits steadily decreasing negative average annual growth rates, implying a year by year decrease of the final energy consumption in the period 2010-20. In the rest of the Mediterranean countries, it is noticed a decrease in the average gross annual rates in final gross energy consumption, which nevertheless remain positive. This implies that final gross energy consumption in these countries is still increasing in this period, but at lower pace, based on lowering energy consumption policies.

Share of Renewables in Gross Final Energy Consumption in the Mediterranean

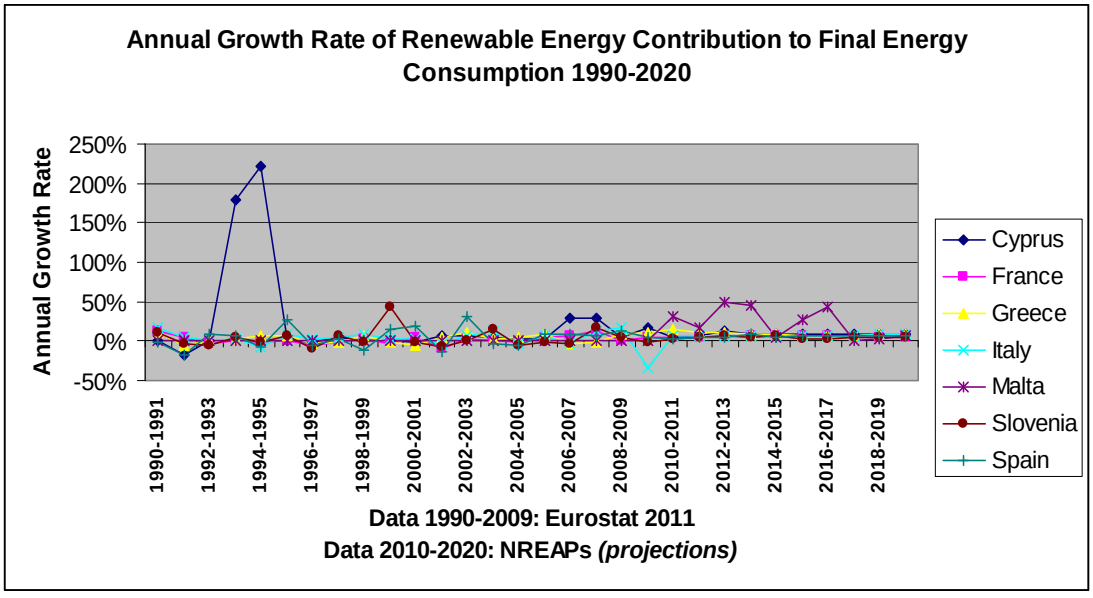
The share of renewable energy in the final energy consumption in the EU Mediterranean countries, based on the EUROSTAT and RERISK Project data, seems to follow an increasing pace during 1990-2009, with countries exhibiting diversified efforts in this respect (Fig. 7). The only country with zero share of RE in this period is Malta (0% share of renewables). Cyprus has made a quite remarkable progress, Italy, Spain, Slovenia and Greece have also considerably raised their share of RE in the final energy consumption, while France follows.

Fig. 7: Renewable energy contribution in final energy consumption
Source: EUROSTAT and NREAPs data, own elaboration



The annual growth rates of the share of renewable energy in the final gross energy consumption, for the period 1990-2009, are exhibiting a rather unstable trajectory in the Mediterranean countries, with sharp peaks (ups and downs) during the whole period (see Fig. 8).Exception from the above is Malta, where the share of RE is zero (no renewables in Malta's final gross energy consumption).

Fig. 8: Annual growth of renewable energy contribution to final energy consumption
Source: EUROSTAT and NREAPs data, own elaboration



When average annual growth rates are considered, Cyprus is at the top, exhibiting an average annual growth rate of 24.34%, which reflects the remarkable efforts undertaken by Cyprus at this period. Spain, Greece, Slovenia and Italy follow, at a distance, with average annual growth rates of 4.40%, 3.27%, 3.18% and 3.15% respectively. Last comes France, with average annual growth rate of RE at 1.75%, that reflects the starting point (share of RE in gross

final consumption at the beginning of the period) as compared to the rest of the Mediterranean countries.

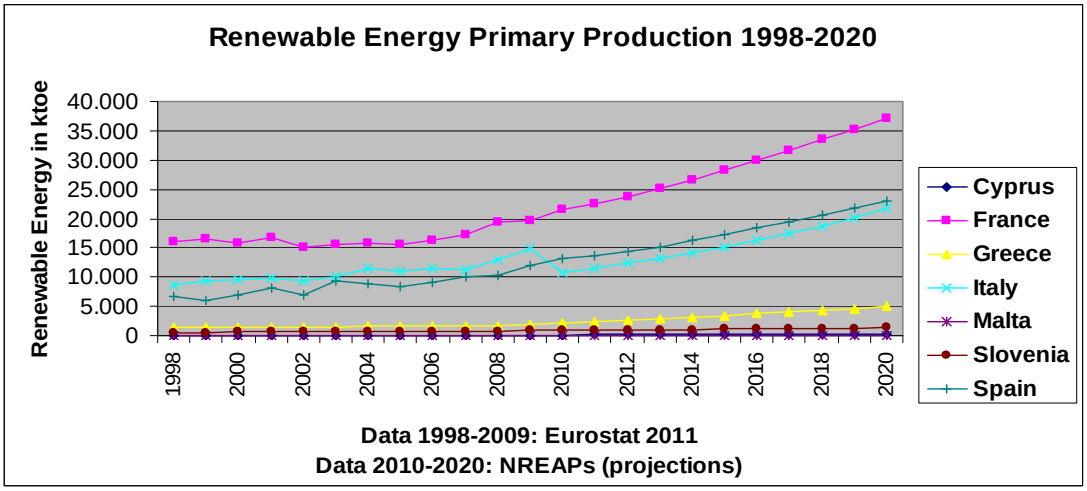
The planned renewable energy contribution to the final gross energy consumption for the period 2010-20, indicates that more dedicated efforts are requested from the Mediterranean countries. More specifically, Malta should follow a very quick pace with average annual growth of RE in final energy production of 22.77%, which is the largest among the Mediterranean countries. It follows Greece and Cyprus (9.06% and 8.75% respectively), while last come Italy, Spain, France and Slovenia (7.31%, 5.69%, 5.62% and 4.40%).

The above annual growth rates for the period 2010-20, compared with those of the period 1990-2009, clearly show rather ambitious efforts needed, by each Mediterranean country, for reaching the EU overall RE target by 2020. This implies that for reaching the national mandatory targets set, countries should follow strictly their national renewable energy action plans, as in most of the countries there is a 'long way' between the target values in 2020 and the 'starting point' in 2009.

Primary Renewable Energy Production in the Mediterranean

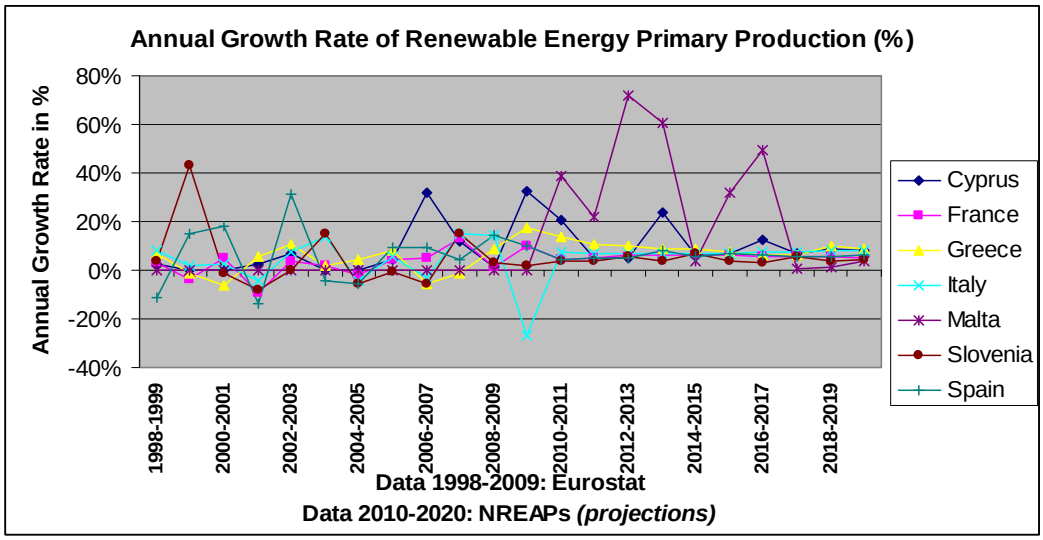
EUROSTAT data for the period 1998-2009 exhibit Spain, Italy and Slovenia to have reached increasing trajectories of primary renewable energy production, with certain upward peaks, which place them in ranking high in the study region (see Fig. 9 and 10). France and Greece follow, exhibiting a steadily increasing pace in RE primary production for 1998-2009, while Cyprus exhibits a rather fast pace, mostly after its accession in the EU. Finally, Malta keeps the lowest place, for the period 1998-2009, with zero RE primary production in its territory, although a member of the EU since 2004.

Fig. 9: Primary renewable energy production 1998-2020
Source: EUROSTAT and NREAPs data, own elaboration



During the period 2010-20, Greece and Cyprus, as shown in their NREAPs, have to follow a faster pace when compared to the rest of Mediterranean countries, as they are far from the national 2020target. France and Spain are closer to their national 2020 targets, implying a larger potential for reaching them. Italy and Slovenia are in an even better position, in this respect, while Malta (the only country of the Mediterranean basin with zero contribution of renewable primary energy production for the period 1998-2009) has to devote extra efforts in the period 2010-20, in order to meet its national targets.

Fig. 10: Annual growth of renewable energy primary production
Source: EUROSTAT and NREAPs data, own elaboration



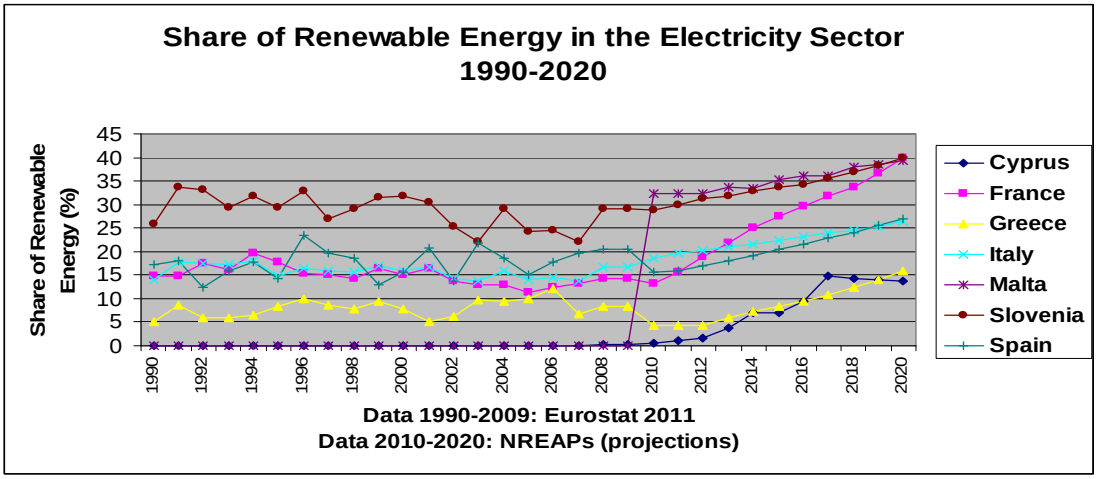
For the period 2010-20 (see NREAPs of the EU Mediterranean countries), it is evident that all countries have to devote considerable efforts for reaching their 2020 national targets.

Malta is at the bottom with zero RE primary production. Cyprus and Greece, despite satisfactory average annual growth rates during 1998-2009 (7.76% and 4.17% respectively), need to enhance their efforts (average annual growth rates 10.42% and 9.06%) for reaching national targets in 2020. On the other hand, Spain, Italy, France and Slovenia, based on their fast pace in the period 1998-2009 (6.39%, 2.50%, 2.66% and 5.06% respectively), need to follow a relatively low average annual growth rate for the period 2010-20 (5.8%, 7.3%, 5.6% and 4.4% respectively), when compared to the rest of the Mediterranean countries, in order to reach their national 2020 targets.

Share of Renewables in Electricity Production in the Mediterranean

The share of renewable energy in electricity production shows a large variation among Mediterranean countries during the period 1990-2009 (Fig. 11). Slovenia and Spain keep the first and second places respectively, although Spain exhibits a slightly decreasing average annual growth rate (-0.08%). Moreover, they also exhibit the largest fluctuations, compared to the rest of the Mediterranean countries. France and Italy show rather stable patterns with comparable values. France shows a slightly decreasing average annual growth rate for the period 1990-2009, unlike Italy, which exhibits an increasing average annual growth rate. Greece also exhibits a high fluctuation for the period 1990-2009, ending up to a slightly decreasing average annual growth rate of the share of renewables in electricity. Finally, Cyprus and Malta show zero shares of renewables in electricity for the period 1990-2006 and 1990-2009 respectively, with Cyprus making the first steps in the field by 2007, while Malta in 2010.

Fig. 11: Share of renewable energy in the electricity sector 1990-2020
Source: EUROSTAT and NREAPs data, own elaboration

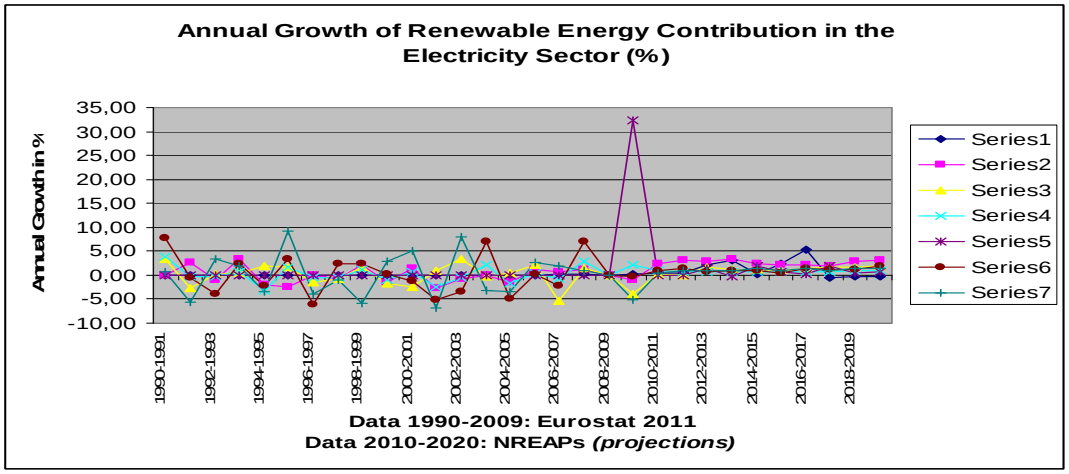


Based on the average annual growth rates of the share of renewables in electricity production, during 1990-2009 (Fig. 12), it can be seen a very little progress, in the Mediterranean, with some of the countries exhibiting negative average annual growth rates (France -0.08%, Greece -0.03 and Spain -0.08%), while others positive rates (Cyprus 0.03%). The highest positive average annual growth rate is exhibited by Italy (0.24%).

For the period 2010-20, Mediterranean countries, based on the mandatory targets for renewable energy set by the EU, need to undertake focused efforts, strengthening their efforts towards the end year 2020.

In addition, based on the national sectoral targets for 2020, France is exhibiting the highest average annual growth rate (2.65%), followed by Cyprus, Greece, Spain and Slovenia (1.32%, 1.17%, 1.15% and 1.12% respectively), while at the bottom rank Italy and Malta (0.77% and 0.69%).

Fig. 12: Annual growth of renewable energy contribution in the electricity sector
Source: EUROSTAT and NREAPs data, own elaboration



Share of Renewables in the Transport Sector in the Mediterranean[7]

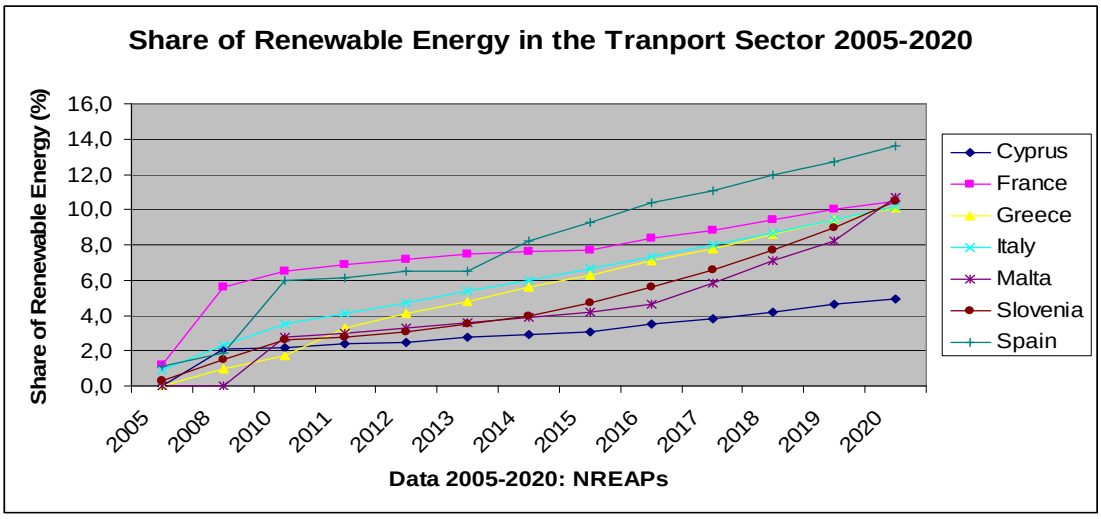
The share of renewable energy in the transport sector in the Mediterranean countries in 2005, presents *two groups* of countries. The first group comprises countries with some progress in the field, namely France (1.2% share in transport), Spain (1.1%), Italy (0.9%) and Slovenia (0.3%); and the second group, comprising countries that embark from the zero level (Cyprus, Malta and Greece). This to a certain extent may explain their difficulty to meet the 2010 biofuels' target of 5.75%.

The biofuels' target has been estimated as likely to be reached only by two countries in the Mediterranean basin, namely France (6.5%) and Spain (6.0%) (Fig. 13), while the rest appear to be lagging behind in respect to the 2010.

Nevertheless, the pattern of the share of biofuels in the transport sector has followed an upward trajectory to 2010 (Fig. 13). Based on the average annual growth rates in the period 2005-08, France and Spain are keeping their pace (average annual growth rate 1.06% and 0.98% respectively), followed by Malta and Italy (0.56% and 0.53%), Slovenia and Cyprus (0.46% and 0.44%) and finally Greece (0.34%).

For the period 2010-20, efforts are steadily increasing, according to the NREAPs of the Mediterranean countries. In this respect, Malta, Slovenia, Greece and Spain appears that need to undertake the most dedicated effort in order to reach sectoral targets (average annual rate of 0.8% for all four countries), together with Italy (0.7%), while France and Cyprus may keep a slower pace, based on the progress already achieved (rates 0.4% and 0.3% respectively).

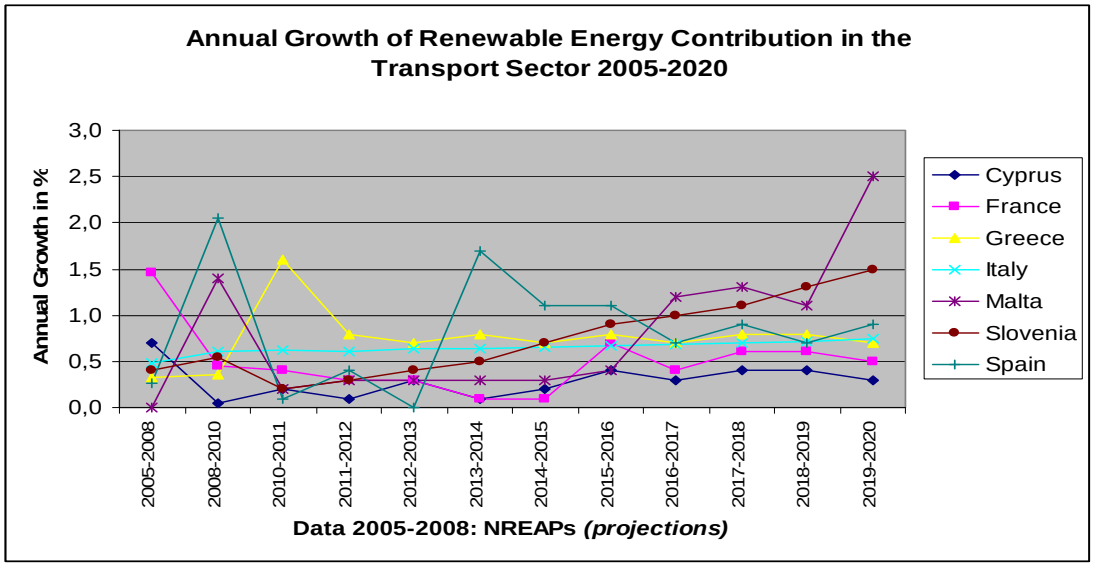
Fig. 13: Share of renewable energy in the transport sector 2005-2020
Source: EUROSTAT and NREAPs data, own elaboration



The annual growth rates of the Mediterranean countries on the share of RE in the transport sector, for the period 2010-20, have as follows: France, Malta and Spain exhibit rather irregular patterns of annual growth rates, with France placing special emphasis at the take off of the period. The most regular annual growth pattern is exhibited by Italy, Greece and Cyprus, respectively. Finally, Slovenia shows steadily increasing annual growth rates, having strengthened its efforts during the last few years.

[7] The data used at this stage is emanating from the NREAPs of the Mediterranean countries, as EUROSTAT data exists only for two of the seven Mediterranean countries (France and Spain) for the years 2005-2008.

Fig. 14: Annual growth of renewable energy in the transport sector 2005-2020
Source: EUROSTAT and NREAPs data, own elaboration



The comparison of the annual growth rates for 2005-08 and 2010-20 respectively shows that Greece (0.336% and 0.8%), Slovenia (0.46% and 0.8%), Malta (0.56% and 0.8%) and Italy (0.526% and 0.7%) should strengthen their efforts in order to reach the 2020 national targets. Spain (0.98% and 0.8%) and Cyprus (0.44% and 0.3%), on the other hand, are in a better position, as they can continue with almost the same pace, while France (1.06% and 0.4%) may lower pace in order to reach the national target.

Conclusions

The Mediterranean countries are enjoying an abundance of resources to be used potentially as renewable energy sources. The experience of renewable energy development patterns in the *period 1990-2009* clearly shows the diversifying efforts dedicated by the different Mediterranean countries. Moreover, the study of the pattern of RE development in the period 1990-2009 shows several ups and downs in most of the countries, advocating the fact that not fully concrete or literally followed RE development plans were in place, which, taking also into account the non-binding nature of 2010 targets, has driven a more 'loose' trajectory of RE developments in the Mediterranean countries. More specifically, the following patterns of RE development are shown:

- The share of renewables in gross final energy consumption has made a considerable progress in most countries (Italy, Spain, Slovenia and Greece, followed by France), while Malta has zero progress, although member of the EU since 2004.
- As to the primary renewable energy production, Spain, Italy and Slovenia rate first in their efforts, followed by France and Greece, while last comes Malta, with zero primary RE production.
- Slovenia and Spain rate first as to the share of renewables in electricity production. Second rate France and Italy, exhibiting rather stable patterns, while Greece follows. Cyprus and Malta have zero share of RE in electricity production, with Cyprus taking the first steps in 2006 and Malta in 2010.
- Finally, as to the share of renewables in the transport sector (time period 2005-08), France and Spain are rating first, being the only countries of the Mediterranean reaching the 2010 EU biofuels' target (5.75%), while Italy and Slovenia follow. Finally, Greece, Cyprus and Malta start from scratch and are far away from the EU target in 2010.

In decade *2010-20*, the Mediterranean countries need to undertake a more substantial effort, based on the national 2020 mandatory targets they have to meet. This effort of course is differing from country to country, based on a number of factors, such as the starting point, RE potential, etc. More specifically:

- As to the RE contribution to final gross energy consumption, Malta has to undertake the most substantial effort, followed by Greece and Cyprus, while at the bottom lie Italy, Spain, France and Slovenia.
- In the primary RE production sector the situation is similar, with Malta rating first as to the effort needed for reaching 2020 targets.
- All countries need to undertake focused efforts in order to reach 2020 targets in respect to the share of RE in the electricity production.
- Finally, as to the biofuels' share in transport, Malta, Slovenia, Greece, Spain and Italy need to place more effort to reach the mandatory targets, in respect to Cyprus and France that have already made considerable progress in the previous period and thus can lower their level of effort.

Based on the previously presented analysis of past (1990-2009, EUROSTAT) and projected RE data (2010-20, NREAPs) for the Mediterranean countries, it is evident that most of them should strengthen their efforts in order to fulfill commitments undertaken towards meeting the EU 2020 targets. This can be further justified by the *gap* existing between the pattern of RE in 2010 and the targeted RE pattern in 2020; and the average annual growth rates followed in 1990-2009 in respect to the average annual growth rates needed in 2010-20 for the renewable energy sectors examined in this study.

In this respect, there is a need to undertake more dedicated efforts and strictly follow the implementation and monitoring of the NREAPs, as most of the Mediterranean countries have a 'long way' to cover towards RE mandatory targets in 2020.

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PROMOTING RES AND RUE IN TRANSPORT POLICIES FOR SUSTAINABLE TOURISM

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INTRODUCTION

Over the last decades tourism has grown enormously and travel distances have increased. Land occupied by tourism related activities is growing significantly, in certain areas, and this trend is expected to continue, at the expense of land previously used in other activities.

According to the World Tourism Organization (WTO), tourism is likely to become the largest single economic activity in the EU (currently accounts for 5.5% of the EU's GNP). In this context, particular emphasis should be placed on the impacts of tourism on sustainable development where the integration of environment considerations into the tourism sector should appear of top priority.

It is of great importance to find solutions that potentially increase the surplus of carrying capacity of the tourist sites, such as flexible arrival and departure dates, larger seasonal price differentiation, better information on traffic and transport and sustainable tourist development for unexploited promising areas with limited demand.

The tourism industry depends heavily on transport and affects significantly traffic generation. Therefore, in the sustainability context, the contribution of renewable energy sources and rational use of energy in the transport sector for tourism, is one of the issues that should be thoroughly explored.

The focus of the present paper will be on the contribution of the Renewable Energy Sources (RES) and Rational Use of Energy (RUE), in the transport sector, for sustainable tourism. In particular, the paper will elaborate on the concerns that should guide future actions on RES and RUE at the various levels of the transport chain in the global Tourism Stakeholder Model.

The first part of the paper will provide some basic definitions and will explore the main Community actions to promote sustainability in European Tourism.

The second part of the paper will describe the major RES and RUE technologies and practices related to transport, which could play a role in the context of sustainable tourism.

The third part will elaborate on policies at the various levels of the transport chain promoting the use of RES and RUE for sustainable tourism.

In the fourth part, a real case from Malta will be presented providing integrated solutions towards this end. Finally, in the fourth part some conclusions and guidelines for action will be drawn.

1. SUSTAINABILITY IN EUROPEAN TOURISM

The scope of this part is to present some information on the tourism sector developments in the European Union, and to comment on the need to ensure sustainability in this major economic and social activity. Some major guidelines that rule EU actions, in this context, are further provided.

1.1 The Tourism Sector in the European Union

Tourism significantly contributes to the socio-economic development of many of the world countries by expanding their economic base, increasing foreign exchange and providing employment.

Globalization, technological development and growing prosperity in the last two decades have all contributed to the creation of an even greater demand for tourism. As a result tourism has grown enormously and travel distances have increased.
However, the rapid growth of tourism in the EU leads to a number of problems that may challenge the effectiveness of policy-making, planning and management of tourism development. The Treaty on European Union acknowledges that EU actions should also include measures in the field of tourism in order to accomplish other tasks of concern, which have been specifically assigned. [1]
The European Commission, recognizing the role of tourism on European economy, aims to support the EU member States to further develop the tourism sector, in particular sustainable tourism, by strengthening the capacity of both human resources and institutions and by promoting regional cooperation. [2] In this context, the exploitation of RES and RUE are among the Commissions major concerns.

1.2 Sustainable Tourism

Sustainable tourism heavily depends on clean environment. However, the achievement of the environmental objectives in the tourism sector depends on the effectiveness of the measures taken in the other sectors, e.g. a switch in transport modes, water and waste management, use of RES and RUE and in particular on measures taken at national and local levels as well as on the tourism industry itself.
In April 1995, the Commission issued a Green Paper on 'The Role of the Union in the Field of Tourism' [3]. The Green Paper indulges on the concept of sustainable tourism, and proposes appropriate actions to be carried out in the field of tourism as well as the instruments available towards this end. It also examines the need to introduce a degree of coherence and linkages among three associated domains of tourism, consumer affairs, as well as natural and cultural heritage.
In the context of Agenda 21[1] for tourism in Europe [4], the strategic guidelines for the sustainable development of transport related to tourism are rather pronounced. The purpose is to draw the attention of all parties on the need for a common commitment towards the implementation of the appropriate measures. More specifically these objectives are:
-to prevent and reduce the territorial and environmental impact of tourism in destinations;
-to control the growth of transport linked to tourism;
-to promote "appreciative" tourism as a factor for social and cultural development.
At the EU level a large amount of money was dedicated, under the Structural Funds, for co-financing investment and infrastructure projects for tourism but also projects to upgrade cultural and historical resources; this has greatly contributed to the development of tourism in under-developed regions, regions affected by the decline of industry and those with a concern for rural development. [5]
Member States are in the process of developing integrated sustainable tourism policies where a broad range of instruments has been used to combat growing environmental problems stemming from tourism activities.
In this respect tourism related actions, both supply and demand side measures, have been used e.g. economic (fuel and road tax), regulatory (EIAs, zoning laws, land-use laws, building permits), educational and training instruments (brochures, training manuals), tourism guidelines (codes of conduct), as well as voluntary sustainable management initiatives.
For further actions, the following priority guidelines of measures are considered:

A. *Integration*

- public authorities should work together to better integrate environmental considerations into their tourism policies at the most appropriate level;

[1] An Agenda for the 21st century to implement sustainable development as expressed in an EC Report, which highlights key policy approaches and initiatives taken, and presents key messages for the future.

- need to develop integrated land-use planning at local or regional level;

B. *Protection of Sensitive areas*

- Development of a framework, by the Member States, for the protection of the environment particularly in sensitive areas such as the Mediterranean, the Baltic, the Alps and the coastal zones;

C. *Tourist Information*

- public authorities and the tourist industry should provide better information for the public, on the state of the environment, in order to enable public pressure to act as a driver towards sustainable tourism;

D. *Management of Tourist Flows*

- public authorities in cooperation with the tourist industry need to examine the carrying capacity of tourist sites and take appropriate measures for the management of the tourists' flows to the lasting benefit of both the sector and the environment.

1.3 The Future of European Tourism

The European Commission pursues clear objectives on how to best exploit the competitive potential of the European tourist industry. Outlined in the Communication on Working together for the future of European tourism[2], the Commission highlights the need to enhance co-operation on and consistency in the implementation of tourism policies among the stakeholders involved in the sector. These include the European Commission, Member States, regional and local authorities, industry, associations, and tourist destinations. [6]
The Commission underlines the importance of information and experience exchange among the interested parties, in order to prepare for the implementation of the actions recommended in the Communication (COM 2001)665 final).
Some of the key activities advocated in the provisions of this Communication are:

- Promotion of the dialogue among the tourism industry and other interested parties.
- Fostering of networking services and support functions, for instance through competence centres (observatories, study and research centres) at national, regional and local levels.
- Ensuring the efficient use of the EU financial and non-financial instruments to the benefit of the tourism industry.
- Promoting sustainable development by further elaboration and implementation of the "Agenda 21" guidelines.
- Defining and disseminating of the assessment methods and tools (quality indicators and benchmarking) necessary for the monitoring of the quality of tourist destinations and services.

1.4 Tourism and Transport

A number of factors such as the increased demand for tourist activities and services, the deregulation of transport services and the development of transport networks, as well as the increased efficiency of the single market and the growing availability of information society tools, will continue to promote transport mobility and contribute to the growing internationalization of tourist flows. Single currency is one more reason that makes Europe even more attractive as a destination for visitors from non-member countries.
The need to promote sustainable tourism is of high priority in the context of the Union. In the area of transport, some Member States are focusing on the integration of environmentally friendly transport means into tourism development. Austria, for example, has developed a

[2] COM(2001)665 final

system of traffic management by promoting traffic free tourism, soft mobility in tourist communes, special land use requirements, and trains to ski resorts. [7]
An overall objective is to improve the information context of transport planning and policy formulation at the regional, national and local levels so that the policy and decision makers in the member countries become more aware and better informed on the emerging issues, developments and alternative policy options.
The areas of focus include transport planning and policy formulation, renewable energy sources, networking, public-private partnerships, and social, environmental and safety aspects of transport.
As a general policy instrument, the White Paper on "European Transport Policy for 2010: time to decide" outlines how to achieve tourist transport that is more efficient, sustainable and of higher quality. [8]

2. PROMOTING RES AND RUE IN TRANSPORT POLICIES FOR TOURISM

The, second, part of the paper describes the major RES and RUE technologies and practices related to transport, which may potentially play an important role in the context of sustainable tourism.

2.1 Renewable Energy Sources - RES

The development of renewable energy sources is a central objective of the European Commission's energy policy.
In the RES-E Directive [9], the following definition of Renewable Energy Sources (RES) is applied:
"*Renewable energy sources" shall mean renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases*)"

Renewable energy policy at the EU level is based on the European Commission's White Paper for a Community Strategy and Action Plan [10].
This strategy aims to double the share of renewable energy sources in gross domestic energy consumption across the EU from the 6% of 2000 to 12% by 2010, and includes a timetable of actions to achieve this objective.
Renewable energy has an important role to play in reducing Carbon Dioxide (CO_2) emissions - a major Community objective. By increasing the share of renewable energy in the energy balance enhances sustainability, and helps to improve the security of energy supply by reducing the Community's growing dependence on imported energy sources. Renewable energy sources are expected to be economically competitive with conventional energy sources in the medium to long term.

2.2 Rational Use of Energy – (RUE)

Efficient use of energy is a vital component in reducing industry's production costs and thereby raising competitiveness. Even for industries where energy costs account for no more than four or five per cent of their total production costs, the attainable improvements in energy use can make a great difference to profit margins. It is estimated that the EU could save at least 20 % of its present energy consumption in a cost-effective manner, equivalent to EUR 60 billion per year, or in other words the present combined energy consumption of Germany and Finland. [11]
Initiatives to promote and increase energy efficiency in the end-use sectors are an important contribution to the achievement of the energy and environmental goals of the European Union and the proposed reduction target of greenhouse gas emissions (GHG).

This policy is part of the EU policies on energy supply including its efforts to promote renewable energy and consists part of the set of priorities first outlined in the 2000 Green Paper "Towards a European Strategy for the Security of Energy Supply"[3].

A new Green Paper [12] seeks to promote a more rational use of energy in the EU. In this respect, the European Commission takes the initiative to help Member States to meet their Kyoto commitments, and contributes to the EU efforts to combat, in the longer term, climate change through further emission reductions, as part of a future post 2012 regime within the United Nations Framework Convention on Climate Change.

The Green Papers seek to identify options on how to eliminate existing obstacles, suggesting a number of key actions that might be taken. Examples include the establishment of annual energy-efficiency action plans at the national level. Such plans identify measures to be taken at national, regional and local levels and subsequently monitor their success both in terms of improving energy efficiency and cost effectiveness.
These plans include the promotion of new energy efficient technologies, such as more energy efficient cars and IT equipment and the development of a new generation of more fuel-efficient vehicles.
During the recent years, energy policies have imposed a number of targets at the European and national levels for rational use of energy (RUE), renewable energy sources (RES) and related CO_2-reductions. As a result, a wide variety of policy instruments are currently implemented.
The comprehensive review of current policies for promoting RES and RUE technologies covers a broad range of financial and non-financial push and pull instruments in Europe.
Taxation could be another mean of action. It is estimated that energy taxes have a strong impact on both RUE and RES [4]. [13] However, taxation is not an EU competence and Member States want to retain their autonomy in setting taxes. Nevertheless, the Commission has the intention to boost fiscal incentives for greener cars.

2.3 RES and RUE in the Context of Cars' Use

The scope of this section is to provide information on the most recent developments regarding policies and actions related to further promotion of green cars.

2.3.1 Background

Motor vehicles have become the prime means of personal and commercial mobility in today's world. Growing prosperity has led to a spectacular rise in car use - a phenomenon being repeated in the new Member States which joined the Union in 2004. This success has generated serious concerns about the environmental effects of vehicle use, in particular traffic congestion, air pollution, traffic-related diseases and noise.
These concerns have led the EU to come up with legislations and initiatives in order to drive the change towards cleaner cars while promoting sustainable transport modes and modal shifts (trains, inland shipping, public transport, bikes etc.).
Interest in cleaner, less polluting vehicles and fuel has grown rapidly in the recent years. Emissions from petrol and diesel engines have been significantly reduced, driven mainly by European legislation, and will continue to be reduced in the future. [14]

[3] Green Paper "Towards a European strategy for the security of energy supply", 29 November 2000, (COM, 2000, 769 final).

[4] All countries considered have at least some kind of energy taxes. The most important ones are taxes on transportation fuels, heating oil and electricity.

2.3.2 Towards Green Cars

The EU has started several initiatives in order to stimulate the production and marketing of more environmentally friendly cars. The main efforts focus on:

- reducing vehicles' CO_2 emissions and changing consumers' behaviour,
- reducing emissions of pollutants and particles,
- towards sulphur-free fuel,
- equipping vehicles with new technologies,
- alternative fuels (biofuels, natural gas, and hydrogen).

2.3.2.1 Reducing vehicles' CO_2 emissions and changing consumers' behaviour

Almost 40 per cent of the transport sector's CO_2 emissions, in the EU, are produced by the use of private cars in cities. CO_2 emissions are damaging the environment contributing thus to climate change.

Both petrol and diesel engines have their good and bad sides as regards emissions. Engines working with diesel fuel emit less CO_2 than others working with petrol. Diesel engines, on the other hand, are releasing more cancer-causing particles in the air.

Voluntary commitments [15] have been made by Automobile Manufacturers to reduce CO_2 emissions from passenger cars. The Association of European Automobile Manufacturers (ACEA) made a voluntary commitment to achieve a target of 140g CO_2/km for their fleet of new passenger cars sold in the EU by the year 2008. The CO2 target is to be achieved mainly by technological developments and market changes linked to these developments[5].

Progress from car makers has been better than expected. The overall EU's aim is to reach - by 2010 at the latest - an average CO_2 emission figure of 120 g/km for all new passenger cars marketed in the Union.

EU legislation requires that **consumers** are provided with information on CO_2 emissions of cars that are offered for sale or lease[6].

2.3.2.2 Reducing emissions of pollutants and particles

Air pollution caused by car emissions has serious health impacts, which EU legislation is seeking to reduce. The increasingly stringent emission standards for passenger cars and other vehicles have initiated a significant reduction in air pollution per driven kilometer. Emission control technologies (particle filters, catalytic converters) are available but expensive.

Discussions have started on new EURO standards (Euro 5 and Euro 6) to enter into force by 2010. These new standards will focus on reducing emissions of cancer-causing particulates from diesel cars.

2.3.2.3 Toward sulphur-free fuel

The Commission brought forward a proposal in 2005 to amend the sulphur content of petrol and diesel [16]. Sulphur-free fuel is due to be compulsory as of 2009. When this directive is approved, it will lead car-makers to use cleaner technologies[7].

2.3.2.4 Equipping vehicles with new technologies

In order to meet the standards set above, the automobile industry has to produce greener cars with lower-fuel consumption. The objective is to improve the efficiency of engines and to make vehicles lighter.

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[5] See Commission's page on the automobile industry voluntary commitments.

[6] Directive 1999/94/EC on availability of consumer information on fuel economy and CO2 emissions in respect of the marketing of new passenger cars.

[7] See Commission page on Automotive Fuel Quality.

Several new technologies (advanced combustion engines, mild hybrid, hybrid and fuel cell propulsion) are currently being tested. The best technologies are due to appear on the market once technological and commercial barriers have been overcome.

2.3.2.5 Alternative fuels

Another way to make cars greener is to use alternative fuels. A Commission Communication on alternative fuels suggests a target of 20% use of alternative fuels in road transport by 2020.

The Commission concludes that only three options would have the potential to achieve individually more than 5% of total transport fuel consumption over the next 20 years: *biofuels* which are already available, *natural gas* in the medium term and *hydrogen and fuel cells* in the long term. [17]

Biofuels currently represent around 0.3 percent only of diesel and gasoline consumption in the EU. In May 2003, the Commission adopted a draft Directive which requires Member States to take the necessary measures to increase the market share of biofuels.

The Commission estimates that an effective implementation of the 2003 Biofuels Directive could save 19 million tones of oil by 2010. [18]

N**atural gas,** apart from being a clean source of energy, offers the advantage of ensuring security of supply. The ***2003 Report of the high level experts on Alternative Fuels*** for the Commission comes to the conclusion that natural gas is the only alternative fuel with potential for significant market share well above 5% by 2020, which could potentially compete with conventional fuels in terms of the economics of supply in a mature market scenario. [19]

Hydrogen is a clean and storable energy vector that can be produced from a variety of primary energy sources (including fossil, renewable and nuclear). In September 2003, the Commission presented a Communication proposing the creation of a European Hydrogen and Fuel Cells Technology Partnership in order to promote hydrogen research in Europe. This is regarded as a potentially abundant alternative source of energy. [20]

As a consequence, in Brussels, on the 20th of January 2004, European Commission President Romano Prodi, whose Advisory Council includes key players of the European hydrogen sector, launched the **"European Hydrogen and Fuel Cell Technology" Platform**.

There are various other initiatives that intent to make cars cleaner, such as:

- **Reduction of pollution from tires**: the Commission is currently elaborating measures to drastically reduce the proportion of certain toxic chemicals used in the production of car tires by end 2008.
- **Recycling of end of life vehicles**: Every year, end of life vehicles in the EU generate between 8 and 9 million tones of waste. To manage this problem, the European Parliament and the Council adopted in September 2000 a Directive which makes vehicle dismantling and recycling more environmentally friendly. [21]

However, many transport experts doubt whether these measures will provide a sustainable solution in the long run. In general, the growth of car use (especially in developing countries) and the increased transport demand are likely to offset the benefits brought by the introduction of greener cars in mature markets.

3. RUE IN TRANSPORT IN THE TOURIST SECTOR

The third part of the paper elaborates on policies at the various levels of the transport chain promoting the use of RES and RUE for sustainable tourism. There are various important issues related to a better management of the global transport chain. Section 2 focus on the various aspects related to Renewable Energy Sources (RES) and Rational Use of Energy (RUE) linked to the consumption patterns of transport.

3.1 Introduction

The challenges for sustainable tourism are linked to both the consumption (directly linked to RES) and the production patterns, i.e. the infrastructure, facilities and services that are offered to satisfy the demand of tourism for transport, directly linked to RUE. Due to its potential impacts on the environment and public health the transport sector poses one of the greatest policy challenges for sustainable development within the EU.

The environmental impacts of the transportation activity include:

- emissions of greenhouse gases that have been widely accepted as the main cause of global warming;
- emissions of compounds that make the ozone layer thinner and thereby cause damaging infiltration of ultraviolet radiation;
- production of persistent organic pollutants that damage the biological systems;

In addition, transport usually contributes more than half of all local and regional air pollution and noise, and is the major source of external acoustic nuisance in urban areas. [22]

Transport activity is a major user of non-renewable energy resources. About 20 per cent of worldwide energy resources are used for transport.

In the EU, the transport sector is responsible for 32 per cent of energy consumption. Moreover, 90 per cent of transport (road/rail/air/sea) depends on oil; after a hundred years of exploration and extraction, few new oil reserves have been found. If supply declines and demand continues growing, the world could encounter serious shortages.

In pursuing sustainable mobility there are various obstacles and tourism related activities that are among the major contributors to these global problems. The European Environment Agency[8] estimates that in Europe over 40% of transport and its associated energy use is for tourism and leisure activities.

Traffic congestion resulting from tourist travel is a significant factor for bottlenecks, especially if the seasonality of this transport demand is taken into consideration.

Pollution and noise resulting from transport for tourism (in this context, the effects of aviation noise and pollution should also be considered) are major problems, especially for those tourist areas that do not have the technical means to ease these effects.

The White Paper on "*European transport policy for 2010: time to decide*", which is the main document expressing the Common Transport Policy, outlines how to achieve tourist transport that is more efficient, sustainable and of higher quality.

The proposed strategy and measures are designed to gradually break the decoupling between transport growth and economic growth in order to reduce congestion and the pressure on the environment.

The proposed strategy and measures aim at maintaining the EU's economic competitiveness developing at the same time a transport policy of quality for European citizens. Road safety, low congestion, sustainable mobility, passengers' rights, better quality of transport services, and sustainable infrastructure meet the concerns of tourists and local population and significantly affect the tourist product and life in destinations.

An efficient strategy for sustainable tourism can influence the way in which people travel around during their holidays. In the context of a global strategy, there are many policy options that could be applied in order to facilitate sustainable tourism.

[8] http://www.eea.eu.int

In the following paragraphs some of the main policies are provided, implemented in the context of tourism, in order to facilitate sustainable mobility.

3.2 Planning and Managing Transport Networks

The goal of the Union's transport policy is to ensure *sustainable mobility* for people and goods and create a coherent global transport system, which will enable for the best possible returns, not only in terms of investment, but also in securing safety and other environmental and social priorities.

All transport networks, either regional or international, are systems incorporating compatible physical infrastructure and operational standards ensuring sustainability.

In the broader European context, the existence of an integrated transport network is a prerequisite for the creation of the internal market and the territorial cohesion. The Trans-European transport network (TEN-T), comprising infrastructure for the different modes of transport and traffic management systems, strongly facilitates sustainable mobility. [23]

The same network serves the main flows of the European tourism demand for transport. In this sense, the successful design of such a European network, meeting the needs at regional and local level plays a significant role in the promotion of sustainable tourism.

3.3 Modal Split

In order to reduce the environmental damage caused by the prevailing trends the EU is trying to increase the use of road and air transport, by promoting alternative modes of transport, such as rail and maritime transport. This is one of the main goals that have been set by Common Transport Policy.

The White Paper on "*European Transport Policy for 2010: time to decide*", stresses the importance of a balanced growth among the different modes of transport.

Some of the policies towards this end, ensuring the fair competition among the different modes of transport, could be the internalization of the external costs of transport and the targeted investments on the networks.

Revitalizing the more environmentally friendly modes of transport (e.g. railways) would be an important step towards sustainability. Some examples of the railways advantages include:

- low environmental impacts;
- high standards of safety;
- low external costs (e.g. costs related to accidents, air pollution, climate change risks, noise, and congestion);
- high efficiency concerning capacity, energy, space and time.

Railways traditionally serve high flows of tourists (especially youngsters); their modernization could make the European railways ideal means for generalized tourist trips and this would have tremendous positive impacts for sustainability [24].

For **maritime transport**, effective sea motorways are planned as part of the trans-European network. According to the definition of the European Commission, "*motorways of the sea are aimed at acting as a substitute for motorways on land, either to avoid saturated land corridors or to give access to countries separated by the rest of Europe by sea*".

To further promote this mode of transport, a European maritime traffic management system is to be established and strict rules on maritime safety are to be introduced.

Maritime transport is the main means to reach many tourist destinations, and especially islands. In this sense, the promotion of sustainable maritime transport would be valuable for sustainable tourism.

3.4 Promoting the Use of Public Transport

More than 75 per cent of the population of the European Union lives in urban areas. Therefore urban transport accounts for a significant part of total mobility. Increased car use has been accompanied by safety and environmental problems (such as congestion and pollution) as well as by a downward spiral of under-investment in public transport. The initiatives taken so far to face this challenge at an EU level include the promotion of:

- lower-consumption vehicles and new propulsion technologies to reduce emissions;
- the use of improved collective and non-motorized modes in conjunction with mobility management schemes;
- information systems for traffic management in order to improve traffic flow;
- local services that increase accessibility for peripheral residential areas, provide access to the main employment and education areas as well as to the town centres and provide interchange for rural and feeder routes to core bus services;
- integration of bus and rail ticketing.

Promoting the use of public transport is an important objective for cities with tourist attractions, in order to achieve sustainable tourism.

3.5 Influencing Travel Behaviour

Changing the patterns of travel behaviour in tourist regions may imply the development of special local facilities, such as walking and cycling networks and park and ride facilities.

Walking and Cycling

The development and maintenance of principal walking and cycling routes may have multiple benefits by providing residents sustainable travel and exercise opportunities but also visitors with a healthy "car-free day out" activity. Improved pedestrian infrastructure may help to reduce the number of short car trips.

An efficient cycling strategy may comprise the provision of new on road cycle routes as well as improved links to the existing routes.

A cycling network may link together major land uses, bus and rail interchanges as well as major tourist attractions.

For every aspect, the town strategies must be developed taking into consideration the *seasonal peaks* congestion issues.

Park-and-Ride

The development of *park-and-ride* facilities could result in significant growth in traffic levels if appropriate land use planning measures are not taken to reduce the patterns of travelling together with adequate investments in the transport network. This would be essential in order to ensure a reduction in potential future traffic generation and control congestion across the highway networks in urban areas.

Managing Traffic Flows (Demand Management)

Commuter parking spaces could be converted to shopper/ visitor use, allowing the economic vitality of towns to be sustained through shopping and tourist trips. Within the city centre, priority for on-street parking should be given to certain categories of users, with other cars

discouraged from travelling into the centre. Other improvements could encourage residents and visitors to travel to the centre without using cars.

Marketing and Publicity

Individual marketing and publicity activities that will be undertaken to encourage people to make more sustainable trips include:

-"Car Free Days Out" leaflets;
- Inter-operator ticketing promotions;
- Improved tourist information;
- Publicity leaflets, improved signage and website information regarding the walking and cycling network;
- Measures utilizing the various media promoting the public transport network.

Traditionally, many European cities or regions are tourist destinations. By taking into consideration the seasonality of the tourist traffic, it can be said that those cities and regions suffer from unregulated transport behaviour. All the above mentioned measures could play a significant role in promoting sustainable tourism, contributing in turn to a more Rational Use of Energy.

4. CASE STUDY

One of the main problems of leisure tourism in Europe is the seasonality of the activity and its concentration on specific periods of the year. This leads to poor working and employment conditions with negative impacts on qualification levels, service quality and business competitiveness, along with certain saturation of the communication infrastructure and tourist facilities.

Member States are already implementing some policies with respect to the environmental impacts of tourism. In this context, improvements in infrastructure, identified through analyses of tourist flows, are a sound tool to increase the capacity, eliminate bottlenecks and reduce energy consumption in the peak season.

The above improvements in transport infrastructure may contribute heavily in reaching the objectives for RUE, as well as for better use of RES.

In this part of the paper a Case Study is presented, undertaken in the context of "*TINA-Transport Infrastructure Needs Assessment in Malta*" that was carried out between April 2001 and March 2002. [26]

The study focus was on the definition of the components of the transport network that were proposed to become parts of the revised TEN, after the 2004 enlargement.

The importance of tourism for the country was among the leading factors for the structuring of all the proposed measures regarding the modernization of the transport network.

One of the main problems in this context was the existing bottlenecks on the road transport network, mainly due to tourist flows that caused significant operational and environmental problems (see Annex I). More specifically:

There had been a steady growth in the influx of tourists, between 1995 and 2000, by approximately 1.5% per annum, while by 2000, the total number of tourist arrivals in Malta had reached 1.2 million i.e. three times more than Malta's residential population.

Statistical analysis of the data collected as part of an expenditure survey carried out in 1998 indicated that tourism earnings in the Maltese Islands' amounted approximately € 800 million each year. More precisely this can be described as follows:

Table 4.1 Economic Impacts of Tourism in Malta

Aviation related (Air-Malta and airport) Revenues	€ 175.88 million
Passenger Handling Revenues	€ 14.88 million
Accommodation Revenues	€ 314.75 million
Catering (food and beverage) Revenues	€ 133.90 million
Domestic Transport Revenues	€ 35.75 million
Recreation Revenues	€ 48.85 million
Shopping Revenues	€ 66.90 million
Other Revenues	€ 7.72 million
TOTAL	€ **798.63 million**

Source: The Economic Impact of Tourism in Malta, Malta Tourism Authority, 2000

Tourism had considerable impacts on the Maltese economy (namely on: Employment, Gross National Product, National Income and Imports/ Exports). In 1998 the impacts were as follows:

- *Employment: 41,451 persons (34% of the total working population) were employed directly or indirectly within the tourism sector.*
- *Gross National Product:* The direct impact was €348 million accounting for 10.45% of the national total GNP.
- *National Income:* the maximum impact contribution of the tourism sector components on national income in 1998 was 21%.
- *Import + Outflows:* Slightly more than 9% of the total imports and outflows are as a direct result of tourism earnings, this rises up to 13.69% when indirect earnings are taken into account.

The 1998 expenditure survey was also used to give an estimation of the tourists' *willingness to spend* during their stay in Malta, if no financial or time constraints existed, as well as the type of facilities and attractions they would like to find in this particular destination.

From the results of the survey, it is clearly evident that transport and its infrastructure have an important impact on tourists' perception as to the quality of their stay in Malta (accounting 33.6% of responses).

In total 28.9% of tourists felt that more investments should be directed towards improving road infrastructure, signage, pavements, footpaths and the quality and frequency of bus services (used by 80.6% of tourists). A further 4.7% of the respondents felt that further investment should also be made to improve the quality of car hire and taxi services.

In conclusion, it can be seen that in a small country such as Malta, with limited natural resources, the economy is almost totally dependent on the service sector and, in particular, on tourism. In a highly competitive tourism market, a poor perception by the visitors on the country's transport system may, in the medium to long term, cause significant damage to the tourist industry and, through the multiplier effects, to the economy as a whole.

In this context, it was found that road transport faces severe congestion problems in Malta due to the extreme demand and the problem is expected to worsen in the coming years, therefore measures to extend capacity were necessary, in order to eliminate infrastructure bottlenecks.

It has to be mentioned that the above analysis was based on surveys by Tour Operators and the Travel Agents Association[9].

The Transport Infrastructure Needs Assessment for Malta resulted in both a priority TINA Main Road Network and a network of access roads to the TINA main road network. Investment needs of the order of €233.60 million were identified for the modernization of the road network in Malta by 2015.

[9] For example, it has been reported that 85% of all tourists to Malta visit Rabat and Mdina.

RES and RUE in the Transport System of Malta

By identifying the priority main road network, and in order to reach the objective for sustainable tourism, the TINA exercise focused on infrastructure measures that could promote sustainable transport.

In this context measures for the Rational Use of Energy (RUE) in the transport sector were proposed, for meeting the very high summer demand for energy, due to tourist flows.

In search for more RUE, transport planning could be extended to study and use a broader spectrum of measures, including additional transport modes.

Towards this end, it has been pursued by the authorities the revitalization of an older plan for the establishment of a railway line in Malta connecting Valetta, the capital of the island, with its suburbs, that was assessed as having potentially, valuable external benefits for the country

The operation of a suburban railway line could contribute to a significant shift of road traffic towards more energy efficient and less polluting modes such as the electric railway. It is estimated that the operation of an electrified suburban railway line in Malta (length: approx. 15 km) could save some € 3.45 million per year due to energy reductions. The estimations have been based on average consumptions shown in the following Table.

Table 4.2 Indicative energy consumption

Mode	**Average Consumption per pas/km**
Passenger Car	0.194 lit petrol equivalent
Suburban train	0.031 lit petrol equivalent

Source: "Railway and Environment", CER (Community of European Railways), September 2001

An average price of oil of €1.00 per lit was taken into account. In order to estimate other external benefits from such a traffic shift to rail, the figures of the following table (presenting the average costs of passengers transport due to environmental impacts) are taken into consideration:

Table 4.3 Costs of Environmental Impacts

For passengers traffic	**Environmental impacts** (*figures expressed in Euros per pas.km*)
Road modes in total	0.044
Rail	0.022

Source: "Environmental and Safety Aspects in Rail Transport" (Dionelis and Giaoutzi, 2005)

Based on the above figures, it is estimated that the operation of an electrified Suburban Railway line in Malta could save some additional €460 thousand per year (The estimations have been based on an assumption of moving about 3,800 passengers per day by train, i.e. making some 21,000,000 pas/km every year).
The measures described in the previous paragraphs are the results of infrastructural transport planning studies, serving the goal for more RUE.
However, such measures alone cannot be effective without integrated actions for an extensive use of Renewable Energy Sources (RES).

In the framework of the TINA exercise in Malta, the main objective for sustainable tourism was pursued through recommendations for extensive use of Renewable Energy Sources (RES) in road transport.
Emphasis was placed, in this context, on the extensive use of cleaner, less polluting cars for at least tourist trips that may seriously contribute towards a better environment on the islands. The efficiency of such actions has as a prerequisite political will plus close cooperation among local authorities, Tour Operators as well as the Travel Agents Associations in the islands.

5. CONCLUSIONS

Tourism growth is one of the greatest success stories of our times but, in recent years, there have been increasingly some alarming signs, such as: over-saturation and deterioration of local conditions in destinations, the overwhelming pressure on local cultures, the bottlenecks in transport facilities, as well as a growing resentment by residents for the disturbance and the pressure, on natural resources, caused by the visitors, in some destinations. In this context, the emerging environmental problems force policy makers but also stakeholders to realize that the depletion of natural and human resources goes much faster than the society and the environment can afford. Meeting the world energy needs without considerable environmental impacts is one of the major challenges to sustainable development while access to reliable and affordable energy is an essential prerequisite to sustainable tourism. Therefore, developing Renewable Energy Sources (RES) has become one of the main pillars of the European Union's energy policy. Furthermore, rational use of energy (RUE) has become a vital component in reducing consumption and thereby reducing costs and raising competitiveness. Increased share of Renewable Energy Sources (RES) and Rational Use of Energy (RUE) help to improve the security of energy supply by reducing the dependence on imported energy sources, and to promote sustainability. The transport sector is a major actor in energy consumption. It is estimated that in the EU context, the transport sector is responsible for 32 per cent of energy consumption, while, over 40 per cent of transport and its associated energy use is for tourism and leisure activities. For reaching sustainable tourism, transport is one of the fields where strict measures should be taken. Tourist travel is a significant factor for increased energy consumption, due to the high traffic flows it creates, and the seasonality of transport demand. Furthermore, pollution and noise resulting from tourist transport are also major problems, especially for those tourist areas that do not have the technical means to ease these effects. Promoting RES and RUE in transport policies should be one of the main fields for action, towards sustainable tourism. The increase of the share of renewable energy in the transport energy balance and the rational use of energy can be achieved through measures undertaken at national, regional and local levels. Therefore part of our efforts to meet the pressing environmental challenges of tourist demand, should involve a revised vision of our transport systems, where RES and RUE are at the core of concerns for reaching both sustainable transport and indirectly sustainable tourism. On the other hand, sustainable tourism has a direct link with RUE, through the efforts for better design of international, national and regional transport systems. New transport strategies need to focus on questions relating to RES and RUE. These may involve:

- Reorientation of land use and infrastructure planning;
- improvements in cars' technology and fuels;
- changes in transport consumption patterns, such as more efficient traffic management, diverse modal transport mix comprising increased public and non-motorized transport, and investment measures concerning infrastructure improvements.

In the case of Malta, it was found that the very high tourist traffic flows seriously damage the environment causing bottlenecks and congestions, as their seasonable character cannot be served by the capacity of the existing transport infrastructure. By employing basic principles of transportation planning, the Transport Infrastructure Needs Assessment (TINA) for the islands identified the necessary measures, regarding the modernization of the existing road network that

may promote sustainable transport and tourism. These take into account all the options available for the utilization of RES and RUE in the transport sector especially for tourism development.
Another finding drawn from the Malta case study was the necessity for the establishment of an electrified railway line connecting Valetta with its suburbs that could contribute towards more RUE, as this plan would cause a significant shift of road traffic towards more energy efficient and less polluting modes. The above measures should be coupled with concrete actions for enhancing the use of Renewable Energy Sources (RES), where sustainable tourism would be pursued through incentives and policies for the extensive use of Renewable Energy Sources (RES) in road transport but also the use of cleaner, less polluting cars for at least tourist trips that could greatly contribute towards a better environment on the islands.
The conclusions drawn from the present case study could also apply to any other typical tourist destination, where tourism creates bottlenecks and has negative impacts on the local transport systems and the environment. Conclusions drawn from the present paper underline that future developments in general and in the tourism sector in particular should take into account the depletion of resources resulting from irrational use and lack of planning that seriously threaten sustainable development. Therefore it is necessary plan carefully for the preservation of resources in order to support policy decisions for the implementation of sustainable mobility and tourism. Tourism and travel will inevitably continue to increase. Meeting the objectives of sustainability, in the present era, in a way that effectively preserves natural resources and the environment is the challenge of our times.

ANNEX I

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THE INFLUENCE OF CULTURAL AFFINITY FOR THE BOOST OF BRAZILIAN INVESTMENT IN PORTUGAL

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Abstract:
In response to a survey of Fortune 1000 companies enquiring in 2007 about "the biggest barrier in doing business in the world market", cultural differences ranked at the top of the list. For a long time culture and economy have been treated as broadly independent areas of research The gap to recognize cultural differences was the most common cause of failure for cross-national enterprises. Members of different cultures express different values and priorities when they make and implement decisions. This article seeks to measure the influence of factors such as history, language and culture in foreign direct investment (FDI) of Brazilian companies in Portugal, two countries with deep cultural affinity. Brazil is an emerging country that is increasing your importance as international investor. Firstly, we will describe the increase importance of emerging countries in the world economy, Brazil as international investor and the luso-Brazilian economic relations, especially after 1990s. Secondly, it will take surveys and assesses approaches to explain a multidimensional analysis of the FDI, in particular those related to culture. After that, through a regression analysis based on interviews answered by Brazilian companies in Portugal, we measure by a regression model the influence of the Uppsala School, or Scandinavian, which postulates the importance of culture in corporate investment abroad. While geographic, political and economic approaches have advantages of their own; the cultural area is particularly useful for a long-term comparative economic analysis.

Keywords: cultural affinity – enterprises – Foreign Direct Investment – Brazil – Portugal - emerging countries – Stepwise method – Eclectic theory – Scandinavian Theory

1. The Brazilian outward FDI on emerging countries and Portuguese context

For many years, emerging economies have commonly been perceived as target countries of foreign direct investment (FDI). Recent large-scale overseas investments by companies based in countries like China, India, Brazil, Mexico, Indonesia, Russia or South Africa have made it clear, however, that emerging economies also play an important role as origin countries of FDI (McCann, 2010). This article seeks to provide some background information on this phenomenon and formulates preliminary policy conclusions.
Stylized facts can be summarized as follows:

- According to UNCTAD (2007), aggregate production of emerging economies reached an important landmark in 2006: more than half of gross domestic product (GDP), measured in purchasing power parity (PPP, the acronym in English). The emerging countries, maximizing the global growth, causing a strong impact on inflation, wages, interest rates and corporate profits. The participation of the emerging world exports rose from 20% in 1970 to 43% in 2005. They consume more than half the world's energy and account for 80% growth in oil demand from 2001 to 2006. They also hold 70% of global foreign exchange reserves.
- Emerging economies have become an important source of FDI. Outflows grew particularly in the 1990s and reached US$ 133 billion in 2005 or about 17 per cent of world flows. Even excluding flows from Hong Kong (China) and offshore financial centres, outflows from developing and transition countries were close to US$ 90 billion. The outward FDI stock of developing and transition countries reached US$ 1.4 trillion in 2005, or 13 per cent of the world total (all data from United Nations Conference on Trade and Development [UNCTAD], 2006: 105–08).

Given that developing and transition countries invest heavily in other developing countries, mostly from the same region, their importance as source of developing countries' inward FDI is even more pronounced. The share of South–South flows in total FDI to developing countries rose from 16 per cent in 1995 to 36 per cent in 2003 (World Bank, 2006: 108). According to the UNCTAD Investment Report 2006, close to 50 per cent of the inward FDI stock of developing and transition economies comes from other developing countries. Especially for low-income countries, FDI from other developing countries takes the lion's share of all inward investments (UNCTAD, 2006: 117–21).

- For some emerging economies, outward FDI has become a quantitatively relevant phenomenon. Starting in the mid-1990s, outward FDI of emerging economies has gained strength, albeit with great volatility. Based on the average 2002–04, the following countries have experienced outward FDI of more than US$ 1 billion annually: Brazil, Chile, China (PRC), Hong Kong (China); (US$ 23 billion!), India, Korea, Malaysia, Mexico, Russia, Taipei, China (UNCTAD, 2005). For countries like Brazil (2004), Korea, Malaysia, Russia, South Africa (2003–04), outward FDI is in the range (or above) of 50 per cent of inward FDI. In some industries, multinational enterprises (MNEs) based in emerging economies have become important players on world markets. A recent Boston Consulting Group (BCG) report identified, from an original set of more than 3,000 companies, a list of 100 global challengers from emerging countries and analyzed their entry strategies and growth potential (BCG, 2006). Major countries of origin of these companies are China (44), India (21), Brazil (12), Russia (7) and Mexico (6). They are active in a wide range of industries, with 32 companies in the industrial goods sector, 18 in consumer durables, 15 in resource extraction, 11 in food and cosmetics, six in technology equipment, six in telecommunication services and 12 in other sectors. According to the 2006 UNCTAD Investment Report (UNCTAD, 2006: 123),MNEs from developing and transition countries are among the top 20 players worldwide in all areas of economic activity, with some concentration in container shipping, steel and petroleum refining. Before going into details, a cautious note on the availability and reliability of data is appropriate. FDI of emerging economies is incomplete and does not give a breakdown for industries or destination countries.

While other BRIC countries don't have the same degree of need for change, awareness that it is dangerous to be over reliant on exporting as a means of growth is no bad thing for them all. According to O'Neill (2010), for the next decade up to 2020, the possible increase in the aggregate GDP of the four BRIC countries will be about $11 trillion, about three times more than the 3 trillion that the US is likely to grow by. In fact, if this occurs, the dollar size of the BRIC economies will match that of the US sometime before the end of the decade, both being around $18 trillion. China will be about 2/3 of this, at 12 trillion, with the other BRIC countries, Brazil, India and Russia making up the rest. Of that increase, it is vital for the US and other over levered economies who will be raising savings, reducing their budget and external deficits, which the lion's share of it will be in domestic consumption, much of which can be satisfied through imports. In relation to Eurozone countries, a detailed breakdown of regional German export destinations shows a staggering degree of growth in exports to both China and India. To China in particular, things are so buoyant that if the current pace remained for the next 12 months, by this time in 2011, German trade with China could be as large as their trade with France.

The internationalization of Brazilian companies is a relatively recent phenomenon. From 2000 to 2003, outward foreign direct investment (OFDI) averaged USD 0.7 billion a year. Over the four-year period 2004−2008, this average jumped to nearly USD 14 billion. In 2008, when global FDI inflows were estimated to have fallen by 15%, OFDI from Brazil almost tripled, increasing from just over USD 7 billion in 2007 to nearly USD 21 billion in 2008. Central Bank data put the current stock of Brazilian OFDI at USD 104 billion, an increase of 89% over 2003. Brazilian outflows are difficult to separate authentic FDI from purely financial investment under the guise of FDI. According to the most recent data, more than one thousand of Brazilian companies have invested abroad. Along with other emerging economies, Brazil is suffering from the effects of the global financial crisis. The OECD forecasts that M&A spending from

Brazil, Russia, India, China, South Africa, and Indonesia will be reduced by 85% in 2009, in comparison to 2008. This matches the partial performance captured in the data already released: in the period January-May 2009, Brazilian OFDI shrank by 87% in comparison to the same period in 2008, from somewhat under USD 8 billion to somewhat under USD 1 billion. If this trend persists, outward FDI from Brazil will be no higher than USD 4 billion in 2009, as against USD 21 billion in 2008.

The internationalization of Brazilian companies is dominated by the private sector, although state-owned enterprises also play a role. Petrobras, for example, has expanded its overseas activities to 15 countries in three continents. In Latin America, the company has energetically pursued a strategy of regional integration in natural gas.

Why are more and more Brazilian companies going abroad? The most frequently cited reason is that they are following clients into international markets. But there are many other reasons as well, such as defending their competitive position, monitoring the competition in international markets, meeting international demand and reducing their dependence on a single (domestic) market. Many Brazilian companies are also interested in natural resources. Yet others are looking for lower costs, better infrastructure and more attractive fiscal incentives. Broadly speaking, Brazilian outward investors are in search of three things: markets, natural resources and investment climates superior to the one they find at home. The cultural affinity could play a special importance in this direction.

1.2- The luso-Brazilian investments

The increase of economic cooperation between Portugal and Brazil has always been object of discourses evoking the historical and cultural ties that unite the two countries. It was not an empty rhetoric, since it reflected a genuine aspiration, but it lacked the business content, which has been, since ancient times, a key force for the contacts intensification between peoples. In recent years this has changed. According to FDI inflows, since 1986, the European Economic Community, now the European Union, Portugal has become, for Brazil, the gateway to a powerful market. Similarly, from the constitution in 1991, the Southern Common Market (Mercosur), this region of South America has qualified himself as one of the most promising investment centres around the world. The bilateral commerce (Imports + exports), which increased from 292.78 million euros in 1989 to 1.70 billion euros in 2008, six times more. And bilateral investment has grown from 67, 26 million to 1765.50 million gross in the same period, more than 26 times. The turning point on investment relations between the two countries with deep historical ties had a precise date. It was on April, 14, 1996, with the visit in Brazil of Prime Minister Antonio Guterres, who was accompanied by a large delegation of executives from various small, medium and large Portuguese companies, and appeal to the business cooperation between the two countries. As some pull factors, in addition to history, culture and language (this fact lowers the cost of communication), Brazil is the fifth largest consumer market in the world and the second largest location of foreign investment among emerging markets. The Guterres plan was facilitated by Brazil government, a team with the dialogue was very easy. The convergence between Guterres and Fernando Henrique Cardoso had a decisive new posture of luso-Brazilian economic relations. Guterre's speech coincided with the opening of the Brazilian economy and the privatization that began in Brazil in the 90s, besides the economic stability provided by Real Plan. Then, the companies' acquire more confidence to investing in Brazil. Portugal already is a preferred location for Brazilian companies. Proof of this is the number of Brazilian companies installed the second favourite in terms of geographical location, shortly after Argentina. Brazil's position among the 10 largest foreign investors in Portugal, in the early 2000s, is ahead of several countries traditionally overseas investors. By 1990 there were about 50 Brazilian companies in Portugal. With the globalization phenomenon, especially in the 2000s, this number increased significantly, reaching in 2010 more than one hundred companies, and a gross investment of over 2 billion euros, between 1996 and 2009, according to Bank of Portugal.

The fact that there are recognized Brazilian companies in various sectors of the Portuguese economy is also a relevant point in our subject of study. Cechella (2008) points out the main factors for the boost of Brazilian investments in Portugal (Cechella, 2008):

- The size of domestic market: with a GDP per capita of U.S. $ 21,404.00 in 2009 (IMF), Portugal is a relevant market for many Brazilian companies and various economic sectors.
- Basis for wider market and the European Union (EU): as a member state of the European Union, and having to observe the common rules that the EU imposes, Portugal is seen by many companies in Brazil as a central country to deepening investments in the European Union.
- The cultural connexion from the European immigration to Brazil in the nineteenth century and their traditional trade relations also reflect the importance of EU for Brazilian investments.
- Possibility of learning and facilitate foreign management - a common language and cultural relations intense simplify the understanding of business environment, one of the biggest challenges for investment abroad. The cultural affinity is one advantage that some Brazilian companies visualize in Portugal, especially those that are beginning. This facilitates both the communication between people as to interchange experience and technology.
- The economic geography: the geographic position of one country over another is an essential aspect in measuring the potential of trade and investment. Brazil, in the context of South America, and Portugal in the European Union, are part of different continental areas and, therefore, can take the advantage of these strategic points.
- Economic and political stability of two countries is a key factor to foreign direct investment because it reduces the uncertainty of investment. Portugal, European Union member since 1986, need to fulfil targets of macroeconomic balance and good policies to continue as a member, and Brazil, with democratic elections since 1985 and with the success of the Real Plan in 1994 in the fight against the inflation as well as the significant improvement in its balance of payments, are countries that have achieved a good degree of politic and economic stability.
- The increasing importance for some companies to integrate into global networks: the phenomenon of integration and globalization has opened the borders. For many sectors of the economy, this represented a reduction of protectionist barriers, and the resulting increase on competition. Thus, companies needed to reorganize its business through measures as the internationalization of their activities to gain scale and improve their products and services.

2. A multidimensional analysis of the FDI

The early attempts to explain why foreign direct investment exists emerged in the 1960s, just as flows of FDI began to increase in volume. Before this time, FDI was modelled as a part of neoclassical capital theory, but as Dunning (1981) notes there are two main problems with viewing FDI this way. First, FDI is more than just the transfer of capital, since just as importantly it involves the transfer of technology, organisational and management skills. Second, the resources are transferred within the firm rather than between two independent parties in the marketplace, as is the case with capital. These factors give FDI its own unique literature, with the key theories often cited as: Hymer's (1960) international operations of national firms; Vernon's (1966) product life-cycle theory; Caves's (1971) horizontal and vertical theories; Buckley and Casson's (1976) internalisation theory; Dunning's (1977) eclectic theory; and The Uppsala or Scandinavian School of firms. The last two approaches will be considered and form the theory substance of this paper.

2.1 The Eclectic Paradigm

Reflecting upon the history of the theory of FDI, Dunning (1977; 2008) noted that it was very much couched in terms of either the structural market failure hypothesis of Hymer and Caves or the internalisation approach of Buckley and Casson. Dunning provided an eclectic response to these by bringing the competing theories together to form a single theory, or paradigm as it is more often referred. The basic premise of Dunning's paradigm is that it links together Hymer's ownership advantages with the internalisation school, and at the same time adds a locational dimension to the theory, which at the time had not been fully explored. Although in many ways the core of the paradigm shares similarities with the previous research, Dunning does manage to

introduce some new considerations, such as the impact that different country and industry characteristics have on each of the ownership, locational and internalisation advantages of FDI.
The eclectic paradigm of FDI states that a firm will directly invest in a foreign country only if it fulfils three conditions. These are necessary rather than sufficient conditions. First, the firm must possess an ownership-specific asset, which gives it an advantage over other firms and which are exclusive to the firm. Second, it must internalise these assets within the firm rather than through contracting or licensing. Third, there must be an advantage in setting-up production in a particular foreign country rather than relying on exports.
Different types of ownership (O), locational (L) and internalisation (I) factors are given in Table 2.1 (collectively known as OLI). The ownership advantages are defined by Dunning as particular assets that are specific to the firm that give it the potential to earn greater profits in the future. They include the size of the firm, the level or quality of management, access to factor inputs, access to product markets and technological capabilities. They may reinforce themselves over time to include advantages created from economies of joint supply and through the possession of greater knowledge and information. Thus, a large multinational will have a large number of ownership-specific advantages. Location advantages are the assets that a country possesses that make production attractive, as opposed to exporting. They include input prices, transportation costs (Cechella et al.), communication costs and government incentives. Stable political and legal systems, a commercial infrastructure and language and culture are also relevant. Internalisation advantages are the ways that a firm maximises the gains from their ownership advantages to avoid or overcome market imperfections. Internalisation-specific advantages results in the process of production becoming internal to the firm. Reasons for internalisation include the avoidance of transaction costs, the protection of the good, avoidance of tariffs and the ability to capture economies of scale from production, marketing and finance.

Table 2.1 The Three Conditions of the Eclectic Theory

Ownership-specific advantages (internal to enterprises of one nationality)
Size of firm
Technology and trade marks
Management and organisational systems
Access to spare capacity
Economies of joint supply
Greater access to markets and knowledge
International opportunities such as diversifying risk
Location-specific advantages (determining the location of production)
Distribution of inputs and markets
Costs of labour, materials and transport costs between countries
Government intervention and policies
Commercial and legal infrastructure
Language, culture and customs (i.e. psychic distance)
Internalisation-specific advantages (overcoming market imperfections)
Reduction in search, negotiation and monitoring costs
Avoidance of property right enforcement costs
Engage in price discrimination
Protection of product
Avoidance of tariffs

Source: Dunning (1981).

Not all of the OLI conditions for FDI will be evenly spread across countries, and therefore each condition will be determined by the factors that are specific to individual countries. Links between the OLI advantages and the country-specific characteristics are summarised in Table 2.2. For example, the ownership-specific advantage of firm size is likely to be influenced by market size in the firm's home country. This is because the larger the market is, the more likely will a firm be able to gain ownership-specific advantages in the form of economies of scale. In

terms of location-specific factors, labour costs will vary across developed and developing countries, while transport costs are determined by the distance between the home and host countries. Finally, country-specific factors are likely to affect the degree to which firms internalise their advantages.

Table 2.2 Characteristics of Countries and *OLI*-Specific Advantages

Ownership-specific advantages	*Country characteristics*
Size of firm.	Large markets.
	Liberal attitudes to mergers.
Technology and trade marks.	Government support of innovation.
	Skilled workforce.
Management and organisational systems.	Supply of trained managers.
	Educational facilities.
Product differentiation.	High income countries.
	Levels of advertising and Marketing.
Location-specific advantages	*Country characteristics*
Costs of labour and materials.	Developed or developing country.
Transport costs between countries.	Distance between countries.
Government intervention and policies.	Attitudes of government to FDI.
Economies of scale.	Size of markets.
Psychic distance.	Similarities of countries' languages and cultures.
Internalisation-specific advantages	*Country characteristics*
Searching, negotiating, monitoring costs.	Greater levels of education and larger markets make knowledge type ownership-specific advantages more likely to occur.
Avoid costs of enforcing property rights.	
Protection of products.	

Source: Dunning (1981).

2.2 The Uppsala or Scandinavian School

A group of Swedish economics and management academics probed further into the dynamics of internationalization in their analysis of the process leading from domestic only production and sales to foreign sales (Johanson and Wiedersheim-Paul, 1975; Johanson and Vahlne, 1977; 1990). Their approach draws on Penrose (1959), and it looks into the black box of the firm in order to analyse its decision-making process in a specific field: sales in foreign markets.
The authors study the organization of sales and marketing in one or more foreign countries and come up with the idea of stages in the internationalization process.
What emerges is a dynamic model involving a time sequence that develops in a logical and linear pattern, and in which elements in one stage form the input for the next stage. The work of the Scandinavian School starts with empirical research into the internationalization process of Swedish manufacturing firms (Johanson and Wiedersheim-Paul, 1975). The authors study in detail the following four firms: Sandwik AB, a steel and steel products manufacturer; Atlas Copco, a producer of railway materials and components; Facit, originally a producer of calculating and typing machines who later, in 1972, merged with Electrolux; and Volvo, the car manufacturer.

The authors aim to analyse the stages through which internationalization takes place in any one country as well as the sequence of penetration into different countries. In a later work, Johanson and Vahlne (1990) specify that the model they developed in 1977 – partly on the basis of the empirical work in Johanson and Wiedersheim-Paul (1975) – can explain two patterns in the internationalization of the firm:

• the firm's engagement in a specific foreign market/country, which develops according to an establishment chain; and

• the involvement into several foreign countries, which proceeds in a time sequence related linearly to the psychic distance from the home country.

The psychic distance is defined in Johanson and Vahlne as 'the sum of factors preventing the flow of information from and to the market. Examples are differences in language, education, business practices, culture and industrial development (Johanson and Vahlne, 1977: 24). The countries psychically closer to the domestic market see international involvement earlier than the more distant countries. Psychic and spatial distance tends to be very closely related. In the case of the Swedish firms, the countries which are spatially close tend also to be countries which are culturally and linguistically close to Sweden; they are the ones in which the firm looks for foreign markets first. International involvement into more distant countries – psychically and, usually, also spatially – comes at a later stage (Johanson and Wiedersheim-Paul, 1975).

Johanson and Vahlne (1977) concentrate on the first pattern: increasing involvement in the same foreign country. On the basis of previous empirical work, they see that the establishment of various modes of market involvement into a foreign country follows a specific linear chain ('the establishment chain') along the following sequence: exports via independent representatives (agents); sales subsidiary; and, finally, production subsidiary.

The task the authors set themselves is to explain why and how this sequence evolves. To this end they develop a model of internationalization in which the various steps are explained. Theirs is a dynamic model in which 'the outcome of one decision – or more generally one cycle of events – constitutes the input of the next'.

In their model they distinguish between variables related to state and those related to change aspects of internationalization: the present state of internationalization affects the change in internationalization and therefore the future state aspects.

Essentially the state aspects refer to elements of the situation as it is at the time of the analysis and as the result of investment made and resources committed in the past in that foreign market. It could, for example, include also the resources committed to the training of local labour force or for the deployment of managers and technical staff from other units of the company.

Aspects related to change have to do with results and decisions that extend through time such as the current performance of past investment or the decisions already taken to commit resources in the near future.

As regards the state aspects, the amount of resources committed is close to the size of the investment widely interpreted to include also 'investment in marketing, organization, personnel and other areas'.

The authors distinguish between economic and uncertainty effects of additional commitment. The economic effect is associated with the scale of operations on the market. The uncertainty effect relates to market uncertainty which tends to be high in very dynamic markets and also whenever there is a threat from new or potential new entrants into the market.

The level of uncertainty can be reduced by developing greater interaction and integration with the market such as better communications with customers. Reduced uncertainty or increase in the level of acceptable risk is likely to lead to an increase in the scale of commitment.

The authors conclude the discussion on 'commitment decisions' 'by observing that additional commitments will be made in small steps unless the firm has very large resources and/or market conditions are stable and homogeneous, or the firm has much experience from other markets with similar conditions' (Johanson and Vahlne, 1977: 30–31). Therefore the conclusion is that

involvement in any single foreign country will proceed cautiously and in accordance with the following stages in the establishment chain:
• exports via agents;
• setting up of sales subsidiaries;
• setting up of production subsidiaries.

The above sequence is the result of state and change aspects in which the nature of knowledge and uncertainty play a large role. The dynamic sequence is linear in two ways: because each stage leads to the next one and because each new stage involves a larger commitment of resources than the previous stage.
The second internationalization pattern refers to the spread of internationalization from one foreign country to others. Here the sequence is also dynamic and linear proceeding by stages from the foreign country psychically closer to those more distant. Psychic and spatial distances tend to be strongly related.
In both types of patterns – within a single foreign country and across many – we see internationalization as a result of a series of incremental decisions. It proceeds dynamically and linearly: from one stage to the next; from small to large resource commitment; from a single foreign country to several.

The Scandinavian School starts with the observation of empirical regularities and then goes on to develop a general model to explain internationalization patterns and their regularities. The authors put forward the idea that internationalization develops in stages which are of the following two types:

1 - Stages in the establishment chain: a dynamic and linear sequence leads from exports via agents to sales subsidiaries and later to production subsidiaries. A related linear pattern can also be detected in terms of amount of resources committed at each stage in the establishment chain with more advanced stages in the internationalization process requiring larger commitment of resources.
2 - Stages in the geographical spread of internationalization from one country to many: this follows a linear pattern related to psychic distance between the home and foreign countries.

The model explains various stages in the internationalization process via an analysis of states and change aspects of internationalization. The nature of knowledge and in particular experiential knowledge and its environment-specific character, play a strong role in the development of the various stages. So does uncertainty.
The strength of the model is the realization that internationalization is not an either or situation with regard to mode of operations or number of foreign countries of involvement. Rather it is a dynamic sequence with each stage affecting the change and thus the next stage: the performance variables in each stage become inputs for the next. It is also a cautious and incremental approach to internationalization in which the firm tastes the internationalization water before walking in and later dipping in. The commitment is gradual and the sequences are linear. This gradual stages approach is strongly linked to uncertainty and to the relevance of non-transmittable experiential knowledge.
The model leads the authors to probe into the organization/institution and its decision making process. In this respect it follows other organizational types of studies though the authors confine themselves to the study of the organization's marketing and sales functions. There is very little on production, its organization, its problems and how opportunities might arise or strategies be formulated in relation to the production elements such as costs or innovation and technology, or availability of labour skills.
There is a rather deterministic feel about the Scandinavian School model; the various stages follow a linear, almost predetermined, pattern. Though the model is not driven by efficiency considerations, the scope for strategic decisions seems limited in its well defined linear patterns.

3. A model of Brazilian foreign direct investments in Portugal

This model seeks to show, through a factor analysis and regression, the factor that contributed to the evaluation perception of profitability success of Brazilian firms in Portugal, and the influence of cultural affinity as a factor in the decision to invest in Portuguese market. These two techniques are widely used in studies on FDI (Bang Nam et al., 2008; van Roeseler, 1996, Zaman and Ünsal, 1997, Read, 2008). Specific questions about Brazilian companies located in Portugal were used, based on the OLI paradigm proposed by Dunning and the Uppsala School (in annex). Firstly, we performed a factor analysis to identify the main explanatory variables, according to the survey conducted in locus with 30 Brazilian companies, 42.12% of total sample. Secondly, we measure de importance of cultural affinity to profitability with a regression with and without constant, using the stepwise method and SPSS 16.0 software.

3.1. Methodology

In order to reduce the number of items associated with the factors related to assets, internalizing and location, we performed the factorial analysis to identify the variables that explain the maximum variance of original items. The criterion used was *eigenvalues* greater than 1, followed by *Varimax* rotation and according to *screet plot*.

Firstly, we seek to explain the latent variables of Brazilian foreign direct investments in Portugal motivational factors related to the assets. The factor analysis converging to a solution with three main components, explaining 66% of total variance, as showed by the parsimony analysis. By analysing the solution after *Varimax* rotation, the first principal component explains 36% of the total variance and is composed by items related to technological capability, innovative reputation, brand image, human potential and management. The second principal component explains 17.41% of total variance and includes these factors: international vocation of the owner, location and infrastructure of trade agreements with Portugal and Brazil. The third principal component explains 12.60% of total variance and contains these items: sanitized financial structure, experience in the domestic market and low manufacturing cost of products.

As for factors related to internalization, the factor analysis converged to a solution with four main components that explain 75% of total variance. The items with high saturation in the first component, which explains 47% of total variance, are the high costs of transportation and communication; market used as a platform for export to third countries and customs barriers. The second component (11.21% of total variance), the factors are those related to good financial structure, to follow competitors or clients, institutional support and economic stability in Brazil. The three components (9.12% of total variance) consists a prior exports and synergies by integrating international, and the four component (7.9% of total variance) is related to the company seeking to diversify the risk and be closer to its customers.

The factors related to location, the factor analysis converged to a solution with 9 principal components that explain 86% of total variance. The components that we retain were the first three, which explain 56.6% of total variance, the sufficient to assess the representativeness of the sample. The component number one (36.40% of total variance) includes items as the existence of bilateral agreements, host- country tax incentives, subsidies, and land section by host-country, subsidies and tax incentives in the country of origin and investments limitations of the country of origin. The component number two (11.73% of total variance) covers the availability and quality factors of human capital, potential and size of the Portuguese market, level of competence of the host country and access to suppliers. The component number three (8.48% of total variance) includes the items geographical distance, emergence of relations between Brazil and Portugal, legal environment, clustering, buy opportunities to businesses. All major components described above were saved in our database for statistical analysis, including a multiple linear regression analysis. In order to clarify the determinants found by factor, in the following section we perform the empirical analysis.

3.2 Results and discussion

To identify the influence of cultural affinity in the profitability of Brazilian companies located in Portugal and proceeded to a multiple linear regression with these variables as independent and dependent, respectively. The first two principal components of the factors related to the assets, the first two main components of factors related to internalization, the three main factors related to location and, finally, two variables that attempt to measure the influence of cultural affinity between Brazil and Portugal complete the list of independent model variables.

The first arises in the context of the factors of location, and the second is a single question asking whether the language, culture and history influenced Brazilian companies' decision-making to invest in Portugal. The method used was the stepwise regression. This model is particularly appropriate when there are significant correlations between independent variables. In search of the best model we test simulations including and excluding the constant. In both models were not detected multicollinearity problems.

3.2.1 - Model with constant

Table 3.1. Model with constant profitability - summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	0.568	0.323	0.283	0.95611

The first model explains only 32% of profitability, contributing to the explanation the first principal component of factors related to internalizing 8p=0.011), that encompasses issues of high cost of transportation and communication, barriers customs and Portuguese market used as export platform.

Table 3.2. Profitability model with constant - coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.000	0.220		22.713	0.000
	FAC1_28	0.556	0.195	0.568	2.846	0.011

a Dependent Variable: **Profitability**

3.2.2 – Model without constant

Seeking the best solution, we estimate a new model not including the constant in the regression line. The regression analysis stopped at the fourth step and explained 94% profitability variance.

Table 3.3. Profitability model without constant - summary

Model	R	R^2 (a)	Adjusted R^2	Std. Error of the Estimate
1	0.924	0.854	0.846	2.02857
2	0.944	0.892	0.879	1.80040
3	0.959	0.919	0.904	1.60389
4	0.972	0.944	0.929	1.37831

The variables that contribute significantly to explain the variance valuation of the company based on profitability are: q21 (cultural influence, in annex), B = 0.924, t (15) = 4.402, p = 0,001, Q29_25 (cultural affinity), the first principal component of factors related to assets FAC1_27 (technological innovative capability, reputation and brand image, human potential and management company), and the first principal component of the factors related to the

internalization FAC1_28 (high cost of transportation and communication, tariff barriers and Portuguese market used as export platform).

Table 3.4. Profitability model without constant - coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	Q21	3.214	0.313	0.924	10.269	0.000
2	Q21	3.383	0.286	0.973	11.811	0.000
	FAC1_27	-1.247	0.516	0.199	2.419	0.027
3	Q21	2.379	0.501	0.684	4.749	0.000
	FAC1_27	-1.188	0.460	0.190	2.582	0.020
	Q29_25	0.305	0.131	0.331	2.328	0.033
4	**Q21**	**2.001**	**0.455**	**0.575**	**4.402**	**0.001**
	FAC1_27	**-1.263**	**0.396**	**0.202**	**3.185**	**0.006**
	Q29_25	**0.400**	**0.119**	**0.434**	**3.378**	**0.004**
	FAC1_28	**0.772**	**0.299**	**0.168**	**2.582**	**0.021**

a Dependent Variable: **Profitability,** b Linear Regression through the Origin

The cultural affinity contribute more significantly to explain the variance in profitability to *Stepwise method*, according to the theories of FDI examined, such as Uppsala and eclectic paradigm, followed by the first principal component of factors related to assets (related to monopolistic advantage), and the first principal component of the factors related to internalization. Not only in the case of the Portuguese language, which is still emerging, but also of English, Spanish, among others, are evidence that a common language, even that does not guarantee the success of the investment, is a facilitator of business in several strategic issues.

Therefore, the regression straight of the profitability model is:

Profitability = 2.001(cultural influence) -1.263 (technological innovative capability) + 0.400 (cultural affinity) + 0.772 (high cost of transportation and communication)

4. Final remarks

For a long time culture and economy have been treated as broadly independent areas of research. Furthering the understanding of the determinants of economic activity promised to be one of the major research areas in the post-war era, although past analyses, especially those that are quantitatively based, are mainly focused on economic variables. Since the late twentieth century, however, there have been arguments respecting an increasingly close relationship between economy and culture. With regards to the mechanism of their relationship, one should recognize that economy and culture do not impose upon one another as wholly external forces, but are always intimately associated. Despite the closeness of this association, they have different logics: the one taking account of certain intrinsic or non-instrumental values, the other relating instrumental values to external goals of reproduction. Their interactions are complex as are their effects on economic development and cultural change.

It is now increasingly accepted that one of the many reasons underlying the relative lack of success of past economic development efforts is that culture was overlooked in development thinking and practice. This belated resurgence of interest has raised culture to a position of honour in development debates. Even conservative financial planners and technical problem-solvers now recognize that if healthy and sustainable development is to take place culture cannot be ignored. In fact, many social scientists, particularly sociologists, human geographers and political scientists, have been undergoing a ‘cultural conversion’ in recent decades, evident

both in method and content. As a result there has been a long-overdue dialogue with literary studies, and an increased concern with cultural phenomena.
This paper show, though a factorial and a regression model, the importance of cultural affinity for Brazilian foreign direct investment in Portugal, on globalization and economic growing of emerging countries, as Uppsala School approach, exposed.

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Annex - Survey "Brazilian investment motivations in Portuguese market"

Location factors

- Geographic distance
- Access to natural resources
- Political and economic stability of the host country
- Legal system (judiciary efficiency, bureaucracy)
- Respect of property rights
- Labour laws
- Tax burden
- Market size Portuguese
- Cost of human resources
- Transport costs
- Costs of raw materials, energy and water
- Infrastructure
- Availability and quality of human capital
- Market extended to European Union
- Competence level of the host country
- Suppliers access
- Emergence of economic relations between Brazil and Portugal
- Buy local firms
- Improve position in relation to competition
- Personal contacts with host country
- Clustering
- Subsidies and tax incentives
- Environmental legislation less rigid

- Cultural Affinity
- International trade agreements
- Learning opportunities)
- Legal Environment
- Quality of life and public services
- Good receptivity of the community
- Tax incentives in the host country
- Existence of multilateral / bilateral agreements
- Market limitations in the country of origin
- Reduce risk (crisis and instability in the country of origin)

Assets factors

- Reputation, image and brand
- Technological and innovative capacity
- Human Potential and Management
- International vocation of the owner
- Products better than competition
- Low cost manufacturing of products
- Geographic location and Portuguese infrastructure
- Support and trade agreements between Brazil and Portugal
- Agreements with other multinationals
- Experience in the domestic market

Internalizing factors

- Availability of financial resources
- Previous exports
- High costs of transportation and communication
- Logistic
- Explore and control directly strategic resources
- Access to natural resources
- Market used as a export platform to third countries
- Follow the competitors or customers
- Institutional support
- Customs barriers
- Increase the scale of business
- Economic stability of Brazil
- Diversify the risk of production and sales
- Synergies by international integrating

Q. 21 – Aspects, such as language, common culture and history influenced the Brazilian firms' decision-making to invest in Portugal? Yes/No

DO BANGLADESH AND PERU REACH UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS BY 2015? A COMPARATIVE PERFORMANCE ASSESSMENT

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Abstract:

Education is a society's main instrument for reproducing itself and a compelling ingredient for lasting meaningful socioeconomic change. Therefore at the beginning of new millennium when the United Nations Member States was trying to reach a global consensus for global sustainability and development, issues related to universal primary education was a rational choice for them. This paper compares the status quo of the access to universal primary education (UPE) and possible scenario by 2015 in Bangladesh and Peru, where 'development' takes place in reality. The increase of universal primary school enrolment is closely related to the national and international spending on education sector for these countries and in addition to this, issues like population growth and poverty traps also put increased pressure on the resources allocation to education. Mostly based on secondary information (e.g. literature analysis and analysis through World Development Indicators, United Nations Millennium Development Goals Indicators and United Nations Children's Fund Data), this paper highlights the macro level comparative scenarios and challenges that how these two countries are putting their efforts and facing challenges in achieving universal primary education enrolment targets as part of their UNMDGs commitments by 2015.

Keywords: Bangladesh, Peru, Universal Primary Education, UNMDGs.

Introduction

Primary education has direct and positive impacts on earnings, farm productivity, human fertility, along with immense intergenerational influence on child health, nutrition and education and women empowerment. Considering the impacts of education on economic productivity, a wide number of studies conclude that investments in primary education yield returns that are typically well above the opportunity cost of capital. One study showed that 4 years of education increased small farm productivity by 7% across 13 developing countries and by 10% in countries where new agricultural techniques were being introduced (Lockheed et al., 1990). The social impacts of education are also positive. Particularly women with more than four years of basic education usually have 30% fewer children than women with no education, and their children have mortality rates only half as high. Children of educated parents are also more likely

to enroll in school and to complete more years of schooling than the children of uneducated parents (Lockheed et al., 1990).This has been identified that where the head of the household has some forms of educational attainments, the multidimensional poverty levels for that particular household are also lower (UNDP, 2010). This has been demonstrated by the different case analyses across the world. In Papua New Guinea, people living in households headed by a person with no formal education constitute more than 50% of the poor. This is also true for the Republic of Serbia. There the poverty level for households, where the family head had no education, was three times higher than the national average. In 2008, UNDP (2010) findings showed that 77% of Syrian mothers whose children had died before the age of five were also illiterate or had not completed primary education. In many parts of the world, immunization coverage is significantly lower for the children of less educated mothers.

Considering all these positive impacts of education on human development, almost 10 years before when the global leaders of the United Nations (UN) member states agreed to set far sighted goals to free a major portion of humanity from the shackles of extreme poverty, hunger, illiteracy and diseases. They perceived the 'Universal Primary Education (UPE)' as one of the major goals of their development achievements. Primary education is conceived now as the basis for economic growth and social development and a principal means of improving the welfare of individuals and societies. Access to UPE opportunity increases the productive capacities of societies as well as plays critical role for developing the political, economic, and scientific institutions. It plays the decisive role in reducing poverty by increasing the value and efficiency of the labour offered by the poor and by mitigating the population, health, and nutritional consequences of poverty. Amartya Sen believes that people become poor or get impoverished as they are prevented from initiating change and education is one of the widely accepted important tools that can offer the human beings the capacity to initiate any meaningful change or transformations (Samuels, 2005).

In recent years, there has been remarkable progress towards achieving the UPE targets. Several countries in the Global South, particularly the countries with transitional economy (e.g. middle and upper middle income countries) have achieved already the 90% enrolment threshold (UNESCO, 2010). UPE enrolment in primary education has increased fastest in Sub-Saharan Africa, from 58% in 2000 to 74% in 2007 (UNESCO, 2010). Challenge remains with more than 72 million children of primary school age who are still remaining out of school. Dropout rates are still high in many countries particularly in low income developing countries or Highly Indebted Poor Countries and for them achieving 100% primary school completion rate is still a next-to-impossible development challenge (UNESCO, 2010).

Bangladesh and Peru both have comparatively lower GDP in comparison to their neighbouring countries. Their dependency on foreign aid is also at the substantial level, but the increase of foreign direct investments (FDIs) is not that much.

Apart from the geographical distances, there are some other differences between Bangladesh and Peru. Demographic composition and socioeconomic determinants usually have different impacts on the public spending on UPE in these two countries. At the same time, these two countries have some similarities. Increasing inequality is among the major development challenges for both of the countries. Apart from their vulnerability to global crisis, Bangladesh and Peru both countries suffer from their weak political culture.

Despite the several indicators of UNMDGs Goal 2, this paper only focuses the universal primary education enrolment by both sexes. This paper neither addressed explicitly the decreasing gender gap in UPE enrolment nor the issues like drop outs.

Comparative social research has, currently, gained a new momentum. This usually offers us how the similar issues are being dealt or taking place in different social, economic, political or spatial context. In social science, the outcome could be useful for taking different types of policy decisions to make the situation better. Comparison mostly based on secondary literature research and data interpretation and analysis from different sources like World Development Indicators, UNICEF datasets, this paper begins with an analytical overview of these two countries and then examines the recent status and efforts for achieving the UNMDGs goals on UPE by 2015. Afterwards it highlights the situation among the disadvantaged communities.

Finally this paper concludes by summarizing several issues related to UPE with a brief outlook, what can be instrumental for policy planning and decision making.

Comparative Development Scenarios in Bangladesh & Peru:

Socioeconomic conditions along with demographic and spatial determinants play decisive role in shaping the *status quo* of progress towards the achievement of UPE targets by 2015 both in Bangladesh and in Peru. Even though of having different geographical locations consisting different land-population ration, these two countries usually receive often global media attentions due to their different development challenges.
Bangladesh is a relatively small flat country in South Asia. The land mass is deltaic comprising mainly with the delta of three famous mighty rivers; the Ganges, the Brahmaputra and the Meghna. The population is huge, even though it has relatively homogenous ethnic identities. Almost 98% people are Bengalis and the rest 2% comprises the tribal population and non-Bengali Muslims (CIA World Fact book, 2010).

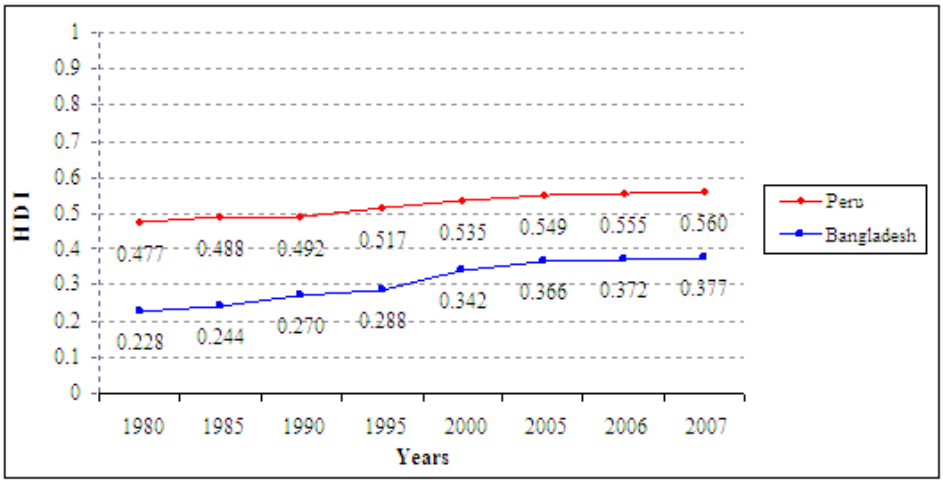
Table 1: Country Profile-Bangladesh and Peru

Country	Population	Land Area (sq km)	GDP per capita in USD (PPP)[1]
Bangladesh	156,050,883	143,998	1500
Peru	29,546,963	1,285,216	8500

Source: CIA World Fact book (2010)

On the other hand, Peru (a mostly mountainous country) maintains relatively better economic status and has less population than Bangladesh. This country, historically, is the home of diverse and heterogeneous ethnicities, which consists almost 45% Amerindian, 37% Mestizo (mixed Amerindian and white), 15% white, black, Japanese and Chinese, and 3% comprises other ethnic origins (CIA World Fact book, 2010). However, recently Bangladesh and Peru have experienced different levels of human development achievements.

Fig. 1: HDI trend in Bangladesh and Peru



Source: UNDP (2010)

[1] Purchasing power parity (PPP) theory states that exchange rates between currencies are in equilibrium when their purchasing power is the same in each of the two countries. This means that the exchange rate between two countries should equal the ratio of the two countries' price level of a fixed basket of goods and services. When a country's domestic price level is increasing (i.e., a country experiences inflation), that country's exchange rate must depreciated in order to return to PPP.

Development disparities are alarmingly high and social exclusion and inequalities are more visible than any times before in both of the countries. Promotions of rural employments or employments in remote hilly regions were never at the centre of public policy agenda. As consequences, increasing poverty or inequality has impacted on states' performance on achieving the UPE targets along with other UNMDGs targets. Mostly the minority or ethnic populations are the major victims of this situation.

Public Policy Response:

While the international development community has encouraged the adoption of the MDGs, including for primary education, it is national governments who have been given the primary responsibility for developing and implementing appropriate measures. The drive for UPE must come first and foremost from political leaders and policy makers, and should then be translated through legal, governance, and bureaucratic structures with sufficient capacities and adequately resourced policies and plans into greater action (UNDG, 2010).

At this instance, US$ 16 billion is needed annually for most of the low income countries to reach the goals for providing primary education for all. Low-income countries could themselves make available an additional US$7 billion a year – or 0.7% of their GDP. Still there are risks of financing gaps. Aid commitments to basic education fell by 22% in 2007 (UNESCO, 2010).

However, even though the progress is slower than the expected accelerated rate, globally the UPE scenario is optimistic. The global primary net school enrolment ratio (NER) increased from 85% in 1999 to 89% in 2006 (UNDP, 2009). That indicates globally more than 10% children of primary school-going-age are out of the schools. In the Global South, enrolment coverage in UPE reached 88% in 2007 in comparison to 83% in 2000 (UNDP, 2009).

In some countries the main reasons for low educational attainment among the children are different socioeconomic, ethnic or religious determinants. In countries like Bangladesh, more than half of children from the bottom two income quintiles never even enrolled. Elsewhere particularly in Latin America, enrolment is almost universal, but high repetition and drop-out rates lead to low completion rates. In both cases, poor students are much more likely not to the complete schools. Demographic trends could be also among other decisive factors, since population growth usually puts increased pressure on the resources (e.g. per capita spending on UPE), which are allotted to education spending.

In Bangladesh, public policy has laid emphasis on the education since the country signed the multilateral 'Education For All (EFA)' agreement in the early 90s. The Government continues to be the main provider and financer of UPE. About 47% of primary schools are public schools. There are also registered non-government primary schools, which are privately operated but heavily subsidized by the government. Registered non-government primary schools only represent about one fourth of the entire existing schools. There are also some other schools operated by non-government organizations (e.g. BRAC), religious institutions and other non-government formal or informal schools. In addition to direct financing, Government of Bangladesh has also introduced demand side interventions to make UPE accessible in all clusters of society, e.g., stipends and fee waiver programmes, incentives for the private sectors to provide education services and community based programmes for increased provision for out of school children.

In parallel Peru has been signed an important agreement called Social Pact (Pacto Social), which is key policy initiative for the education sector. Subsequently to the Social Pact, the government has enabled the 'Juntos' programme, implemented in 2005[2]. As in Bangladesh, in Peru also the Government is the main provider and financier of promoting UPE. There are also private schools mostly attended by the children from middle class and richer families. These schools are not subsidized by the state. In addition to this, there are also some schools operated

[2] The Juntos programme is a lump-sum payment (monthly cash transfer of US$35) and differs across households based on the number of children. To receive this payment, households need to comply with a number of requirements. This "conditionality" varies, depending on the age and gender of the beneficiaries (World Bank, 2009).

by NGOs. Among others, Catholic schools named 'Fe y Alegría' are quite familiar. But for the 'Fe y Alegría' schools considerable levels of state funding are paid by the public sector, particularly for the payments of teachers' salaries. By 2006, the 'Fe y Alegría' catholic schools had 71,500 students, 3,200 teachers, 62 high schools and four rural school networks with 97 additional schools (World Bank, 2007).

In Peru, UNMDGs have been integrated as the key instrument of public governance, such as the Multiannual Macroeconomic Framework (MMF 2009-2011) and the Multiannual Social Framework (MSF 2009-2011), drawn up for the first time at the same year to carry out the provisions of the 'Plan of Social Programme Reform'. MSF even includes inequality aspects, previously which were not included in MMF. Finally, in the Budget Law for the Year 2009, the targets for 2011 relating to chronic malnutrition and other prioritized social issues, e.g. maternal and newborn health, learning achievements, access to potable water and sanitary waste and sewage disposal, access to health and education facilities etc., have been ratified (Presidencia del Consejo de Ministros del Perú, 2009). Therefore this is clearly evident that the level of commitments of Peruvian government has increased significantly at the recent years in order to achieve the goals designed not only to maintain macroeconomic balances but to overcome the social gaps. However, the United Nations Development Group (2010) addresses the progress of MDGs 2 in Bangladesh and in Peru as follows:

Table 2: Progress Scenario of MDGs 2 in Bangladesh and Peru

Country	**EFA Development Index (EDI) in 2007**	**MDG 2 Indicators (2008)**			**Total public expenditure on education (2007) as % of total government expenditure**	**Recipient of aid to education**	
		Adjusted Net Enrolment Rate in primary	**Survival rate to last grade in primary**	**Youth Literacy Rate**		**Total aid to educ. (2007)/US$ millions**	**Total aid to basic educ. (2007)/US$ millions**
Bangladesh	0.718; Far from achieving EFA (EDI< 0.800)	85.46	-	74.4	15.8	250	118
Peru	0.942; Intermediate position (0.949 ≥ EDI ≥ 0.800)	97.25	82.96	97.4	16.4	44	17

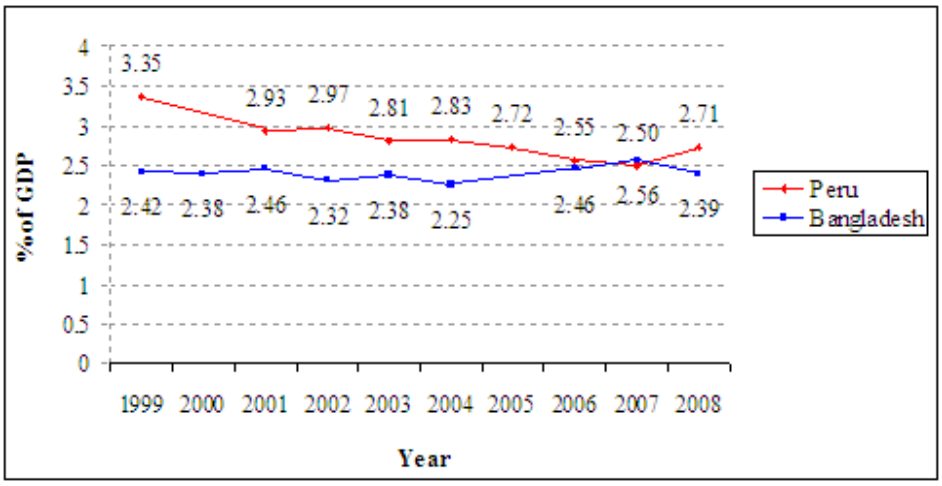
Source: UNDG (2010)

Public Expenditure:

Bangladesh has achieved relatively strong economic performance with GDP growth rate more than 5% during the 1990s and real GDP growing by nearly 52% over the same period (World Bank, 2008). Public spending and attentions have continued to give priority to health and education sectors. Nevertheless, total spending on social sectors is a little under 5% of GDP.

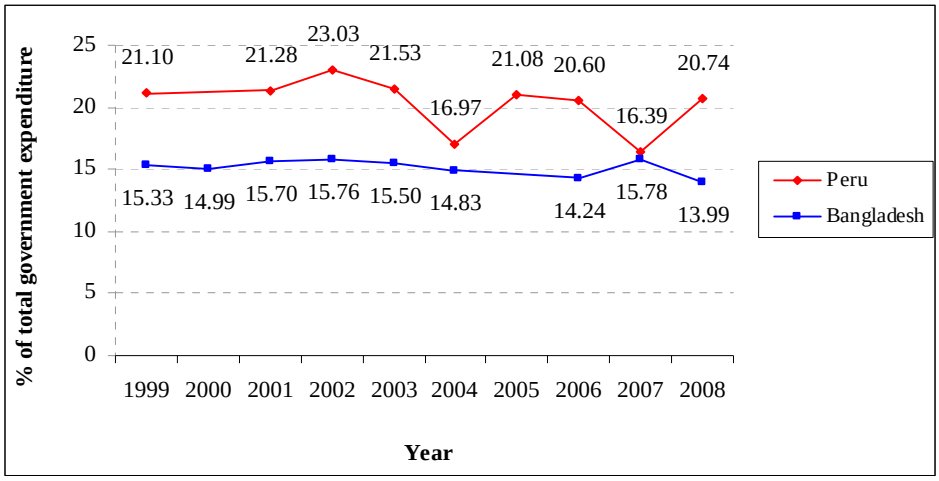
Education expenditures increased significantly from 1.6% of total GDP in 1990 to over 2.4% in 1995-96. Since 1999, the share of education in GDP remained stable at 2.2% (World Bank, 2008). But Bangladesh is spending less money per student in primary education in comparison to other developing countries with similar per capita income.

Fig. 2: Public expenditure on education as % of GDP



Source: UNESCO (2010)

Fig. 3: Public expenditure on education as % of total government expenditure



Source: UNESCO (2010)

In Peru, spending on education has declined remarkably from 3.35% of total GDP in 1999 to 2.50% in 2007. In 2008 there was an increase. Interestingly in Peru the reduction of spending on education did not affect the increase of literacy rate (UNDP, 2010).
Peru has also experienced a steady economic progress in the last years: 6.8% in 2005, 7.7% in 2006, 8.9% in 2007 and up to 9.8% in 2008 (World Bank, 2010). Approximately 3% of gross domestic product (GDP) has spent for the education sector, which is equivalent to the 16.5% of the total public expenses. This number indicates around US$300 is spending for each student per year in the primary school (Ministerio de Educación de Perú, 2004).

Access to Schooling for the Disadvantaged Groups:

This has been identified that disparities in access, quality of education enjoyed by learners and in learning outcomes among populations, groups and regions exist due in large part to social, economic and cultural factors. In reality, marginalized individuals and groups do not just accumulate fewer years of education, but often received a poorer quality education that results in low levels of learning achievement. Underlying causes are often diverse and interconnected,

with household poverty being one of the strongest and most persistent factors for educational marginalization. Frequently gender is another important barrier, especially when these are combined with other factors such as culture, language, ethnicity, race, geographical location, disability, health and other socio-political context (UNDG, 2010).

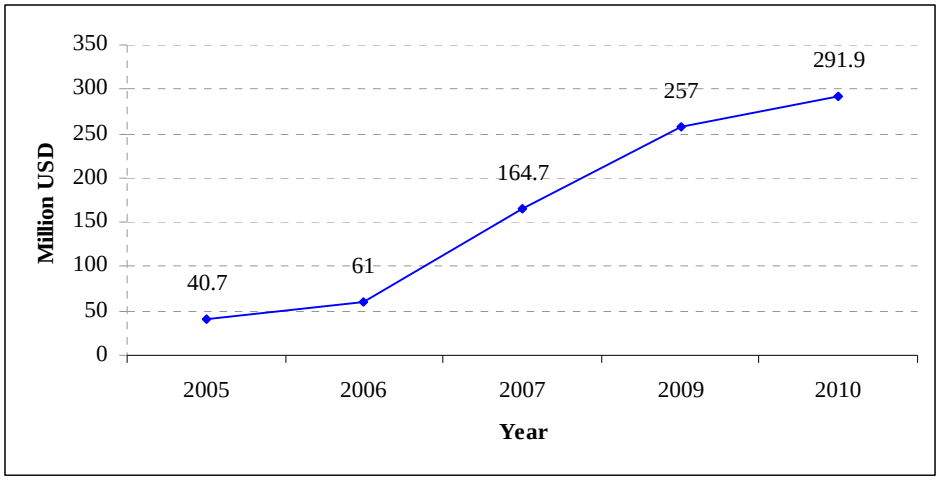
For countries with 'rich' culture and tradition like Bangladesh and Peru, unequal opportunities resulting from prejudices based on gender, ethnicity, income, language or disabilities are quite visible and those are major obstacles for achieving the UNMDGs Goal 2 within 2015. Still the global target for UPE remains off-track. The critical challenge is the renewed targeting the bottom 10% of the population (Rahman and Islam, 2009).

In 1990s, Demographic and Health Surveys showed in Bangladesh the improvements in access to basic education benefited foremost the children from better-off families, while children from poor families saw little or no improvement. The access to primary education worsened in Peru during the 1990s. But only the poor bore the consequences, however the non-poor were not affected (Vandermoortele, 2002).

In tackling the situations, Government of Bangladesh has initiated a stipend programme in 2002 to reach the 40% of the poorest primary school students. In Bangladesh the indigenous people are often seemed to be among the most disadvantaged groups. Despite the availability of public resources, Government is putting its all efforts to reach the mountainous regions (Chittagong Hill Tracts) for ensuring the accessibility to the UPE facilities. Some records show that 150,000 children from indigenous communities have dropped out of school, and the completion rate of those who do enrol is also very low. The current services provided for indigenous children by various NGOs, aid agencies and the government are not sufficient. Government primary schools cannot operate in remote hilly regions due to cost-effectiveness (DrikNEWS, 2009). Apart from this, there are also other difficulties in achieving education by the local indigenous communities. Sometimes there is some irrelevancy of curriculum with the local culture and social context, language barriers between teachers and students, recruitment or appointment of teachers from outside community, less numbers of schools and remoteness of communities are some of the most difficult obstacles to educational access faced by the CHT indigenous groups (Tipura, 2008).

On the contrary, in Peru Juntos aimed to serve 110 districts, which covered 37000 household and then that expanded to 638 districts and covered 454000 households. This has been aimed so far to expand to all 880 the poorest districts (World Bank, 2009). Here poverty is pervasive among the minority ethnic groups and have direct impacts on primary schools enrolment from the respective groups. The government of Peru, recognizing the relationship between poverty and education, decided the following objectives for Juntos: (a) in the short run, to reduce poverty by providing households with cash transfers, and (b) in the long run, to break the intergenerational transmission of poverty through promotion of human capital via improved access to education and health services (World Bank, 2009).

Fig. 4: Budget allocation to the 'Juntos' programme during 2005-10



Source: Juntos Programme (2010).

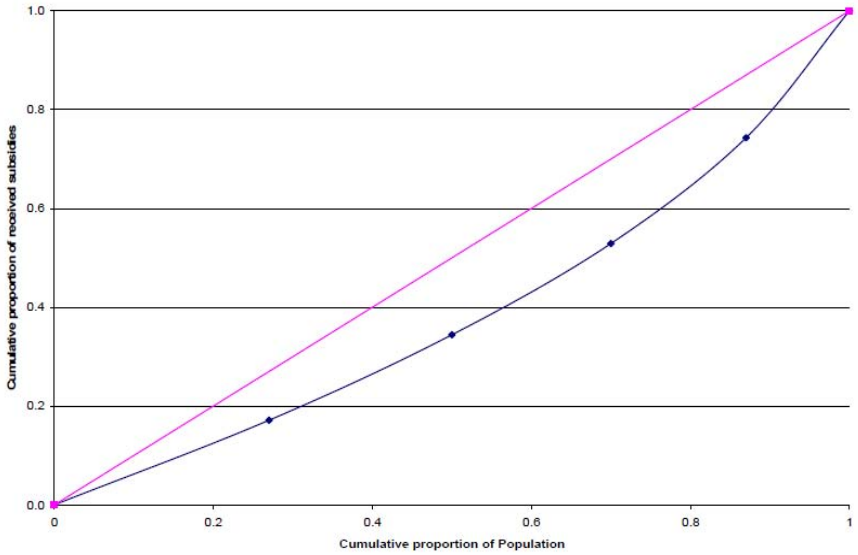
Although indigenous people make up at least 40% of Peru's population, their inclusion in higher education has never been an explicit national policy. Peru's indigenous populations can be broadly divided between the highland Quechua and Aymara-speaking peoples and the more than 50 lowland Amazonian linguistic groups. Nevertheless, the intercultural bilingual education did not receive substantial government attentions or supports. Till now there have been no legislative or financial initiatives to tackle this situation. In 2000, World Bank's initiatives for strengthening indigenous organizations implemented in neighbouring Bolivia, Ecuador, Argentina and Chile, but not in Peru (Dillon, 2008).

Policy Gaps:

Financial scarcities are often identified as the most important constraint. Usually low income countries spend a lower share of GDP and of total expenditure on education than do middle and high income countries, surely with wide variations between country figures. However, the political economy of each country is different and it cannot be assumed that how much a country can direct its spending on UPE. While aid is a very small part of total spending on primary education overall, it does play a key role in poor countries and is often an important source of funds for non salary items. Try to quantify the financing gap is therefore is always troublesome (UNDG, 2010).

At this moment in Bangladesh, the benefits incidence of public spending is regressive as the poor are less likely to go to school. Particularly, the poorest quintile benefits comparatively less from the government's primary education subsidy (17%) than the richest quintile who gains 26% of total primary education spending. In other words, it might be plausible that the public spending is less efficiently targeted towards the poorest children and the poor usually receive a smaller share in UPE subsidy than their share in the total population. Graphically this scenario can be depicted using the Lorenz curve, which is shown below (World Bank. 2008).

Fig. 5: Distribution of public subsidies among students from different expenditure quintiles



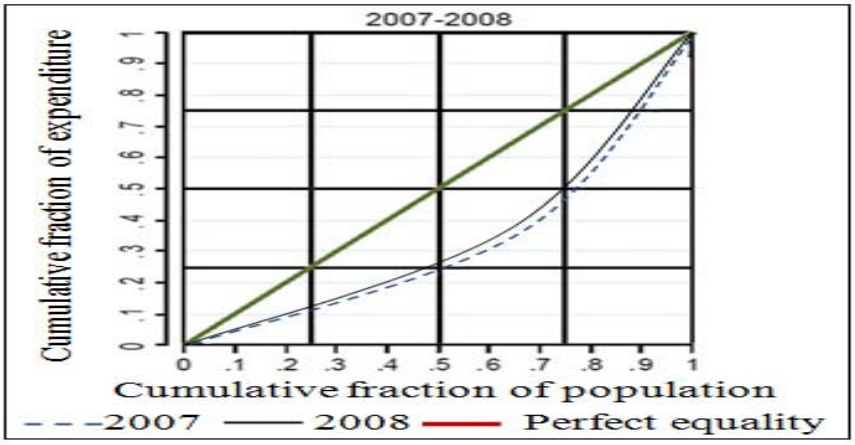
Source: Bangladesh Household Income and Expenditure Survey, 2005.

In Lorenz Curve the cumulative proportion of subsidy received by students is plotted against the cumulative proportion of primary school aged population from different welfare groups. The degree of convexity of the curve suggests that spending on primary education is not well targeted to the poor and therefore that the benefit incidence is regressive. Furthermore, the average benefit incidence analysis shows that a significant portion of the stipend subsidy leaks out to children from richer households: about 24% of the stipend recipients belong to the 40% richest quintile. The marginal benefit incidence analysis confirms this result in so far as children from the richest quintile would still receive about 10% of an increase in the size of the stipend programme.

The fact is more or less similar to Peru also. In Peru, the level of education is perhaps the factor, which allows distinguishing more clearly the poor from the non-poor. Until 2007, 55.0% of the poor and 71.0% of the extreme poor over 15 years of age were able to study a year of primary education or did not have any level of education (INEI, 2007).

Peru has seen a decrease in the inequality of spending, but that was mainly evidenced in Lima (the capital of Peru), where the Gini coefficient is reduced from 0.376 in 2004 to 0.328 in 2008. In the national urban area the decline is less, goes from 0.350 to 0.334. In contrast, in rural areas, the degree of inequality has remained constant and therefore, that has impact on the public spending on the basic education (INEI, 2008).

Fig. 6: Lorenz curve, expenditure in Peru



Source: INEI, 2008.

In short, Peru experiences challenges due to its multiethnic and multilingual communities along with greater socioeconomic and political inequalities than Bangladesh. On the contrary, the major challenges of Bangladesh for achieving the UPE targets are over-population, chronic and seasonal food insecurity & poverty, political instability and at the recent time vulnerabilities due to climate induced extreme weather events.

Countries' Performances in Regional Context:

Some of the health and education indicators of Bangladesh are significantly better than those found in other South Asian countries. In fact, while India and Pakistan have recorded a gross enrolment rate (GER) of 75.2 and 70.5 respectively in the early 2000s, Bangladesh had achieved a GER of 86.1% (World Bank. 2008). Similarly Bangladesh recorded a net enrolment rate of 62.9% compared to 54.8% and 50.5% respectively for India and Pakistan during the same period. More importantly, Bangladesh has closed the gender gap in both primary and secondary education enrolments (World Bank. 2008).
Similarly, some of the education indicators in Peru are significantly better than its neighboring countries in South America. In the early 2000s while Chile and Bolivia have recorded a gross enrolment rate (GER) of 89.7 and 95.1 respectively, Peru had achieved a GER of 96.5% (PRIE, 2010). In 2008 the net enrolment for the men was 96.4% and for the women it was 97.3% (INEI, 2010b).

Concluding Remarks

In Bangladesh approximately 2.4 million 6-10 years old children are outside of primary school. The MDGs progress report of Bangladesh reveals another alarming scenario: among those enrolled, a large portion of them do not complete the primary education and therefore an increasing trend of dropout is more visible than previous. At the recent years primary school dropouts in Bangladesh has increased to 48%, rising by 15% compared to 33% in 2005 (The New Age Reporting, 2007). In other words, this is clearly understandable that only 52 out of every 100 children enrolled in a primary school completed primary education in 2007. Therefore, this is plausible that besides failing to reduce poverty and improve the quality of life for the children, Bangladesh is also unlikely to attain 100% completion of primary education by the MDG deadline of 2015 (Rahman and Islam, 2009).
But for Peru this is a different story, even though Peru is struggling for providing access to basic schooling to all its ethnic groups or remote regions in Andes mountain regions. Recent years, the net enrolment rate varies between 90.6% and 94.2% since 2000. Peru has achieved a net

enrolment rate of children aged between 6 and 11 years of 94.2% by 2008, achieving an increase of 3.3% in comparison with 2004 (Presidencia del Consejo de Ministros del Perú, 2009).

UPE is a complex, multifaceted task involving different types of human, institutional and structural opportunities and also constraints. Many countries have successfully redirected national policies in an effort to fulfill their commitments towards achieving UPE targets by 2015. They might have simultaneously gained the opportunity to incorporate their marginalized populations in the mainstream development. Although UPE is only one building block in order to reach a higher degree of social justice and equality in national or global scale, it should at least be 'more-than-just-a-dream' for the marginalized regions, countries or population groups.

This is now quite clear that Peru will achieve the UPE targets by 2015, but for Bangladesh this might be a daunting task. Due to huge population pressure and yearly damage by natural disasters (e.g., floods, cyclones, river erosions) along with political chaos, public funds and spending are frequently redirected for immediate response. Therefore public spending on UPE usually is very much precarious for the low income developing countries like Bangladesh. On the contrary Peru might face mountable challenges in promoting UPE among all ethnic groups and in its all remote-hilly geographical locations. There will be always critical trade-offs between economic and social cost.

This is true that at the recent time, when world is facing tremendous financial downturn, this could be an impossible task to achieve the UPE targets within 2015 for many least developed countries. Surely financial crisis, oil and commodity price increase will leave a legacy of poverty and hunger in many parts of the world. At the same time this is also true that if the countries like Bangladesh and Peru can make concerted efforts with the involvements of all stakeholders groups, then the challenges can be overcome with the demonstrable progress as well as can make further meaningful advancement in human development, otherwise the story could end up with frustrations and create further nightmare by threatening the human security among the poor unprivileged people.

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SOURCE APPORTIONMENT OF PM10, PM2.5 AND PM1 IN THE LARGER CITY IN THE NORTH OF ALBANIA

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Abstract:
In this paper we are focused on the determination of particulate matter concentrations in different locations in Shkodra city, Albania, and rural areas around it. Monitoring results show that principal aerosol sources in the city of Shkodra are traffic and residential activities. Overall measurement results show a particularly problematic situation, where PM concentrations in the city clearly exceed international recommendations. To improve this situation, it is recommended to order traffic, re-construct existing roads, substitute old vehicles with new ones, and improve also the fuel quality.

Keywords: PM concentrations, monitoring campaign, air quality

1. Introduction

Aerosols are classified as solid or liquid particles suspended in the air. Their size ranges from few nanometers up to hundreds micrometers. Particles smaller than 1 μm are found in free troposphere in concentrations 103-104 cm-3, while particle greater than 1 μm are found in concentrations less than 1 cm3. Aerosol particles play an important role in atmospheric processes. The principal aerosol impacts on atmosphere are air pollution (Schneider et al., 2004), related particulate matter especially in heavy populated industrial centers and global warming which is related with radiation budged of the atmosphere (Viana et al., 2008; Stier et al., 2004).

Aerosol particles are characterized by many parameters as physical, chemical or geometrical ones (Harrison et al., 1999; Harrison et al., 2006; Dall'Osto et al., 2006). These parameters are related with size, form, internal structure, chemical composition (Oliviera et al., 2007; Hu et al., 2008; Beekmann et al., 2007), and with many other characteristics (Van Dingenen et al., 2004). Over all geometrical parameters, the size of aerosol particles is the most important (Makela et al, 2000). Almost all aerosol particles are size dependent. Based on their size, aerosol particles are classified in fine mode (up to 2.5μm) and coarse mode (up to 10 μm). The fine mode can be divided into other finer modes; nucleation mode (up 20 nm), Atiken mode (20-90 nm), and accumulation mode (90-1000 nm). Nucleation and Atiken particles are both called ultrafine particles.

The major number concentration of aerosol particles are in ultrafine mode, while the major surface and mass concentrations are respectively in the accumulation and coarse modes.

Aerosol particles are divided into two main groups according to their origin; primary and secondary aerosols. Principal sources of primary aerosol particles are produced by natural and anthropogenic origin like volcanic activity, re-suspended dust, sea salt, industrial processes, etc (Harrison et al., 2008; Charron et al., 2007; Wang et al., 2006). On the other hand sources of secondary aerosol particles are physical and chemical processes that cause the formation of new particles in the atmosphere. Nowadays atmospheric studies aerosol research is one of the most important topics. Aerosol research is related with many atmospheric and environmental problems, such as new particle formation, particle growth rate, radiation balance, atmospheric electricity, air quality, etc (Liu et al., 2004). Various scenarios of aerosol concentrations in the atmosphere in nowadays are retrieved using sophisticated measurement instruments and information and communication technologies (Bushati, et al., 2010).

In urban areas or industrial centers air quality becomes one of the hottest topics in environmental and health problems (Maesano et al., 2007; Jones et al., 2004). The monitoring of air quality consists on the measurement of several meteorological parameters, chemical agents, particulate matter, etc (Yin et al., 2005; Zhao et al., 2009). The last parameter, particulate matter mass concentration, called PM, is one of the physical parameters in air quality monitoring. The most investigated environmental aerosol parameters are PM modes, like PM2.5 and PM10 (particles respectively with aerodynamic diameter up to 2.5 μm and 10 μm) (Kousa, 2002). Particles in PM2.5 mode can reach till alveolus, while PM10 particles can't penetrate, but they reach only on lung pathways. For an accurate PM analysis, the parameters of the distribution of aerosol mass concentration must be determinate (Zhang et al., 2004; Makkonen et al., 2010). The effects of PM on health occur at levels of exposure currently being experienced by most urban and rural populations in both developed and developing countries. Chronic exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as of lung cancer (Jacqes et al., 2000). In few words, estimating aerosol concentrations gives a clear picture of atmospheric properties related with our living environmental.

Traffic is one of the most important factors influencing on air quality (Tiitta, 2009). Diesel vehicles contribute significantly to the air pollution burden (Oahn et al., 2010; Jones et al., 2005). The emissions depend on number factors such as vehicle age, engine design and operating conditions, lubrificant oil and fuel (Lim et al, 2010). Diesel engines in developing countries are generally old, and exhaust emission controls are rare. Most of particles emitted from diesel exhaust are in submicron size. The presence of particulate matter below ten microns size (PM10) is significant due to the associated respiratory health implications (Byrd et al., 2010). Especially diesel exhaust particle is a complex that has been linked to acute cardiopulmonary and vascular responses, chronic health effects, and lung cancer in a number of epidemiologic studies (Lee et al., 2010; Yi et al., 2010).

2. Methods and experimental setup

Several measurement campaigns of PM1, PM2.5 and PM10 have been realized in several points of Shkodra city. Shkodra is the biggest city in the north of Albania (42°4'14.20"N; 19°30'49.79"E). The city has about 120,000 inhabitants. The altitude of the city is around 6-12 m and it is bounded by mountains in the north and east.

Measurement campaign was spread in seven months, May-November 2009. The measured sites are selected based on a number of criteria, including some common characteristics between the sites, as well as some key differences. These locations have been selected for PM measurements:

- Two points in the center of the city (site 1)
- Main exit road of the city (site 2)
- Inner part of the city, distant from the main roads (site 3)
- Rural area of Zogaj, near the lake of Shkodra (site 4)

Two points in the center of the city and one point of main exit road are distant from the main roads by about 10-20 m. Traffic rate in two center points is about 15,000 vehicles /day, whereas in the rural site Zogaj the traffic rate is very limited, about 100 vehicles /day. In the rural area of Zogaj (42° 4'16.76"N; 19°23'55.89"E), near the lake of Shkodra, where there are also conducted measurements, traffic impact can be neglected. Numbers of light/heavy duty vehicles in the Shkodra city are given by the table 1.

Since Shkodra city cannot be considered as industrial center, main contributions on PM concentrations are traffic and residential wood combustion, the latter especially during the colder season. In the inner part of the city, the measurements are carried out in the gardens about 55 m far from the main roads, and protected from direct impact of traffic effect by several 10-20 m high buildings. Altitude measurements were about 1.5 m above the ground. Reading the PM concentrations in this measurement location, one can determine the city background PM concentration.

Monitoring process is realized in various meteorological conditions; fair weather, cloudy, rainy and foggy days. This diversity of meteorological conditions lets us notice also their effects on PM concentration. Number of days with and without precipitation is presented in the table 2.

For measurements and data collection an environmental dust monitor had been used, model GRIMM EDM 107, which enables simultaneous measurements of PM1, PM2.5 and PM10 (Martuzevicius et al., 2004). Measurement principle is light-scattering and the measurement range of this instrument is

0.25-32 μm. This size range is divided in three PM modes (PM1, PM2.5 and PM10) for environmental purposes. Concentration range is $1\text{-}2 \cdot 10^6$ particles/liter. Time response of the instrument is 6s, but it can be obtained by hourly or daily averaged data.
Also the dust whose mass distribution is measured can be collected in filters for further chemical analysis. After each measurement in every site, the filter of the instrument is taken off. Then these filters are subjected to subsequent chemical analysis. Three filters have been analyzed; for measurements in the center and in the main exit road of the city, as well as in the inner part of the city. Filters are conserved in plastic sachets. Then the samples are dried at 100-110^{O}C temperature and they are transported in chemical glasses. The digestion of dust samples is done by using aqua regna (ratio 3:1 HCl and HNO_3) with analytical grade reagents. Samples were heated to boil for about 30 min and were filtered by using Sinta Glass filter and were marked to 25 ml volumetric flask. Calibration standards were done by using the matrix of digestion samples. In the last step, samples were analyzed for metals content by spectrophotometer NovaA400, Analytik Jena.

3. Monitoring results

About 70,000 data of PM concentrations have been revealed from our measurement campaign. PM1, PM2.5 and PM10 concentrations in fair weather conditions in the urban centre of Shkodra and in rural area of Zogaj are summarized in the tables 3-6. In these tables are given principal statistical parameters of PM distribution. PM concentration values in tables 2-5 are expressed in $\mu g/m^3$.
After concluding with PM concentrations analysis, we are focused on the estimation of metals in the samples taken from the measurement process in the urban cent (Lithgow et al., 2004; Bekteshi et al., 2010). Three samples for analysis have been taken; site 1, site 2 and site 3. The results obtained from the estimation of metal presence in analyzed samples are given in table 7. An overall estimation of metals in PM of Shkodra city shows that their average concentrations are in low levels. Greater concentrations are encountered for calcium, magnesium and lead.
From the table 7 it can be seen that most "problematic" metals on PM are calcium, magnesium and lead.

4. Discussion

The principal PM sources in the urban centre of Shkodra city are traffic and residential wood combustion. The second PM source becomes more evident during November measurements, when ambience temperatures fall, and heating processes begins through populated areas. Residential wood combustions are spread almost uniformly across all the city area. But these activities play an important role especially in the inner part of the city, far from the main roads. Since Shkodra city has only a modest industrial activity, it cannot be considered as an industrial centre. Shkodra city, being simply an urban centre, the main contributors on PM concentrations would be traffic and residential wood combustion. Traffic is uniformly distributed over all monitoring campaign, while residential wood combustion was evidenced mostly on colder days of November measurements. This is the main reason that why we have conducted measurements in road-sides and in the inner part of the city (Krecl et al., 2008).
Traffic activity has two major effects; mechanical particle re suspension (mainly in coarse mode) and particle emission form vehicle exhausts (mainly in fine mode). Form the comparisons between values of table 3 and 4 we can see that average values of PM1 and PM2.5 are almost equal in the center and exit road of the city, with respectively only 3.0% and 3.3% higher values in the center. PM10 values differ more evidently, getting 8.8% higher values on the exit road. Higher values of PM10 in the exit road compared with the center of the city can be justified by the worse conditions of main exit road which enables the re-suspension of coarse mode particles.
"Surprising" results are taken from the measurements in the inner part of the city. In these measurements PM1 and PM2.5 modes were respectively 51.4% and 21.1% higher than in the center of the city. While PM10 mode has about 42.3% lower values than in the center of the city. This happens because of greater efficiency on gravitational sedimentation and low efficiency transport of PM10 mode particles (Chang et al., 2010). Meanwhile PM2.5 and especially PM1 mode have greater transport efficiency, because of their longer life times, and so can be moved from main roads where traffic is more effective to the inner part of the city. Another factor except traffic, which is also the

most important, is the contribution of residential wood combustion especially on fine mode of particle concentrations. These aerosol sources were quite near the measurement point in site 3.

Effectiveness of aerosol sources is also influenced by meteorological conditions at the measuring site. Precipitation is the most important meteorological factor which influences PM concentrations. In table 2 we have presented the number of days with and without precipitation during monitoring campaign. During precipitations on rainy days there was evidenced a clear reduction of PM concentrations at all measuring sites. Average PM Concentrations during fair-weather and rainy days in the site 3 are presented in table 8.

Values in brackets in the table 8 are percentage reductions of PM concentrations during days with precipitations. Based on the reduction values of table 8 it can be affirmed that both PM modes are reduced during precipitations. The percentage reductions of each PM mode were quite equal, with only small differences between them.

Wind is another important meteorological factor which ha a great influence on the PM concentrations. In the figure 3 there is presented wind rose during monitoring campaign and wind class distribution.

Let us analyze the contributions of different aerosol sources in the measuring sites taking into account wind influence. Wind rose suggests that moderate wind come usually from the east. All the three measuring sites in the urban centre are located in the west side of the main axis of the Shkodra city. In this road passes the major part of the traffic in the city. This fact makes this road a great aerosol source in this area. The distances of measuring sites in urban centre from this road are respectively: d_{site1} = 20 m, d_{site2} = 10 m and d_{site3} = 55 m. In general wind influence on PM dispersion, decreasing so PM concentrations. But because the short distances from the main road and relatively high win frequency coming from the east, we can affirm that in the days with wind turbulences, the decreasing of PM concentrations is compensated somewhat by aerosols coming from the traffic sources.

PM concentrations in rural areas near the urban centre were lower than in two sites of urban centre, for all PM modes. PM1 concentration was 13.7%, PM2.5 26.5% and PM10 61.7% lower than the average PM values in the urban centre of Shkodra. This situation is in a good accordance with theoretical expectations. This rural area is characterized by very low traffic rate and low PM emissions for both modes. But transport mechanism from urban centre of Shkodra, contributes mainly on fine particles; PM2.5 and especially PM1 mode. This is why PM2.5 and especially PM1 mode in rural area have relatively smaller differences from these modes in urban centre, compared with the concentrations of PM10 mode. Transport effect from urban centre of Shkodra is facilitated by the fact that Zogaj area and Shkodra city are separated only by Lake of Shkodra, and there are not any natural obstacles between them. Their distance (about 9.5 km) is relatively short for transport mechanisms of fine mode particles. Not only the absence of natural obstacles, but also the air masses coming pronominally from the east (Zogaj lay in the west side of Shkodra city) influence in the high level of PM concentrations in this rural area.

Based on environmental viewpoint we have compared averaged PM concentrations in the city of Shkodra and rural area of Zogaj with international recommendations for PM2.5 and PM10 concentrations. These comparisons are presented by the table 9.

Values in the first column of the table 9 are averaged concentrations of the road-side measurements; in the center and in the main exit road of the city of Shkodra. Values of second column of this table are averaged values of PM concentration in the rural area of Zogaj. From this table can clearly be seen that PM concentrations in Shkodra urban centre exceed many international recommendation, while PM concentrations in the rural area of Zogaj are almost in the upper limits of these recommendations. This result has a special environmental significance because Zogaj is one of the most frequented tourist locations in the Shkodra Lake.

It can be possible also to separate different contributors on PM concentrations, in order to have a clear picture of their sources in the area of monitoring (Querol et al., 2004). The values of regional background can be estimated by minimal PM values obtained over all monitoring area. The values of city background (local background) can be estimated by minimal PM values in the three sites of city measurements (sites 1, 2 3). On the other hand, average values of local sources, in our case traffic and residential wood combustion, can be estimated by the differences between averaged and minimal values respectively in the road-side measurements and the measurements in the inner part of the city. In the table 10, are presented PM concentrations of local sources, local background and regional background.

Values in the table 10 are obtained from averaging diurnal variations of PM concentrations in all measurement locations in fair weather conditions. So, local PM sources are obtained from differences between maximal and minimal values of these diurnal variations. In the figure 4-6 are presented the percentile contributions of these sources on PM concentrations given in table 8.

From the fig.6 it can be noticed that traffic contributes more in PM10 mode (30%). This is due to re-suspension effect of the traffic, which influences more on the coarse mode. Residential wood combustion (domestic activities) has almost equal contribution for all modes (35-42%), but for fine modes this contribution is about 33% higher than in PM10 mode. Residential wood combustion like heating or cooking contributes mostly on fine particle mode. These measurement results make residential wood combustion the most effective source on PM emission in the city of Shkodra during the cold season, while traffic effects have almost the same contribution all over the year.

Remote sensing by satellite measurements of PM10 suggest that in our region PM10 concentrations lay is about 1 0$\mu g/m^3$ (Weijers et al.,1998). This regional PM concentration is dominated by Saharan dust fluxes (Langmann et al., 2008). In the southern European region the atmospheric aerosol has an important contribution from natural dust due local emissions and to the influence of African dust intrusions (Contini et al., 2010).

From the chemical viewpoint, based on the values of the table 7, it is evident that high content of calcium and magnesium in environmental dust, especially in the site 1, derives from mechanical processes in construction activities carried out in that location. Furthermore, the high concentration of lead in the samples shows high presence of lead in gasoline. This concentration is much higher in the site 1, where traffic rate is higher, and the used gasoline contains high lead concentrations. But low lead concentrations were encountered in the sites 2 and 3, despite the relatively high traffic rates, low lead presences in site 2 were related with the fact that the traffic is composed mainly by heavy-duty vehicles which usually use diesel. Even lower lead concentrations are encountered in site 3, which is a residential site far from the main roads of the city.

The air quality state can be worsened by continuous increase of the number of vehicles moving in this city. But some interventions in due time can reduce this phenomenon, or even improve the air quality in the city. Most immediate interventions can be considered the construction of new roads, re-construct many of existing roads, initiate the substitution process of old vehicles, and setting a quality standard for fuel used by vehicles in our country.

5. Conclusions

During the period of May-November continuous monitoring campaigns have been realized on PM concentrations in urban centre of Shkodra and around areas. Measurements are located in three principal locations; road-side, inner part of the city and around rural areas.

In this monitoring campaign we have developed a methodology of measurements in selected sites inside and outside urban area. This methodology permits the estimation of activation rates of different aerosol sources, and to predict the trends of PM concentrations.

Measurement results show that higher PM10 concentrations are found in the road-side measurements, because the traffic effect in these locations has a major contribution on re suspended particles. But high PM2.5 and PM1 concentrations are also encountered in road-side measurements. This is because of emission particles from the traffic. Meanwhile higher PM1 and PM2.5 values are encountered in the inner part of the city, near residential wood combustion, especially in the colder part of the year. But also PM10 concentrations were relatively high in these areas of the city. This is due to the contribution of residential wood combustion in this measurement location. So we can conclude that major contributors on PM concentrations in the Shkodra city are traffic and residential wood combustion. Traffic contributes over all the year, while the residential combustion contributes only on the cold season of the year. It is important to emphasize the fact that from the environmental viewpoint PM2.5 and PM10 exceed international recommendations on air quality in the city of Shkodra. But the situation is somewhat better in the tourist location of Zogaj, having also high levels of PM concentrations.

Even though Shkodra isn't an industrial centre, chemical analyses of samples show that the air in the city is relatively polluted by heavy metals, relatively to other cities in Albania. Metal concentrations vary in different measurement sites. Lead has a more evidenced presence in the sites characterized by heavy traffic rate, indicating the high lead concentrations in benzene. The relatively high presence of

calcium and magnesium is related with high construction activities carried out in the center of the city. The situation is somewhat better in the inner part of the city, far from the main roads.
To improve this situation it is recommended to order traffic by constructing new roads which release the traffic, re-construct existing roads, substitute old vehicles with new ones, and improve also the fuel quality. Such interventions, might mach the air qualities in the city of Shkodra according to international recommendations.

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Table 1. Number of vehicles in Shkodra city

	Diesel	Gasoline
Light duty vechicles	15,500	3,200
Heavy duty vehicles	1,800	10

Table 2. Precipitations during monitoring campaign

	Fair-weather (days)	Precipitations (days)	Precipitations (%)
Site 1	37	24	39.3
Site 2	47	15	24.2
Site 3	57	34	37.4

Table 3. PM results in the center of Shkodra (site 1)

	Minimal	*Average*	*Maximal*	*Medium*	*Mode*	*St.Deviation*
PM1	1.9	29.2	393.4	22.2	15.9	21.1
PM2.5	2.2	39.9	1796.3	33.8	22.6	30.6
PM10	2.7	124.7	8139.2	96.4	46.6	150.8

Table 4. PM results in the main exit road of Shkodra (site 2)

	Minimal	*Average*	*Maximal*	*Medium*	*Mode*	*St.Deviation*
PM1	6.9	28.3	147.5	25.4	24.1	15.7
PM2.5	8.7	38.6	266.5	33.3	29.2	23.5
PM10	13.2	135.4	3854.3	95.8	73.3	154.3

Table 5. PM results in the inner part of Shkodra (site 3)

	Minimal	*Average*	*Maximal*	*Medium*	*Mode*	*St.Deviation*
PM1	6.8	44.2	160.7	32.3	10.2	33.6
PM2.5	8.5	48.3	175.5	35.6	29.0	33.6
PM10	11.3	71.9	293.8	51.8	24.2	54.7

Table 6. PM results in the rural area of Zogaj (site 4)

	Minimal	*Average*	*Maximal*	*Medium*	*Mode*	*St.Deviation*
PM1	1.5	25.3	42.1	24.6	24.8	2.9
PM2.5	1.7	29.4	82.2	28.1	27.3	4.9
PM10	2.1	47.7	416.3	39.7	39.3	34.1

Table 7. Concentration of metals on PM in Shkodra city

	Ca (μg/m^3)	*Mg* (μg/m^3)	*Zn* (μg/m^3)	*Cu* (μg/m^3)	*Pb* (μg/m^3)
Site 1	1.90	1.67	0.36	0.19	14.96
Site 2	1.03	0.84	0.51	0.11	1.12
Site 3	0.46	0.37	0.36	0.10	0.15
Average	1.13	0.96	0.41	0.13	5.41

Table 8. Average PM concentration 'with' and 'without' precipitations

	PM 1	PM 25	PM 10
Fair-weather	42.40	46.36	69.41
Precipitations	25.98 (38.7)	29.05 (37.3)	45.40 (34.6)

Table 9. Comparisons of measured PM concentrations with international recommendations

	Shkodra	*Zogaj*	*EU*		*WHO*		*EPA*	
			24 hour mean	*Annual mean*	*24 hour mean*	*Annual mean*	*24 hour mean*	*Annual mean*
PM2.5	42.3	29.3	-	-	25	10	35	15
PM10	110.7	47.7	50	40	50	20	150	50

Table 10. Main PM contributors in the Shkodra region

	Local sources		*Local background*	*Regional background*
	Traffic	*Domestic*		
PM1	3.76	20.69	24.8	1.5
PM2.5	5.35	22.54	27.1	1.7
PM10	31.77	37.02	37.0	2.1

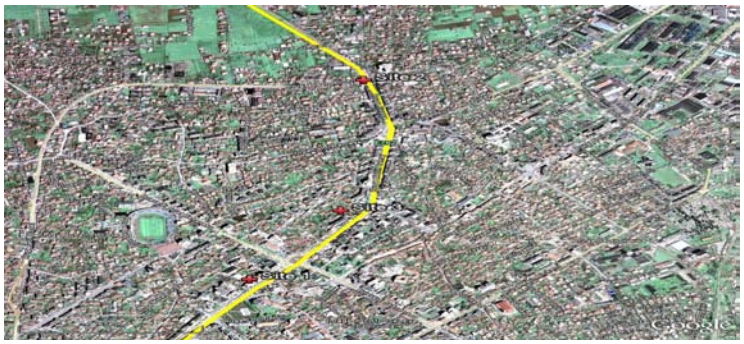

Fig.1. Measurement sites in Shkodra urban centre

Fig. 2. Positions of sites in Zogaj and in Shkodra city

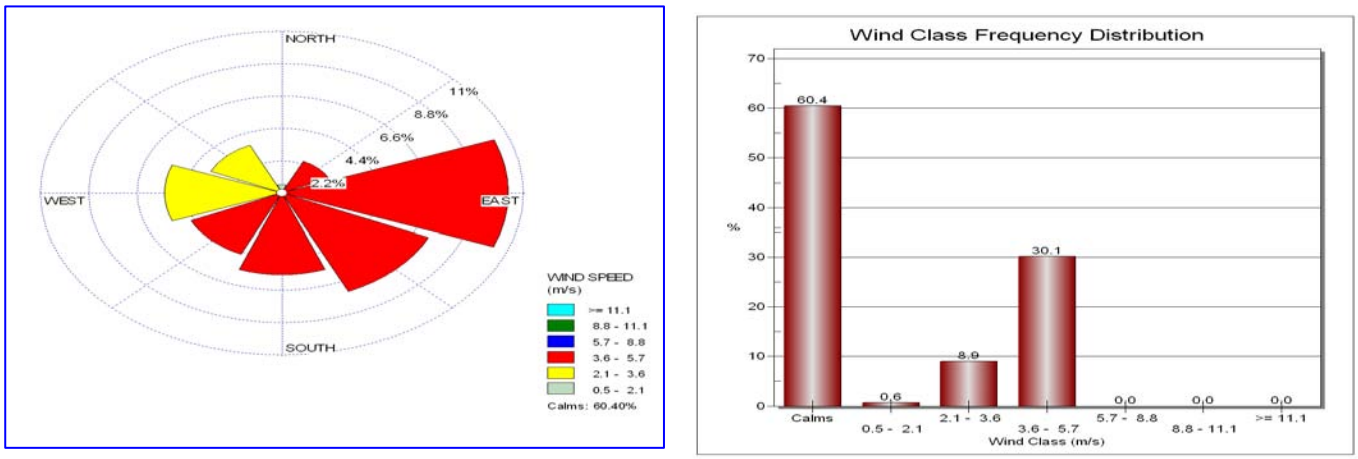

Fig. 3. Wind rose and wind class distribution

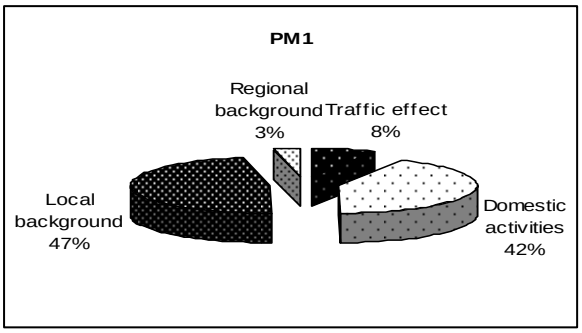

Fig. 4. Source contributions on PM1 concentration in the Shkodra region

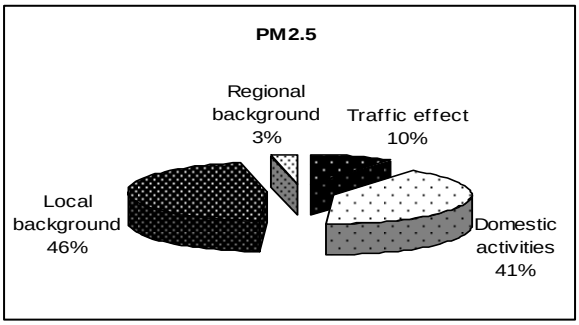

Fig. 5. Source contributions on PM2.5 concentration in the Shkodra region

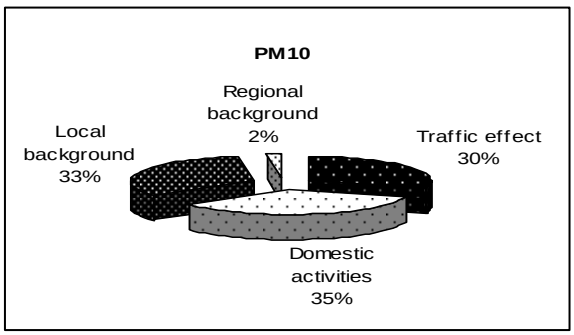

Fig. 6. Source contributions on PM10 concentration in the Shkodra region

ECONOMIC VALUATION, VALUES AND CONTINGENT METHOD: AN OVERVIEW

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Abstract:
In this paper the concept of total economic value of an environmental asset is introduced. The different valuation methods, putting a monetary value on environmental resources as a nonmarket good are also reviewed. Particular emphasis is placed on policy-making and the link of contingent valuation method to standard economic theory. Potential measurement bias attached to the contingent valuation estimates are also reviewed, addressed in terms of an efficient survey design and alternative microeconomic formulations.

1. Introduction

Urban planning is a complex force field with a multiplicity of actors, a variety of – often conflicting – interests, and a great deal of site-specific circumstances or features. In the history of urban planning various methodological strands have emerged, such as purely economic perspectives (reflected inter alia in urban land rent theories or social cost-benefit analyses), ecological perspectives (dealing with historical driving forces of the city), evolutionary perspectives (considering the city as a dynamic and self-organizing entity), or interactive-democratic perspectives (emphasising the city as a joint workshop with distinct responsibilities of urban agents). In recent years we have witnessed the emergence of a new paradigm for urban planning, viz. the microcosmic perspective, in which individual actors represent part of the urban interest and shape together the urban future. The methodological challenge is then to design a toolbox through which mutually complementary and mutually contrasting interests can be integrated in a decision support method that helps to identify a common pathway for the urban future.

From an economic perspective, one might argue that the city makes up a local market which is able to shape its own pathway as the result of 'invisible hand' forces. This would certainly justify a case for a non-interventionist policy, provided all conditions for market equilibrium in the city would be fulfilled. However, the city is a complex spatial entity characterized by a great deal of positive and negative externalities. The positive externalities emerge from the economies of spatial density such as scale and agglomeration advantages. The negative externalities are related to the decay in urban quality of life (e.g., congestion, criminality, socio-economic equality). Such externalities can be analyzed at the meso level of urban or local economies, but are essentiality related to micro decisions of individual actors. How do urban citizens value their environment? Which information is needed by urban planners to design a pleasant quality of life? A micro-cosmic approach may be helpful in mapping out the environmental wishes and the willingness-to-pay of urban actors. Seen from the perspective or urban quality of life, the present paper resorts to lessons from environmental economics, in particular modern evaluation techniques which have proven to offer a new analytical angle for studying the complex

relationship between urban actors and their environment, not only the social costs but also the benefits of an urban mode of living.

Conceptually, the total economic value of benefits of an urban mode of living consists of use and nonuse values. The monetary value assessment of the total economic value of an urban mode of living requires the use of special valuation tools. We pay special attention to non-market valuation, i.e., on how to place a monetary value on benefits, such as urban environmental quality, that are not routinely traded in regular marketplaces. Contingent valuation method (CVM) is one of the valuations tools suggested in the literature and this method will be the focus of our analysis.

This paper is organized as follows. Section 2 presents the concept of total economic value of an environmental asset, such as the protection of a green urban area, reviewing the different valuation methods available to put a monetary value on environmental resources as a nonmarket good. Section 3 focuses on the contingent valuation method and its importance to policy makers since it is the only valuation method that is capable to assess the nonuse value component of environmental resources. Section 4 presents the link of contingent valuation method to standard economic theory. Section 5 discusses the application of the contingent valuation and respective state-of-art research work guidelines. Section 6 reviews potential measurement bias that the contingent valuation estimates are likely to embed and how these can be addressed in terms of an efficient survey design and alternative microeconomic formulations that underpin consumer behaviour. Section 7 concludes with some retrospective remarks.

2. Economic Values and Valuation Methods

2.1 Introduction

The concept of total economic value of an environmental benefit has its foundations in welfare economics: the basic premise of economic valuation is its effect on the well-being of the individuals who make up the society. Therefore, if society wishes to make the most in terms of individuals' well-being maximisation, the issue of the monetary assessment of the total economic value of an environmental benefit is a key issue in terms of policy decisions. Conceptually, the total economic value of an environmental benefit, such as the protection of an urban green area, consists of its use value and nonuse value – see Table 1.

Table 1. Classification of benefits derived from the protection of an urban green area

Total economic value	Use	direct use value	Recreation benefits e.g. jogging, bird watching, walking (with the dog)
		indirect use value	ecosystem functional benefits e.g. carbon sequestration, timber production
		option	safeguard of use benefits
	Nonuse:	value	e.g. future visits
		bequest	legacy benefits
		value	e.g. conservation for the use of the future generations
		existence value	existence benefits e.g. knowledge of protection of urban green area

Use values are what they seem to be: values arising from the actual use/consumption made of the urban green area. Use values are further divided into direct use values, indirect use values and option values. Since we focus on the value assessment of the benefits derived from the protection of a green park in a urban context (the emblematic case is the Central Park in New York), the direct use value refers to the various forms of recreation possibilities available to the park's

visitors; the indirect use value refers to benefits deriving from ecosystem functions such as the park's role in terms of carbon sequestration; the option value refers essentially to the individual's willingness to pay for the preservation of the park against some (subjective) probability that the individual will make use of it at a future date. In addition, the conservation of an urban park has impacts on the well-being of the individuals that are not directly associated with recreational consumption. These are referred to in the literature as the nonuse values, i.e., anthropocentric values which are not associated with current or expected use. The nonuse values are usually divided between the bequest value and the existence value. The bequest value refers to the benefit accruing to any individual from the knowledge that others might benefit from the park in the future; the existence value refers to the benefit derived simply from the knowledge of continued protection of the urban green area. The nonuse values have typically a public good character for which no market price is available to disclose accurate monetary valuation. The lack of such market price information may convey the impression that benefits of conservation policies are unimportant, when compared to the market priced allocation alternatives (e.g. urbanisation and commercial development of the area). As a consequence, most of the time policy makers have based their decisions on an undervaluation of the environmental resources which has thus resulted in a misallocation of scarce environmental resources.

The monetary assessment of the use and nonuse benefits involved with the conservation policy is, therefore, an important step in policy decisions about environmental resources use. The money value assessment of such environmental assets requires special tools. These are discussed in the following session.

2.2 Monetary Valuation Methods

Various valuation methods are available to put an economic value on environmental benefits. We can distinguish two groups of valuation methods: the direct and indirect or dose response valuation methods - see Table 2. The dose response methods have in common that they put a price on environmental commodities without retrieving people's preferences for these commodities. The production cost techniques such as the dose response methods rely on the presence of physical input-output relationships. For example, if one is willing to estimate the monetary value of the benefits of clean air on human health, one can take into account the relationship of air pollution on the number of visits to physicians and purchase of drugs. Conversely, the direct methods rely on individual preferences. On the basis of the process by which these methods retrieve individuals' preferences, these methods are further divided into revealed preference methods and stated preference methods. The group of revealed preference valuation methods consists of three methods: travel cost, hedonic pricing and averting behaviour (see Braden and Kolstad 1991). The common underlying feature is a dependency on a relationship between a market good and the environmental benefit. For example, when using the travel cost method, researchers estimate the economic value of recreational sites by looking at the costs of the trips made by the visitors to these sites. When using the hedonic price method to estimate the economic value of clean air the researchers explore the analysis of house market prices and surrounding air characteristics. Researchers who use the averting behaviour method try to estimate the economic value of clean air on the basis of expenditures on technological equipments made to avert or mitigate the adverse effects of air pollution.

Table 2. A classification of economic valuation methods

Revealed preference	Stated preference	Dose response
Travel cost	Contingent valuation	Production cost
Hedonic pricing	Contingent ranking	Production factor
Averting behaviour	Pairwise allocation games	

Whereas economists who use revealed preference valuation methods have to carry out estimation exercises bearing in mind the existent market price data, economists who use stated preference valuation methods have to collect their own data by means of questionnaires. The underlying feature is the use of the questionnaire to ask directly the individuals to state their economic values for environmental commodities (Mitchell and Carson 1989). The use of questionnaires require economists to work closely with experts from market and survey research, sociology and psychology in order to guarantee the authority of the stated choice methods as a valid instrument to assess economic value of an environmental benefit (Carson et al. 1992, NOAA 1993). In contrast, revealed preference methods have remained an exclusive valuation tool for economists. Stated preference valuation methods: the contingent valuation, contingent ranking, pair-wise comparison and allocation games. The respective differences relate to the way in which the economic values are elicited. For example, whereas the contingent valuation method asks respondents to express directly their preferences in monetary terms for some defined environmental benefit, the contingent ranking method asks the respondent to rank a number of described environmental quality alternatives. The pair-wise comparison is closely related to the contingent ranking method, yet, respondents are asked to compare a series of pairs of alternatives. Finally, in an allocation game respondents are asked to allocate a fixed budget among a set of environmental benefits. This method is frequently used in experimental economics.

2.3 The Contingent Valuation Methodology

CVM is a stated preference valuation method that uses questionnaires to ask directly the individuals to state their preferences for environmental commodities. Mitchell and Carson defined the method as follows:

"The CVM method uses survey questions to elicit people's preferences for public goods by finding out what they are willing to pay (WTP) for specified improvements in them. The method thus aims at eliciting their WTP in dollar amounts. It circumvents the absence of markets for public goods by presenting consumers with hypothetical markets in which they have the opportunity to buy the good in question. The hypothetical market may be modelled after either a private goods' market or a political market. Because the elicited WTP values are contingent upon the hypothetical market described to the respondents, this approach came to be called the contingent valuation method." (Mitchell and Carson 1989, pp. 2-3)

The typical CVM survey consists of three sections.

- The first section is characterized by the description of the environmental change as conveyed by the policy formulation and the description of the contingent market. The policy formulation involves describing the availability (or quality) of the environmental commodity in both the 'reference state' (usually the status quo) and 'target state' (usually depicting the policy action). Since all monetary transactions occur in a social context, it is also crucial to define the contingent market - most of the time rather unfamiliar to the respondents - by stating to the respondent both the rules specifying the conditions that would lead to policy implementation as well the payment to be exacted from the respondent's household in the event of policy implementation.
- The second section is where the respondent is asked to state her monetary valuation for the described policy formulation. This part is the core of the questionnaire. The major objective of this section is to obtain a monetary measure of the maximum willingness to pay that the individual consumers are willing to pay for the described environmental policy action.
- The third section of the CVM instrument is a set of questions that collect socio-demographic information about the respondents. The answers to these questions help to better characterise the respondent's profile and are used to understand the respondent's stated WTP responses. The third section finishes with follow-up questions. The follow-up questions are answered by the interviewers. The goal is to assess whether the respondents have (well) understood the CVM survey in general and the valuation question in particular.

Today, the CVM is one of the most used techniques for valuation of environmental benefits.

This is partly due to the advantages of CVM compared to other valuation methods.

- First, the CVM method gives immediately a monetary assessment of respondents' preferences.
- Second, the CVM method is the only valuation technique that is capable of shedding light on the monetary valuation of the nonuse values, i.e., the benefit value component of the environmental commodity that is not directly associated with its direct use or consumption. These values are characterized by having no behavioral market trace. Therefore, economists cannot glean information about these values relying on market-based valuation approaches. For environmental resources such as the protection of natural parks or biodiversity sensitive areas, which play an important role in guaranteeing the protection of local wildlife diversity, the nonuse value component may account for the major part of the conservation benefits. Ignoring such values will be responsible for a systematic bias in the estimation (an underestimation) of the total economic value of the related environmental.
- Third, CVM brings with it the advantage that environmental quality changes may be valued even if they have not yet occurred (ex ante valuation). This implies that the CVM can be a useful advisory tool for policy decision-making.
- Fourth, and as result that environmental changes may be valued even if they have not yet occurred, CVM offers a greater potential scope and flexibility than the revealed preference methods since it is possible to specify different states of nature (policy scenarios) that may even lie outside the current institutional arrangements or levels of provision. Furthermore, the constructed nature of the CVM method permits to test various methodological issues concerning the measurement validity of the individual's stated valuation responses. Indeed, a great deal of today's research efforts is concerned with the validity of CVM responses. We start, however, with a brief history of CV, exploring the link of survey valuation answers to standard economic theory.

3. A Brief History on Contingent Valuation

3.1 Introduction

The first CVM published reference dates from 1947 (Ciriacy-Wantrup 1947). We refer to the Ciriacy-Wantrup article published in the *Journal of Farms Economics*. The study focuses on the valuation of the economic effects of preventing soil erosion. The author suggested that one way to obtain information on the demand for these favourable effects would be to ask directly the individuals how much they would be willing to pay for successive increments. However, no empirical valuation was attempted. However, the first CVM design and implementation only occurs two decades later when Robert Davis assessed the economic value of the recreational possibilities of the Maine Woods by exploring the survey technique (Davis 1963). Davis simulated a market behavior situation by putting the interviewer in the "*position of a seller who elicits the highest possible bid from the users of the services being offered"*.

Since these early beginnings, the CVM has been used to measure benefits of a wide range of environmental goods including recreation, amenity value, scenery, forests, wetlands, wildlife, air and water quality. More recently, there has been a trend to conduct CVM studies not only to value environmental goods, but also to investigate the various methodological issues involved in the valuation exercise, including the study of the impact of consumer's attitudes, motivations on CVM estimates – see section 6.5. Furthermore, throughout these decades, the CVM has gone through several phases, emerging from the academy into the rough and tumble of the outside world. Strong development stimulus was given by the Reagan Executive Order 12291, introduced in 1981; the re-interpretation of CERCLA, in 1989; the Exxon Valdez damage assessment, in 1992, and, more recently, the NOAA panel.

3.2 Reagan Executive Order & the Re-interpretation of CERCLA

The Reagan Executive Order 12291, introduced in 1981, constitutes a strong stimulus for the development of the monetary valuation methods of environmental commodities. In concrete terms, the Executive Order stipulated that all federal regulations on environmental policy should be submitted to a cost-benefit analysis. All regulations, including both the promulgation of new regulations and the review of the existing ones, would only be carried out if a positive present value for the society could be achieved. Therefore, the social benefits had to be monetized. The flexibility and generality of CVM's application was the main reason why this valuation method received most of the EPA's "demands" in the monetary assessment of the social costs and benefits associated with the new regulations on environmental policy. Thus, the appearance of Executive Order 12291 had a major impact in the development of the CVM.

Another important benchmark in the CVM is the District of Columbia Court of Appeals re-interpretation in 1989 of the US Comprehensive Environmental Response, Compensation and Liability Act of 1980 (USDI 1989). This governmental decision expressed not only the legitimacy of nonuse values as a component of the total resource value, but also granted equal standing to stated and revealed preferences evaluation techniques. Since then, the CVM is being widely used by academic institutions as well as by governmental agencies as a crucial tool in cost-benefit analysis and damage cost assessment.

3.3 The Exxon Valdez Valuation Report

Another important benchmark in the history of the CVM is the massive oil spill due to the grounding of the oil tanker Exxon Valdez in the Prince William Sound in the Northern part of the Gulf of Alaska on March 24, 1989. This oil spill was the largest oil spill from a tanker in US history: more than 1,300 kilometres of coastline were affected and almost 23,000 birds were killed (Carson *et al.* 1992). After the oil spill, the State of Alaska commissioned various studies to identify the physical damage to the natural resources. The follow-up economic damage assessment studies also take into account, in addition to water purification costs, economic losses such as the decrease in revenue from recreation and fisheries. Moreover, the State of Alaska appointed an interdisciplinary group of researchers to design and implement a national CVM study to measure the loss of nonuse values to US citizens as a result of the oil spill. This study constitutes one of the major contingent valuation applications and represents an important methodological reference for all contingent valuation researchers' work. The loss of nonuse values resulting from the Exxon Valdez oil spill is estimated at 2, 8 billion dollars. However, anticipating these high financial consequences, Exxon commissioned a group of researchers to verify whether nonuse values could be accurately measured by the means of CVM. The main argument of critics of CVM is that this method is not capable of resulting in valid and reliable monetary measures of nonuse values. Hausman's well-know argument *"is some number better than no number"* fully expresses the scepticism toward the CVM method. Therefore, according to Hausman, assessments of lost nonuse values by means of the CVM method should not be used in court. In order to address Hausman's critique, National Oceanic and Atmospheric Administration set a group of experts in order to evaluate the reliability of the use of CVM in the natural resource damage assessments.

3.4 The NOAA Panel

A panel of experts, with the Nobel Laureates Kenneth Arrow and Robert Solow as chairmen, provided advice to the National Oceanic and Atmospheric Administration, NOAA, on the following question: "is the contingent valuation method capable of providing estimates of lost nonuse or existence values that are reliable enough to be used in the natural resource damage assessments?" The final advice of the NOAA panel may be summarised by the following sentence:

"... the Panel concludes that well conducted CVM studies can produce estimates reliable enough to be the starting point of a judicial process of damage assessment, including lost passive values." (NOAA, Federal Register, Vol. 58, No. 10, p. 4610)

This conclusion cheered all researchers who wish to use the contingent valuation. However, the Panel was rather prudent with its conclusion and qualified such a statement by establishing a set of guidelines, recommended to all future CVM applications, concerning the design and execution of the survey instrument. The six most important guidelines, also well known as the six pillars of the NOAA, are summarised as follows:

1. CVM should rely on face-to-face interviews rather than telephone interviews, and whenever this is not possible (specially because of the high costs associated with the personal interviews) telephone interviews are preferable to mail surveys;
2. CVM should elicit the respondent's WTP to prevent a future incident rather than WTA for an incident already occurred;
3. CVM should use a dichotomous choice referendum elicitation format, i.e., the respondents should be asked how they would vote (favour or against) upon a described environmental quality change. The main reason for the dichotomous choice is that such a take-it-or-leave-it survey valuation question is more likely to reflect real daily world market decisions which individuals are confronted with. Moreover, the dichotomous choice referendum reveals itself to be less vulnerable to strategic bidding behavior than, for example, the open ended elicitation format;
4. CVM should contain an accurate and understandable description of the program or policy under consideration and the associated environmental benefits in each of the two scenarios, i.e., with and without the policy. Interdisciplinary work with other research areas, namely the biological sciences, is here recommended;
5. CVM should include reminders of the substitutes for the commodity in question as well as its budget. In a context where the respondents are being asked how they would vote on a financial contribution to protect a natural area, the respondents should be reminded of the existence of the other areas that exist. Moreover the respondent should be reminded that such contribution would reduce the amount of money that he or she has available to spend on other things. The major idea here is to make such a (hypothetical) valuation exercise resemble as closely as possible an actual market transaction;
6. CVM experiments should include a follow-up section at the end of the questionnaire to be sure if the respondents understood (or not) the choice that they were asked to make;

According to the Panel, this set of guidelines contributes to guaranteeing the quality of the CVM survey as a measurement instrument and the validity of the respective monetary measures for cost-benefit analysis and damage cost assessments. In the following section, we show how the behavior of CVM respondents can be analysed with standard microeconomic models of choice and explore the demand for environmental quality with respect to alternative measures for assessing welfare changes.

4. Theoretical Underpinning on the Use of Contingent Valuation

4.1 Introduction

Neo-classical theory attempts to model the demand for goods given, certain assumptions. The central assumption pertains to the behavioral characteristics of the individual, i.e., the consumer. The theory assumes that consumers act rationally. This behavioral premise implies two things. First, individual consumers have coherent preferences over the different states of the world. These states can be defined so broadly that they can encompass the distribution of private goods and services, or the provision of public goods like environmental quality. Second, when making choices among alternative states of the world, the individual does this on the basis of her preferences, choosing the state that is most preferred. The underlying intuition that one can draw from the rationality premise is that if an outside observer knew the preferences of any given individual as the individual knows them, that knowledge could be used to explain the human behavior as it relates to choices. It is important, however, to see that the prior "rationality" does not mean "unbounded rationality": surely there are cognitive constraints to any respondent's ability to make complex choices such as the economic valuation of environmental changes (seldom thought in monetary terms). The important thing is that respondent answers to the CVM

questionnaire in general, and to elicitation questions in particular, in a manner consistent with the respondent's preferences.

4.2 The Basic Model

The present section draws on the theoretical perspective that individuals make welfare-optimising consumption decisions. These decisions are captured in the consumer demand functions with respect to available goods and services. Environmental attributes enter those demands. For some environmental benefits, such as the recreational visits to an urban green park, the consumer exercises direct choice over the amount consumed, assuming that the park is open to all residents. To illustrate this setting, we consider an individual, whose utility function has the following form,

$$V = V(x, q, z) \tag{1}$$

where *x* is the consumption of the private good, *q* the quantity of the environmental attribute and *z* the quality of that attribute. For example, *q* could represent the number of visits and *z* the level of protection of the urban green area. We assume that all commodities, including the number of visits, have prices. Moreover, we assume that *x* is a composite private good whose price is normalised to one, and *p* is the price associated with *q*, and that *p* is fixed. We also assume that the consumer exercises direct choice over *q* but not over *z*. The consumer maximises utility subject to a budget constraint,

$$p.q + x \leq M \tag{2}$$

where *M* is money income. Assume non-satiation, i.e. that the consumer uses the available budget fully. For a particular level of *M* and *z*, the consumer solves,

$$\underset{\{x,q\}}{Max}\ V(x, q, z) \tag{3}$$

$$s.t.$$

$$p.q + x = M$$

$$q, x \geq 0$$

yielding some level of utility, *V**, and an optimal consumption bundle, *(q*,x*)*, both of which are functions of *p*, *M* and *z*. To investigate a change in *z*, holding utility constant, we proceed to the total differentiation of $V(x^*, q^*, z)$ and $p.q^* + x^* = M$. Formally, we have:

$$dV = \frac{\partial V}{\partial q} dq + \frac{\partial V}{\partial z} dz + \frac{\partial V}{\partial x} dx \tag{4}$$

and

$$dM = qdp + pdq + dx \tag{5}$$

We focus how changes in *q* and *z* can be compensated by changes in *M*. Thus, we let *dV=0.* The assumption of fixed prices means that *dp=0*, so the first term in (5) drops out. Rearranging (4)-(5), we get:

$$-dx = \frac{\partial V / \partial q}{\partial V / \partial x} dq + \frac{\partial V / \partial z}{\partial V / \partial x} dz \tag{6}$$

and

$$-dx = pdq - dM \tag{7}$$

Now let *z* be the attribute for which a change is contemplated. Setting equal the right-hand sides of the expressions (6)-(7) gives,

$$\frac{\partial V/\partial q}{\partial V/\partial x}dq + \frac{\partial V/\partial z}{\partial V/\partial x}dz - pdq = -dM \tag{8}$$

Equation (8) establishes that the monetary payment must equal the difference between the personal worth of the change in quantity and quality, the first two terms on the left-hand-side, and the change in the expenditure on *q*, the last term on the left-hand-side. A fundamental condition in consumer theory is that the consumers that make welfare-optimising consumption decisions equate the marginal rate of substitution to the ratio of product prices. In the present case, *p* is normalised with respect to the price of composite commodity *x*:

$$\frac{\partial V/\partial q}{\partial V/\partial x} = p \tag{9}$$

Substituting (9) into (8) and cancelling the terms results in:

$$\frac{\partial V/\partial z}{\partial V/\partial x} = -\frac{dM}{dz} \tag{10}$$

i.e., the marginal rate of substitution between *z* and *x* must equal the change in income that will keep utility constant as *z* changes, which can be interpreted as the introduction of a set of new regulations on the protection of the green natural park (e.g. stricter regulations on the use of the park and banning the use of scoters inside the park). That income change is the "price" that reflects the consumer's maximum willingness to pay (WTP) to avoid an undesirable change in *z*. In other words, the theoretical economic measure of welfare change, as described by (10), is the payment that will make a consumer indifferent between having and not having a particular change in the quality or quantity of the environmental attribute. This is the measure of welfare change that CVM researchers look for through the use of direct questioning.

4.3 Alternative Measures of Welfare Change

The literature suggests two alternative measures that can be used to assess the magnitude of the welfare change as described by (10), respectively the Hicksian compensating measure and the Hicksian equivalent measure, are theoretical refinements of the ordinary consumer's surplus (Hicks 1943). Before introducing the Hicksian compensating and the Hicksian equivalent as alternative welfare measures of welfare change, we return to the model as presented in the last section and investigate the welfare change associated with a non-marginal decrease in the quality level of the environmental attribute, *z*. This environmental change may be interpreted as the introduction of a set of new regulations designed to allow partial commercial development of the urban green area, zoning areas for bars and restaurants where before did not exist. In the original situation, i.e., before the setting of the new regulations policy, the individual consumer faces a particular quality level of the environmental attribute; denote such level by z^0. For an environmental quality level z^0, and given an amount *M* of monetary income, the consumer solves (1.3) yielding an optimal consumption bundle $\left(q^0, x^0\right)$ and the utility level $V^0 = V\left(q^0, x^0, z^0\right)$. Inserting the demand functions into the utility function gives the indirect utility function $V\left(q^0\left(p, M, z^0\right), x^0\left(p, M, z^0\right), z^0\right) = v\left(p, M, z^0\right)$. Inverting the indirect utility function for the term *M* yields the expenditure function on market goods required to produce utility level *V*, given *p* and z^0. This is $e\left(p, z^0, V^0\right)$. Table 3 summarises the notation.

This welfare measure equals the compensating payment, i.e., an offsetting change in income, necessary to make the individual indifferent between the original situation (status quo) and the new environmental regulation policy (after the environmental quality change). In terms of the indirect utility function, the Hicksian compensating variation (HC) is the solution to

$$v\left(p, M, z^0\right) = v\left(p, M + HC, z^1\right) = V^0 \tag{11}$$

i.e., the HC measures what must be paid to the individual to make that person indifferent to the new environmental quality level. In other words, if the new regulation is adopted, the individual's income could be increased by the amount of HC and that person would still be as well off as in the original situation. Alternatively, HC can also be defined in terms of the expenditure function. In terms of the expenditure function, HC is the difference between the expenditures required to sustain utility level V^0 at the new environmental quality level, i.e.

$$HC = e\left(p, z^1, V^0\right) - e\left(p, z^0, V^0\right) = e\left(p, z^1, V^0\right) - M \tag{12}$$

Since spending *M* at the new environmental attribute quality level yields a lower level of utility, i.e. V^1, we can also write

$$M = e\left(p, z^1, V^1\right) \tag{13}$$

and by substitution

$$HC = e\left(p, z^1, V^0\right) - e\left(p, z^1, V^1\right) \tag{14}$$

i.e., although the HC is defined in terms of V^0, it also measures the amount of money required to raise the utility from V^1 to V^0 at the new quality level of the environmental attribute.

Table 3. Summary of results

Variables	Original situation	New regulation (introduction of bars and restaurants)
Environmental attribute quality	z^0	z^1
Utility level	V^0	V^1 with $V^0 > V^1$
Indirect utility function	$v\left(p, M, z^0\right)$	$v\left(p, M, z^1\right)$
Expenditure function	$e\left(p, z^0, V^0\right)$	$e\left(p, z^1, V^1\right)$

The Hicksian equivalent measures the change in income (given the original quality level) would lead to the same utility change as the change in the quality of the environmental attribute. In terms of the indirect utility function, the Hicksian equivalent (HE) is the solution to

$$v\left(p, M, z^1\right) = v\left(p, M - HE, z^0\right) = V^1 \tag{15}$$

i.e., the HE measures the income change equivalent to the welfare lost due to the decrease in the quality of the environmental attribute. In other words, and if we admit that the implied property rights are assigned to the change and not to the status quo, the HE translates the maximum amount that the individual would be willing to pay to avoid the changes in the quality level of the environmental attribute. The HE can also be defined in terms of the expenditure function. It is the difference between the expenditures required to sustain utility level V^1, at the original environmental quality level:

$$HE = e\left(p, z^0, V^0\right) - e\left(p, z^0, V^1\right) = M - e\left(p, z^0, V^1\right) \tag{16}$$

Substituting (13) into (16), we get

$$HE = e\left(p, z^1, V^1\right) - e\left(p, z^0, V^1\right) \tag{17}$$

i.e., although the HE is defined in terms of the monetary equivalent of a change from V^1 to V^0, it can also be measured by the change in the expenditure function associated with the environmental quality changes (given the utility level V^1).

These two Hicksian welfare measures can also be interpreted in terms of the implicit rights and obligations associated with alternative environmental quality levels. The HC carries with it implicitly the assumption that the individual has the right to the original environmental quality level in case of environmental quality deterioration. In contrast, the HE contains the assumption that the individual has an obligation to accept the decrease in the quality in the environmental attribute and thus will have to make a payment if the new quality level is not to be attained. Based on the interpretation of the two measures, we are able to argue that the choice between them is, basically, an ethical one, i.e., one that depends on the value judgement as to which underlying distribution of property rights is more equitable (Krutilla, 1967). The results can be summarised as follows:

Table 4. Welfare measures and the property rights distribution

Attribute quality	Hicksian Equivalent measure: Implied property rights in the change	Hicksian Compensating measure: Implied property rights in the status quo
Increase	WAC to forgo	WTP to obtain
Decrease	WTP to avoid[1]	WAC to accept

[1]The preferred welfare measure according to the suggestions of the NOAA panel (1993)

5. Contingent Valuation in Practice

5.1 Introduction

In 'standard' private market exchanges, an individual evaluates the alternative market prospects given her previous experience and market information. The nature of the CVM application, in terms of policy choice appraisal, makes the value formulation problem more difficult relative to ordinary market decisions (Mitchell and Carson 1993).

- First, in CVM, an individual formulates a valuation given the experience and the information provided by the contingent market, i.e., as described in the survey instrument.
- Second, CVM is usually applied to assess the monetary valuation of alternative protection choices that, most of the times are unfamiliar to the citizens. However, these are precisely the cases where the lack of public information for policy choice is the greatest.
- Third, the time devoted to contingent choices may be more limited than in market situations. This time constraint occurs for two reasons: (a) the research strategy may seek to reduce data collection costs by limiting the time devoted to gathering each set of observations; (b) the respondent may choose to limit her time resources devoted to value formulation. Therefore, the value formulation process in the contingent market is submitted to sources of error. Information errors may arise as complex information is communicated to the respondents. Information errors may be left uncorrected due to time constraints on review or repetition. Thus the time constrained process of

communicating complex information is an important source of error in the value formulation process.

The question is then: what is the level of information necessary to be provided in the survey instrument? How much information should be provided in a CVM questionnaire so that the respondents are able to make a valid value formulation? These questions are addressed in the following sections.

5.2 Definition of the Survey Contingent Market

The description of the contingent market is very important in guaranteeing a successful valuation exercise and, this way, can produce estimation results that can be interpreted in economic terms (Carson et al. 1999, Nunes 2002). The description of the contingent market involves three major design tasks. The CVM researcher has in one first stage to (1) identify the set of environmental attributes to which the policy formulation is addressed and measure the respective levels in each of the 'reference' and 'target' states; then (2) describe the social context that involves the hypothetical transaction; and finally (3) recognize the circumstances under which the environmental change is made available to the respondents.

- In the first stage, which concerns the identification and measurement of the set of environmental attributes, it is crucial to work together in a multidisciplinary team, making the best use of the scientific information available. This work goes usually hand-in-hand with the use of focus groups, i.e., small groups of citizens, from all educational levels and varied life experiences, which are invited to discuss the degree of understanding of the material proposed to be used in the description of the public policy. Their comprehension feedback is crucial since it is very important that all the individuals potentially affected by the change in public policy are able to understand the described contingent market. Therefore, careful wording has to be provided without making the questionnaire so complex that its understanding would be beyond the ability, or interest, of many respondents. Finally, the CVM survey communicates the policy formulation as much as possible in visual form, making use of photos, images and computer manipulated images: this makes it possible to the respondent to better "visualise" the range of changes involved.
- In a second stage, the CVM researcher has to choose the payment mechanism and the number of the years involved in the transaction. This means that the respondent has to be informed both about the way in which the described environmental changes are financed and about the number of years over which payments are collected. The best recommendation is to choose a plausible payment vehicle, i.e., one that is perceived as a likely way to pay the environmental change. This improves the credibility of the contingent market: if the respondent finds the payment vehicle believable, ceteris paribus, she takes the choice situation more seriously.
- Finally, the respondent has to be informed how the survey results are likely to be used. This involves describing to the respondent the capacity of the government in providing the described environmental service(s) as well as the ability of the government to (coercively) collect the payment for the described environmental service(s). The underlying idea is to make the respondents taking care about the policy outcomes described in the survey instrument as well as to make the respondents perceiving that their responses to the survey as potentially influencing the final outcome(s).

5.3. The Level of Survey Information

On one hand, enough information must be provided to enable the respondents to make sound choices (Fischhoff and Furby 1988). Naturally, it is easier to make a valuation of a 'red car' if information is also available about the brand, its age, mileage, and so on, than to make a valuation of a 'red car' without such additional information. Most probably, one could expect that such "variations" in the information set are associated with different value estimates. Empirical evidence from CVM studies supports this assertion. Samples et al. (1986) tested the proposition that an individual's reported WTP to preserve a particular species would be significantly influenced by information about the species and its endangered status. The test results confirmed

that the estimated values of wildlife conservation were indeed dependent on the level of information conveyed. Hanley et al. (1995) found that the WTP to preserve biodiversity increases significantly as the level of information provision increases, but at a decreasing rate - "*what is out of sight, is out of mind"* (Tversky and Kahneman 1973, Woo 1996). But, on the other hand, the need for information must be balanced with the need to keep surveys to a reasonable length and easily comprehensible. If enough information is required to communicate alternative policy formulations that, most of the times are unfamiliar to the citizens, too much information will drive the respondent's attention away. The challenge is, therefore, to reach an appropriate level of information. This involves two tasks: an accurate description of the environmental changes associated with the proposed policy formulation as well as an accurate description of the contingent market.

5.4 Survey Elicitation Question

Once the respondent is given the description of the environmental change(s) and the contingent market involving such a provision, the respondent is asked to report her monetary valuation. This involves the choice of the informational support in which the respondent is able to report her valuation responses, i.e., the choice of the elicitation question format. We review five elicitation formats, respecting more or less a chronological order, and discuss the various pros and cons associated with each of these methods - see Table 5.

One the earliest elicitation formats was developed by Davis (1963) and is called the 'bidding game'. The bidding game format was also applied by CVM studies in the 70s (for example, Randall et al. 1974, Brookshire et al. 1976). The assumption is that the individual's WTP will be obtained after a series of questions has been asked, i.e., letting the interviewer iteratively raise, or lower, the proposed bid until the respondent alters her yes or no answer. A fine-tuning of the bidding game format may be achieved by rising, or lowering the bids in the reverse direction after a change in the "yes/no" answers. An advantage of the bidding game is that respondents get some assistance to arrive at a WTP value; moreover, the choice process of the respondent is simplified, so that the number of non-responses may be reduced. These desirable features are, however, obtained at high costs. The principal disadvantage is the phenomenon of 'anchoring' or 'starting-point-bias' (Mitchell and Carson 1989). This occurs when the respondent sees the initial bid as a clue, or reference point, for her final valuation. Thus the respondents who start with a lower initial bid will end up, ceteris paribus, with a lower WTP than the ones who start with a higher bid. To make matters worse, the bidding game format is highly vulnerable to a 'yea-saying', i.e., the fact that respondents tend to agree with increasing bids regardless of their true valuations (Kanninen, 1995). Consequently, the bidding game may be expected to result in an overestimation of the environmental change. Finally, the respondents become bored during the bidding game, especially if the iterative process is particularly long, meaning that their motivation will decline, so that the respective answers will be less accurate. The open-ended, or direct questioning, format consists of one single question that straightforwardly asks for the maximum amount that the respondent is willing to pay for the described environmental change: "What is the maximum amount of money that you are willing to pay for (…)". The main advantage of this format is that it immediately gives the information that the researcher is looking for. However, this method opens up the possibility of some form of strategic behavior: many respondents may immediately state zero WTP although the amenity has value for them, simply because the respondent may attempt to misreport her preferences by bidding untruthfully and thus affecting the outcome (Hoehn and Randall 1987). That is to say, there is a possibility that the respondents will reveal a WTP that is biased downward in the hope of getting "something for nothing". The reluctance of individuals to contribute to the support of public goods is a well-known phenomenon in the literature and referred to as the free rider problem. Furthermore, the open ended question may be very difficult to answer for the individual because most of the time the described environmental change is not particularly familiar to her (Hoevenagel 1994). In this context, Mitchell and Carson argue that "respondents often find it difficult to pick up a value out of the air, as it were, without some form of assistance" (Mitchell and Carson 1989, p. 97). Finally, individual consumers are not used to this procedure in normal market behavior; generally speaking, consumers make choices about buying (or not) a given good at fixed market prices.

Table 5. Comparative analysis of alternative elicitation formats

	Advantages	Disadvantages
Bidding game	Simple and assisted iterative process High participation rate	Anchoring Yea-saying Boring
Open ended	Displays the WTP in the format that the research is looking for Higher accuracy of the relevant statistics	Low participation rates Vulnerable to strategic behavior No valuation 'assistance' Procedure not familiar to consumers
Payment card	No anchoring Displays the WTP in the format that the research is looking for	Limited range of the cards Vulnerable to strategic behaviour
Dichotomous choice	Simple and assisted iterative process High participation rate No anchoring Incentive compatible Procedure familiar to consumers	Yea-saying Too expensive Low accuracy of the relevant statistics
Dichotomous choice with follow-up	Simple and assisted iterative process High participation rate No anchoring Incentive compatible Procedure familiar to consumers Higher accuracy of the relevant statistics	Yea-saying Too expensive Complexity of the involved estimation procedures

The payment card was developed as a response to the large proportions of non-responses and protest 'zeros' which were obtained in the CVM applications with open-ended formats (Mitchell and Carson 1989). The payment card format means that the respondents are offered a card that contains a list of bid amounts. Then the respondents are asked to indicate which amount of money on the card they are willing to pay for the described environmental change. According to Mitchell and Carson the payment card would give the respondents some assistance in searching for their valuation. Furthermore, it would avoid the phenomenon of start bid 'anchoring', as described in the bidding game, and still maintain the positive feature of the open-ended format, i.e., measure the respondent's WTP by mean of a single question. However, the validity of the stated WTP amounts may be questioned because the range of the payment card, specially the maximum bid amount, may influence the final WTP answers of the respondents (Hoevenagel 1994). From an economic point of view, the range of the payment card should be irrelevant: the different maximum amounts on the payment card do not reduce the set of choices of the respondents because each card contains the category 'other, namely: (…)'.

The dichotomous choice referendum format, also known as the take-it-or-leave-it (TIOLI) approach, asks the respondents how would they vote (in favour or against) upon a described program (and associate environmental benefits) upon the payment of an individual cost which is specified in the question format (e.g. "*Is your household willing to pay $xx for …*"). The main reason for the dichotomous choice is that such TIOLI valuation question is more likely to reflect real daily world market decisions which individuals are confronted with, rather than, for example, when respondents are facing an open ended question. Technically speaking, the dichotomous choice elicitation format is simply the first round of the bidding game: the respondents are asked to accept or reject a specific bid amount in return for an environmental change. Therefore, one of the properties of the bidding game is kept: it burdens the respondent less than the open-ended question formats. This elicitation format also avoids most of the disadvantages of the bidding game. Firstly, the dichotomous choice elicitation uses various bid amounts and randomly assigns them to the respondents thus minimising the 'starting-point' phenomenon. Secondly, this

elicitation format has the characteristic of being incentive compatible, i.e., truth telling is the individually optimal strategy (Hoehn and Randall 1987). Nevertheless, when compared to the elicitation question formats mentioned above, the dichotomous choice format involves a stronger financial effort in interviewing since it requires substantially larger samples to obtain the same degree of accuracy of the relevant statistics and thus the same level of value estimation precision. The dichotomous choice format may also encourage the "yea saying" phenomenon where the posted bid is accepted as a hint of what is a reasonable payment (Kanninen 1995).

The dichotomous choice with one follow-up elicitation format, also called the double-bounded dichotomous choice, was first proposed in 1986 (Carson et al. 1986) and is an extension of the (single-bounded) dichotomous choice format. This elicitation format involves the simple addition of one extra dichotomous choice question, containing a proposal for a bid that is dependent on the first bid. So, if the respondent answers "yes" ("no") to the initial bid, then the bid amount, proposed in the second question, is increased (decreased). As in the single-bounded dichotomous choice, a nice property of this elicitation format is that the empirical survival function can be estimated from which the mean and median can be assessed (Cameron 1988, Kriström 1990, Cameron and Quiggin 1994). It has also been proved that the follow-up greatly improves the statistical efficiency of the dichotomous choice format (Hanemann et al. 1991). This means that for each observation, i.e. for each respondent, the CVM researcher has more information about the "location" of the respondent's WTP. In econometric terms, this additional information is reflected (1) in a higher precision in the estimation of the truncated intervals of the c.d.f. and (2) more robust valuation estimates. In other words, this means that it is possible to get more precise WTP value estimates with the same sample dimension and thus, without incurring additional interviewing costs.

6. Respondent's Strategic Behaviour and Value Measurement Bias

6.1 Introduction

The CVM researchers, borrowing from Samuelson's notion of "false signals" maintain a priori that different payment scheme provides different incentives for engaging in strategic behaviour and thus influencing the expected valuation results. As Samuelson argued *"It is in the selfish interest of each person to give false signals to pretend to have less interest in a given collective activity than she really has."* (Samuelson, 1954, p. 388). He made specific reference to the possibility of strategic behaviour with respect to the use of surveys. Samuelson's point, repeated in many textbook discussions of public goods, had a strong effect on how economists view the survey questions. The wrong inference made by many CVM critics is to equate strategic behaviour with lying. As the term is used in the modern mechanism design literature in economics, "strategic behaviour is merely synonymous with a rational agent maximising (broadly defined) self-interest" (Carson et al. 1999, p. 3). Mechanism design theory has shown that the optimal strategic behaviour for the individual consumers in many instances is to truthfully reveal their preferences. Whether this is the case or not depends upon the particular format of the survey elicitation question and other aspects of the scenario, including the payment vehicle and the level of information. These issues are discussed in the following sub-sections.

6.2 The Choice of the Elicitation Question

Much of the attention focused on the binary choice question elicitation format in recent years is due to the NOAA Panel on Contingent Valuation's recommendation for its use. One of the reasons underlying the Panel's recommendation is related with the fact that the dichotomous (binary) choice format is an "appropriate elicitation mechanism for estimating the demand for public goods" because of its (defensive) properties with respect to strategic bidding behaviour. Indeed, one of the core results in mechanism design theory as derived by Gibbard and Satterthwaite (Gibbard 1973, Satterthwaite 1975) is that the binary choice question is the only response format that is potentially incentive compatible in the sense that truthful preference revelation represents an optimal (and the dominant) strategy for the respondent. It has been long known that in some settings the binary choice question format is incentive compatible (Farquaharson 1969). The best-known examples are political races with only two candidates and binding (approve/disapprove) referendums with plurality (usually majority approval) vote

requirement. The discussion of whether the binary choice question meets the incentive compatible property raises two questions.

The first question is whether it is the binding nature of the referendum that makes it incentive compatible. Carson, Groves and Machina (1999) considered "an advisory referendum vote", i.e. the government is more likely to undertake an action the larger in the percentage in favour, and showed that such vote rule is incentive compatible. The second question is whether substituting an "advisory survey" for an "an advisory referendum" alters the incentive properties of the mechanism. Green and Laffont (1978) have shown that the economic mechanism geared by the binary choice question can be implemented using a sampling approach rather than complete information. These two arguments were reiterated in a recent paper by Carson, Groves and Machina:

"It is possible to replace the binding nature of an incentive compatible referendum with the more general assumption that the government is more likely to undertake the action the higher the percentage in favour. It is also possible to substitute a survey of the public good for a vote of the public on the issue. Neither of these changes, alone or together alter the original incentive structure of the binding referendum" (Carson et al. 99, p. 11)

In a paper Hoehn and Randall (1987) illustrated the case for truth telling as the individually optimal strategy in a policy referendum model. The authors conclude that the *"values elicited with parametric cost referendum format weakly dominate the valuations obtained with a* [open ended] *willingness to pay format."* (p. 237 - p. 239). The authors consider that when choosing within the dichotomous choice referendum, the respondent is informed that (a) the proposed policy is implemented if the majority of the respondents approves it, and that (b) for each respondent approval is conditional on an individual cost as stated in the survey instrument. Since the respondent is uncertain about how others will vote, and (a) holds, then she faces an incentive for participation. Therefore, the respondent considers her vote as decisive to approve (or reject) the environmental improvement. If the survey stated cost is lower than the individual's subjective willingness to pay, then the respondent attains a welfare gain if the project is approved, and thus it is optimal to report approval. Conversely, the survey stated cost is higher than the individual's subjective willingness to pay, the respondent suffers a welfare loss if the project is approved and it is optimal to report disapproval. It is important to remark, however, that it is not casting the preference question as a referendum that provides its desirable incentive properties. It is the cast of the preference question is terms of being able to influence a government decision with a binary agree/not agree format.

On the contrary, when choosing for open ended elicitation question format, the respondent is informed that the (a) the proposed policy is implemented if the sum of the reported aggregated benefits exceed the costs and that (b) each respondent pays in proportion to the sample mean bid. This setting may lead respondents to misrepresent preferences and stating a bid that is not their true bid but a bid sufficiently small enough to manipulate the sample mean bid in the hope of getting "something for nothing" (Bohm 1972, p. 113). In other words, the respondent may attempt to give "false signals" and wait to see if the good is provided without her contribution. The empirical evidence shows that, on average, the open ended estimation results are, on average, lower when compared to the dichotomous choice referendum estimates. This empirical finding suggests that understating may be the overwhelming bidding force in the open ended elicitation question format and this is interpreted as free-riding to the supposed lower overall mean.

6.3 The Choice of the Payment Vehicle

A key assumption is being made in the preceding discussion of the binary choice question as an incentive compatible mechanism. The assumption is that the government can compel payment for a good if provided. The ability to coercively collect payment for the provision of the public good is the property that causes the agent to try to influence the government's decision in the desired direction taking into account both the costs and the benefits of the action to the respondent. Relaxing such an assumption will destroy the incentive properties of the referendum advisory survey - see Table 6 (Adapted from Carson et al. 1999, p. 17).

Table 6. Incentive properties of binary discrete choice questions

Type of Good and Nature of the Payment Obligation	Incentive Property
New public good with coercive payment	Incentive compatible
New public good with voluntary payment	Not Incentive compatible

To illustrate Table 6, let us consider the case where a (charitable) organisation wants to provide an increase in the environmental quality of a natural park (e.g. creation of a habitat reserve) via voluntary contributions. A "yes" to the question of the form *"Is your household willing to pay $xx to purchase the habitat reserve if we started the fund"* will encourage the charitable organisation to undertake the fund-raising effort. Given the public nature of the environmental quality - once the habitat reserve is created there is no way that any individual could be excluded from its benefits - the optimal strategy of an agent who wants to visit the forest is to contribute less than her maximum willingness to pay for the good and, in many instances sit back and wait to see if the good is provided without her contribution. The reluctance of individuals to contribute to the support of public goods is a well-known phenomenon in the literature and referred to as the free rider problem.

One of the first CVM studies focused on the study of strategic bidding behaviour was presented by Swedish economist Peter Bohm. Bohm conducted a CVM experiment with the objective of testing whether value estimates are sensitive to the alternative configurations of the payment rules. Bohm's results do not rule out the hypothesis that different payment decision rules engage different strategic behaviour incentives, but the empirical evidence makes it unlikely that these differences are 'very large' – and this result is of considerable practical importance (see Bohm 1972). More recently, Champ et al. (1997) set up an experiment involving contingent donations and actual donations for an environmental project along the North Rim of the Grand Canyon. The project involved old, unpaved roads that must be removed before it can be officially designated as a Wilderness Area. The experiment was characterized by the use of two survey versions: one posed a dichotomous choice question which gave the opportunity to actually donate a specific amount for road removal, whereas the second asked a parallel contingent donation question. The estimations results showed that '23% of the contingent donation respondents were inconsistent in the sense that they said yes to the dichotomous choice contingent donation question but our model predicts that they not actually donate if they had been in the dichotomous choice actual donation treatment' – see Champ et al. (1997).

6.4 The Hypothetical Nature of the Survey Payment

Hypothetical bias is defined as the systematic difference between the stated payments response in a hypothetical market and the actual payments when individuals are presented with the opportunity in reality. Hypothetical bias may occur in the CVM responses because respondents may not be able to visualise the described scenario situation, or it may not seem realistic enough to spend time thinking it through. Respondents may also not believe that their answers will have any effect on the policy. More recently, the divergence between actual and survey behaviour may also be interpreted (and expected) as additional empirical evidence of strategic behaviour in CVM surveys.

To see this, let us return to the case where the government wants to provide a forest recreation area. The incentive structure is illustrated in Table 7 (Nunes, 2002). If one takes a compulsory tax as the payment vehicle, the government can compel payment for the public good if the majority of the electors vote for the provision of the forest recreation area. Therefore, the agent perceives that she is able to influence a government decision and her optimal strategy is to state her true

valuation of the public good. On the contrary, if we consider that a (charitable) organisation wants to provide the forest recreation area via voluntary contributions, the optimal strategy of an agent who wants to visit the forest is to contribute less than her maximum willingness to pay for the good and, in many instances to contribute nothing. This is the classic free riding incentive behaviour - see arrow (a) in Table 7. However, Carson et al. (1999) argue that *"the same incentive structure which should cause free riding with respect to the actual contributions should induce respondents in a survey to over pledge because doing so helps to obtain the latter opportunity to free ride"* (p. 12). Therefore, according to these authors the survey based predictions of contributions, when compared to the actual contributions, are influenced by an over pledge incentive - see arrow (b) in Table 7. The hypothetical bias is difficult to test, except by comparison with real-payments. But clearly, if it was possible to obtain real-cash-payments for the good in question, the CVM method would not be necessary. However, there are some CVM experiments that combine the use of the hypothetical market value elicitation with actual payments. The empirical evidence has not always supported Carson's et al. "Over pledge" argument. One possible reason for the discrepancy between the intended and actual behavior is that an individual may judge her consumption from a public good (e.g. preserve a habitat reserve) as something quite different from consuming the same good as a private one (e.g. WWF membership fee). Hence, *"the transformation of a public good into a private good may be considered highly inefficient"*. Another possible reason explaining the difference between hypothetical and actual behaviour is the respondent's lack of foreknowledge of an obligation to pay in accordance with one's verbal statements. According to Navrud, *"a carefully constructed CVM survey should contain an explicit payment obligation"* (Navrud 1992, p. 245).

Table 7. Strategic behaviour, payment vehicles, and payment settings

Actual payment setting (with cash transaction)		Hypothetical payment setting (no cash transaction)
Compulsory tax	Voluntary contributions	Survey based contributions
Ability to coercively collect payment for the provision of the public good Agent is able to influence a government decision	Agent sits back and wait to see if the good is provided without her contribution Agent contributes less than her own WTP	Agent over pledges (Carson et al. 99) Agent contributes more than her own WTP
⟹ Incentive compatible	(a) ⟹ Not incentive compatible	(b) ⟹ Not incentive compatible

In contrast, other studies provide considerable evidence that hypothetical bias may not be a problem. Sinden (1988) conducted 17 experiments comparing the hypothetical and actual money donations to a fund for soil conservation and an eucalyptus planting program. He found that there was no statistical difference between the two markets in any of the experiments. Finally, some studies found that hypothetical estimates may even be slightly smaller than actual payments. Bateman et al. (1993) cite experiments that "clearly show that stated willingness to pay in a hypothetical market may be below the willingness to pay in a real market" (p. 39). Furthermore, Randall, Hoehn and Brookshire (1983) obtained lower willingness to pay responses from hypothetical markets. A possible reason for this situation is that in the "real market", the version of the good as a "private" (excludable and rival) good, introduces elements of competition, exclusivity and "auction fever" completely absent from the good conceived as a "public good". More recently, Nunes (2002, 2004) puts forward the idea that two valuation mechanisms, of

opposite sign, emerge simultaneously when answering survey based contributions. The first refers to free-riding, and thus reflecting in an incentive to lower willingness to pay responses from the survey. The second refers to the purchase of warm glow, i.e., an expression embedded in the WTP so as to acquire a sense of moral satisfaction. The later is reflecting in an incentive to increase willingness to pay responses from the survey. Nonetheless, the only problem with such cases, from the perspective of economic theory, is not whether there should be a divergence between actual behavior and the survey estimate, but rather whether the magnitude of the divergence empirically observed should be even larger, i.e., to assess whether *"the incentive in a survey to over pledge"* is indeed a statistically significant driving force of the stated WTP responses. Arrow et al. (NOAA 1993) suggest that the response to the issue of the hypothetical nature of the CVM method is to make both the hypothetical market and the payment vehicle as credible and realistic as possible. Moreover, the members of the NOAA Panel also recommend that CVM survey should contain, together with the explicit payment obligation, the use of budget constraint reminders and substitute reminders before eliciting the WTP question.

6.5 The Purchase of Warm Glow

Despite the fact that CVM survey design has been a target of extensive methodological research and quality improvements, this valuation method is an object of diverse critiques. The embedding effect is a major critique of the CVM method. Embedding is attributed to the possibility that CVM is insensitive to the scope of the public policy formulated in the instrument survey. Consider the question of the preservation of two natural areas: area 1 and area 2. Suppose that the WTP for the two areas jointly is $(X + C)$, where X is the economic value of preserving the areas, and C is the value attached to the warm glow of giving. Now suppose the answer to the question for area 1 individually is $(Y + C)$ and the answer to the question for area 2 individually is $(Z + C)$, where $X = Y + Z$. Then, the sum of the answers for the areas individually will be $(X + 2C)$, which is greater by the amount C than the answer for the two areas jointly. The argument for criticising the CVM method goes as follows: how can cost-benefit analysis and damage cost assessment rely on a valuation tool that discloses, for the same public good, different value estimates, whether the public good is valued alone or included in a wider policy program? Kahneman and Knetsch (1992) offered an explanation for embedding that has its roots in the individual consumer behavior. According to these authors embedding is not in conflict with the standard value theory; according to Kahneman and Knetsch embedding can be explained in terms of an impure altruistic motivation of the individual consumer, and that aspect of consumer behavior was not considered in the standard valuation framework. In other words, Kahneman and Knetsch proposed an explanation that maintains that the WTP for public goods is also an expression of WTP to acquire moral satisfaction: "respondents express a willingness to contribute for the acquisition of many public goods, and there is no reason to doubt their sincerity or seriousness. (…) What is the good that respondents are willing to acquire in CVM surveys? We offer the general hypothesis that responses to CVM questions express a willingness to acquire a sense of moral satisfaction, also known as warm-glow of giving.

Moreover, the moral satisfaction valuation transmission can be interpreted in the light of the general model formulation for private donations as initially developed by Andreoni (1989, 1990). According to Andreoni, the individual consumer contributes to the provision of a particular public good for two reasons. First, because the individual consumer simply wants more of it, i.e. the 'no satiety axiom'. Second, because the individual consumer derives some private benefit from giving to the good. Therefore, the individual consumer contribution to the public good enters into her utility function twice: once as a private good and once as a contribution to a public good. By inference, it seems plausible that the act of participating in a CVM market so as to assist in the supply of an environmental good could provide a mixture of private, warm-glow benefits and public services from the increased supply of the good. More recently, Nunes and Schokkaert (2003) explore the use of factor analytic information so as to characterize respondent's motivational profile, showing that the embedding problem in CV applications is linked to the warm glow effect. Moreover, the use of direct attitudinal information played a crucial role to get a better understanding of the real content of CV answers. In fact, it allowed for operationalizing

and estimating a "cold" WTP, i.e. a WTP measure for the case in which all respondents would be free from a general feeling of well-being or satisfaction generated by the act of giving, has worked reasonably well. The "cold" WTP estimates are lower than the original estimates and formal testing has shown that they do not violate the adding-up property. Therefore, if one takes the view that the original WTP estimates do not reflect "economic preferences" because they contain an altruistic motive and should therefore not be used for cost-benefit exercises (Milgrom 1993); this procedure of "cooling down" the altruistic motive might offer a way-out. Further refinement of our method could even lead to a better distinction between the different components of "altruism". One could as well argue, however, that "warm glow" is a legitimate component of WTP and should therefore not be disregarded. Since our results suggest that the problems with the embedding effect do not necessarily point to inconsistent response behaviour but can be explained by the existence of a stable and measurable warm glow component in individual preferences, they also give support to the direct use of the uncorrected original WTP measures.

7. Conclusions

An environmental resource asset, such as the conservation of a natural area, provides a wide range of benefits. Generally speaking, the conservation benefits are classified in terms of the natural area's provision of use and non-use service flows. The use benefits, like the name suggests, refer to a set of recreational possibilities that the individuals are able to experience when visiting the natural area, e.g., hiking or simply enjoying the aesthetic satisfaction of being in such natural environment. The non-use benefits refer to the set of activities (not necessarily associated with any human use) that the natural area is also able to provide, e.g., areas closed to the general public and created to guarantee the protection of the local biodiversity in their natural habitat. Different valuation instruments are available to the researcher as to assess such conservation benefits. CVM is an important valuation technique and since it is the only one capable of assessing the value of the non-use benefits - which are characterized by having no behavioural market trace - therefore, economists cannot glean information regarding these values by merely relying on market-based valuation approaches. Today the CVM method is a well known benefit valuation technique of non-market goods and services and is widely used within the framework of cost-benefit analysis and natural damage assessment. The CVM method consists of implementing a market with the help of a survey directed to the individual consumer. The principal idea underlying this method is that individuals not only have preferences defined over the described environmental good, but also are capable of transforming these preferences into monetary units. In the present work, we present the link of contingent valuation method to standard economic theory as well as carry out a survey on CVM, discussing the state-of-art survey design guidelines. The overall goal is to ensure the validity of the proposed survey as a measurement instrument. In the valuation exercise, we are particularly interested in the study of possible behavioural incentives underlying respondent's behaviour, paying particular attention to strategic behavioural issues, such as free riding, and the purchase of warm glow. Free riding and the purchase of warm glow display opposite effects on individual respondent's bidding. Whereas free riding is characterized by an incentive to understate individual willingness to pay, the presence of warm glow signals the occurrence of a potential over pledging. Recent attempts to introduce attitudinal information into the analysis of CV answers reveal the warm glow effect has an important influence on the WTP answers seems to be rather robust. The use of direct attitudinal information may play a crucial role to get a better understanding of the real content of CV answers.

All in all, these contributed CV methods to gain much popularity in recent years. They have proven empirical validity in a wide variety of environmental economic problems. It is noteworthy that the city – the place par excellence for both positive and negative externalities – has received far less attention in the great many efforts to introduce CV methods as a powerful analytical tool. This offers a great challenge for research, as almost all issues studied in modern CV analysis are present in urban quality of life, such as conservation issues, ecological diversity, and so forth. More research would be needed to make CV a well- accepted analytical tool for studying urban

quality of life. The prospects are favourable as CV methods incorporate a wealth of solid economic perspectives that render in urban life.

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Conferences, Announcements, News

What Future for Cohesion Policy? An Academic and Policy Debate
Organized by:
Regional Studies Association, in collaboration with the European Commission and the Government Office for Local Self-Government and Regional Policy
16-18 March 2011
Bled, Slovenia
Conference Overview by Stilianos Alexiadis

A conference involving academic and policy debate took place in Bled, Slovenia in March 2011. This conference was organized jointly by the Regional Studies Association and the European Commission's Directorate General for Regional Policy (DG REGIO), with the contribution of Slovenian Government Office for Local Self-Government and Regional Policy.

The major research orientation of the event is inspirited by the recent Report on Economic, Social and Territorial Cohesion (published every three years). Overall, these reports describe in detail the progress in achieving the aim of regional cohesion in the European Union (EU). The contributions of the EU, national and regional governments in this aim, are also outlined in these reports.

Taking the Fifth Report on Economic, Social and Territorial Cohesion, as a point of departure, the conference put particular emphasis on the future architecture of cohesion policy. More specifically, the main areas covered in the conference were towards analyzing regional disparities, assessing the contribution of the EU, national and regional governments to regional cohesion, the impact of cohesion policies together with extensive discussions on the cohesion policy after 2013.

This conference is the first to provide a forum for international academic debate on the Fifth Cohesion Report between researchers, specialised in regional theory and empirics together with senior officials from various European institutions.

In general, the papers and presentations in the aforementioned conference were concentrated on a series of key topics. These included, the contribution of cohesion policy to the recently formulated strategy ‘Europe 2020’, the territorial coverage of the policy, policy performance and effectiveness efficiency of governance structures and implementation arrangements the relationship between cohesion policy and other EU structural policies.

International Conference of IGU (International Geographical Union)
Commission C08.14 – Global Information Society on
"Heritage, Planning and e-Participation: The evolving Forms of the Information Society"
National Technical University of Athens
School of Rural and Surveying Engineering
Dept. of Geography and Regional Planning
Conference Overview by Stratigea, A., National Technical University of Athens

The International Conference of IGU (International Geographical Union) – Commission C08.14 – Global Information Society, on **"Heritage, Planning and e-Participation: The evolving Forms of the Information Society"**, took place in Athens, 3-6 July 2011. The Conference was organized by the National Technical University of Athens, School of Rural and Surveying Engineering, Dept. of Geography and Regional Planning, Unit of Spatial Planning and Regional Development.

The Conference has created a platform for discussion on various dimensions of ICTs and their contribution to planning and e-participation in order to cope with contemporary problems of our society. It has attracted researchers from all over world, ranging from USA to Japan, but also from many European Countries and Israel as well.

Thirty (30) very interesting topics were presented, falling into the 10 sessions of the Conference program. Key thematic issues of the Conference in respect to ICTs were:

- ✓ Accessibility and Networks
- ✓ ICT and Regional Development
- ✓ Planning for Smart Cities
- ✓ Planning Methods
- ✓ Greek Information Society
- ✓ e-Government in Practice
- ✓ Socio-spatial transformations
- ✓ e-Participation and Heritage
- ✓ ICT, Innovation and Governance
- ✓ Mediterranean Renaissance Project (MRP): The Role of ICT in Mediterranean Democratic Movements

The Conference has been considered as a very successful one, based on the:

- ✓ Establishment of a platform for exchanging information, experience and research results among researchers of a quite different origin, disciplines and culture (USA, Japan and Europe), broadening thus the context of discussions; and

Enrichment of the C08.14 Commission's work and content, by adding some new areas of interest that need to be further elaborated, based on the evolving context of ICTs (mobile communication, web-based developments etc.), such as ICTs and urban development (e.g. smart cities), ICTs and modeling, ICTs and e-democracy, etc.

Academic Profiles

Professor AHARON KELLLERMAN

Prof. Aharon Kellerman has advanced from teaching assistant to full professor at the University of Haifa, Israel. In the past, Prof. Kellerman has held an assortment of visiting and affiliate academic positions: Oxford University, UK; Bar-Ilan University, Israel (16 years); University of Maryland, College Park, US (six times); Ben-Gurion University of the Negev; University of Miami, US; Boston University, US. He served as Vice President of Administration at the University of Haifa, 1995-2004, and is currently Professor Emeritus of Geography, President- designate, Academic College for Israel (under construction).

Prof. Kellerman has had much committee and administrative experience throughout the years, including his chairmanships over the Department of Geography at the University of Haifa, the M.A. and Doctoral Committees (also at the University of Haifa), and the Joint Research Committee of the University of Haifa and the Technion – Israel Institute of Technology. In addition, he has been involved in many professional organizations, including being the President, Vice President and Council Member of the Israeli Geographical Association, Editor and Co-Editor of Horizons in Geography, and reviewer for the National Science Foundation (U.S.). His public nominations include Member of the Awarding Committee for the Rupin Prize, the Team for Southern Haifa Bay Planning and the Consulting Committee for Economic Development for the City of Haifa. Currently he serves as chair of the Commission on the Geography of the Information Society of the International Geographical Union (IGU), following his service as vice-chair for the Commission on Telecommunications and Geography. His list of publications includes four books; five monographs; over 60 refereed articles; 40 book chapters; proceedings; book reviews, etc. This, in addition to his consulting activities, paper presentations (over 80 in Israel and abroad), and theses supervision, has earned him many awards and grants during his career such as those from the Fullbright Foundation; Memorial Foundation for Jewish Culture; Ben-Shemesh Award (Jewish National Found); the Moshkovitz Foundation; the Burda Foundation; and the Association of American Geographers (AAG).

Academic Profile by Dr. Aikaterini Kokkinou, University of Glasgow, UK

Dr. **ALBERTO PALONI**

Dr. Alberto Paloni is the Head of the Economics Department, Business School, University of Glasgow.

Dr. Paloni holds a PhD degree and a MSc degree in Economics both from Birkbeck College (University of London) and a first degree in Economics from 'La Sapienza' University of Rome.

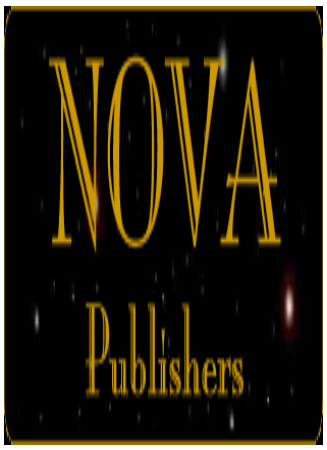
His affiliations include: Member of the Development Studies Association, External Research Fellow of the Centre for Research in International Trade and Development (CREDIT), University of Nottingham, Accredited Member of the Higher Education Academy, Visiting Professor, Department of Economics, 'Roma Tre' University (Rome), and Visiting Professor, Department of Economics, University of Bari.

His research interests are in the area of development and economic policy reforms in developing countries. He has published several articles in specialised journals and books on the reform programmes supported by the International Monetary Fund and the World Bank; foreign direct investment in developing countries; the political economy of reforms; and the implications of globalisation for policy reform.

He is also referee for the following academic journals: Emerging Markets Finance and Trade, International Economic Journal, International Review of Applied Economics, Journal of Asia Pacific Economy, Journal of Development Studies, Journal of Economic Studies, Journal of Economic Surveys, Journal of International Development, Review of Development Economics, Review of International Organizations, Scottish Journal of Political Economy, World Development.

Academic Profile by Dr. Stilianos Alexiadis, RSI Journal

Book Reviews



Handbook of Innovation Economics

George M. Korres

University of Newcastle, CURDS
and
University of the Aegean, Department of Geography

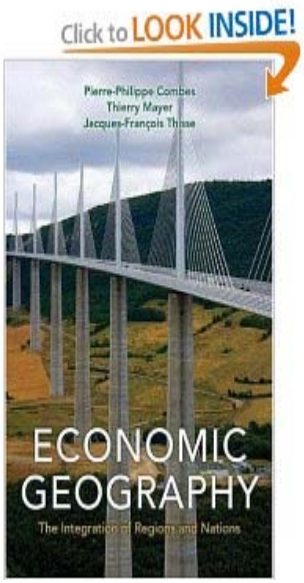
Nova Publishers
Economic Issues, Problems and Perspectives

Innovation is not a simple linear transformation with basic science and other inputs at one end of a chain and commercialization at the other. Successful innovation involves top management to employees in R&D, finance, production and marketing divisions. It requires decision-making, long-term planning, motivation and management techniques, coordination, and efficient R&D, production and marketing.

The book intends to provide a basic understanding of the current issues and the problems of knowledge economy, technical change, innovation activities; it also examines many aspects and consequences of regional integration that are obscure or yet to be explored. After general issues in these fields have been addressed the discussion turns to empirical and theoretical aspects of technical change, productivity, economic growth, European policy and technology policy.

In particular, with its wide range of topics, methodologies and perspectives, the book offers stimulating and wide-ranging analyses that will be of interest to students, economic theorists, empirical social scientists, policy makers and the informed general reader.

Book Review by Dr. George Tsobanoglou, Associate Professor, University of Newcastle and University of the Aegean



Economic Geography:

The Integration of Regions and Nations

Pierre-Philippe Combes, Thierry Mayer and Jacques-Francois Thisse

Princeton University Press

Economic Geography is the most complete, up-to-date textbook available on the important new field of spatial economics. This book fills a gap by providing advanced undergraduate and graduate students with the latest research and methodologies in an accessible and comprehensive way. It is an indispensable reference for researchers in economic geography, regional and urban economics, international trade, and applied econometrics, and can serve as a resource for economists in government.

Economic Geography presents advances in economic theory that explain why, despite the increasing mobility of commodities, ideas, and people, the diffusion of economic activity is very unequal and remains agglomerated in a limited number of spatial entities. The book complements theoretical analysis with detailed discussions of the empirics of the economics of agglomeration, offering a mix of theoretical and empirical research that gives a unique perspective on spatial disparities. It reveals how location continues to matter for trade and economic development, yet how economic integration is transforming the global economy into an economic space in which activities are performed within large metropolitan areas exchanging goods, skills, and information. *Economic Geography* examines the future implications of this evolution in the spatial economy and relates them to other major social and economic trends, providing a complete introduction to economic geography, explaining the latest theory and methodologies and serving as a textbook for students and a resource for professionals

Book Review by Dr. Aikaterini Kokkinou, University of Glasgow

THE REGIONAL SCIENCE INQUIRY JOURNAL (RSIJ)
Instructions to Authors

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In order for a paper to be submitted to the Regional Science Inquiry Journal (RSIJ) for publication, the following should be taken into consideration:

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8. Titles and subtitles should be short.
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