

# GLOBAL JOURNAL

OF HUMAN-SOCIAL SCIENCES: B

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Relationships in Ijeda-Ijesa

Discovering Thoughts, Inventing Future

Volume 14

Issue 7

Version 0.1



GLOBAL JOURNAL OF HUMAN-SOCIAL SCIENCE: B  
GEOGRAPHY GEO-SCIENCES, ENVIRONMENTAL & DISASTER MANAGMENT

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VOLUME 14 ISSUE 7 (VER. 1.0)

OPEN ASSOCIATION OF RESEARCH SOCIETY



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GLOBAL JOURNAL OF HUMAN-SOCIAL SCIENCE: B  
GEOGRAPHY, GEO-SCIENCES, ENVIRONMENTAL DISASTER  
MANAGEMENT

Volume 14 Issue 7 Version 1.0 Year 2014

Type: Double Blind Peer Reviewed International Research Journal

Publisher: Global Journals Inc. (USA)

Online ISSN: 2249-460X & Print ISSN: 0975-587X

## Housing Condition and Health Relationships in Ijeda-Ijesa and Iloko-Ijesa, Osun State, Nigeria

By Ogundahunsi Dele Sunday & Adejuwon Stephen Adebambo

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**Abstract-** This study appraises the effect of housing condition on the health of residents in Ijeda-Ijesa and Iloko-Ijesa, Osun State. Primary data was acquired through structured questionnaires administered to 25% of the residents of the two villages adopting the "stratified-systematic" sampling method. Interviews were conducted for the major stakeholders in the study. Secondary data were sourced from the local government council office, journals, books, magazines, National Population Commission and the internet. Findings reveal that malaria was the most reported ailment followed by dysentery, typhoid and cholera respectively. Age of building was found to have significant relationship with the health of residents in Ijeda while the reverse was the case in Iloko. Significant relationship was found between building type and residents' health in Iloko than Ijeda while occupancy ratio had effect on the health of residents of Ijeda. The study concludes that housing condition affects the health of the residents in the two villages at different levels. Recommendations were made for improving the situation.

**Keywords:** *housing condition, rural, health, environment, amenities, sanitation, traditional compounds.*

**GJHSS-B Classification :** *FOR Code: 040699*



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# Housing Condition and Health Relationships in Ijeda-Ijesa and Iloko-Ijesa, Osun State, Nigeria

Ogundahunsi Dele Sunday<sup>σ</sup> & Adejuwon Stephen Adebambo<sup>σ</sup>

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## I. INTRODUCTION

Decent housing is one of the basic needs of every individual, the family and community in general. It reflects the cultural, social and economic value of a society, as it is the best physical and historical evidence of civilization in a country. Housing is defined as "the process of providing a large number of residential buildings on a permanent basis with adequate physical infrastructure and social amenities, (services) in planned, decent, safe, and sanitary neighbourhoods to meet the basic and special needs of the population" (Federal Ministry of Work and Housing, 2002 in Kuroshi and Bala, 2005). Neutze (1998) in Australian Bureau of Statistics (2006) however affirmed that inadequate housing can pose serious health risks.

Housing conditions play major role in individual health status, as a wide variety of housing features have been reported to influence the physical, social, economic and the mental well-being of occupants (Turunen et al. 2010). WHO (1990) stated that housing should provide:

- protection against communicable diseases,
- protection against injury, poisoning, and chronic diseases,
- and reduce psychological and social stresses to a minimum

A healthy housing environment is one that provides decent liveable dwellings, clean surrounding of minimum acceptable standard of space and environmental health. Environmental health is defined as the control of all those factors in man's physical environment that exercise or may exercise a deleterious effect on his physical, mental or social well-being. In essence, it refers to, among other things, the control of:-

- methods for disposal of excreta, sewage and community wastes to ensure that they are adequate and safe.
- water supplies to ensure that they are pure and wholesome
- housing to ensure that it is of a character likely to:
  - ✓ provide least opportunities for the direct transmission of diseases especially respiratory infections and;
  - ✓ encourage healthful habits of the occupants.

The nature of housing, its environment and its location plays crucial role in determining its occupants' ways of life. It affects the way they spend their income, leisure time, health and attitudes to social relations. Scott (1953) described pure, adequate water and safe removal of waste products as the foundation on which good housing, good nutrition and healthy living can be built.

## II. JUSTIFICATION FOR THE STUDY

Rural area in Nigeria is defined as a settlement with population less than 20,000; where majority of the people are engaged in primary activities like farming, fishing, mining, lumbering etc; where the per capital income is significantly lower than the national average and where the population lacks basic social amenities like; good drinking water, electricity etc. Rural housing is characterized by poor quality of building, poor construction methods and materials, poor planning and design principles.

Quality housing in rural areas tends to raise the standard of living of the rural dwellers and check the flow of the rural people to urban areas. It could encourage population movement from the already congested urban areas to rural areas. In some rural

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areas, serious environmental problems arise in and around people's homes, often creating health hazards. Inadequate sanitation, insufficient or contaminated water, uncollected solid waste and insect infestation are all correlated with rural poverty and lack of environmental services. Respiratory infections and diarrhoea diseases are two major killers that have been linked to inadequate home and neighbourhood environments (Nicol, 2006).

### III. THE STUDY AREA

Ijeda-Ijesa and Iloko-Ijesa are contiguous towns under Oriade Local Government Council, Osun State. Ijeda-Ijesa is located on latitude  $7^{\circ}40'1''$  north and longitude  $4^{\circ}50'1''$  east while Iloko is located on latitude  $7^{\circ}38'1''$  north and longitude  $4^{\circ}48'1''$  east. Both share boundaries with Efon-Alaaye in Ekiti State, Ijebu-Ijesa, Iwaraja, Iwoye and Erinmo. Both being traditional towns, developed virtually without physical plans and this has resulted in the unregulated mixture of land use activities. Ijeda-Ijesa has a population of about 13,000 while Iloko-Ijesa had about 17,000. Residential land use in the areas can be classified into two; the old and the new residential areas.

The old residential area comprises the traditional quarters in the inner part of the town and most of the buildings in the areas are built of local materials such as mud and mud blocks, which are sometimes plastered with cement and roofed with corrugated iron sheets. In addition, the buildings are made up of traditional compound houses in which each compound is connected to the next by narrow footpaths. Access is mainly by foot. On the other hand, new residential areas cover a small area in the outer part of the towns. The inhabitants of Ijeda-Ijesa and Iloko-Ijesa engage in agriculture, crafts and light agro-allied industry made up of cassava processing and distillery.

### IV. MATERIALS AND METHODS

Data for this study were generated from primary and secondary sources. The primary data was acquired through structured questionnaire and interview while secondary data was sourced from local government information office, journals, magazines, National Population Commission and internet. The sample was generated through stratified-systematic sampling method. The houses in each of the two villages were divided into four strata/traditional quarters and twenty-five percent (25%) of the houses in each stratum were systematically selected. In each of the houses, the household head was administered the question nairreto acquire data about housing condition, facilities, waste generation and management, prevalent diseases and illness, and socio-economic characteristics of the inhabitants. This was complemented by observations and information from the secondary source. The data

was analysed using descriptive and chi-square statistics to determine the presence or otherwise of relationship between housing quality and the health status of the people.

#### a) Hypothesis

The hypothesis to be tested is

Ho: There is no relationship between housing condition and the health of the occupants

### V. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Recently there have been an increasing amount of research and publications on the influence of living conditions on the health of occupants (Braubach & Bonnefoy, 2001; Mackenbach & Howden-Chapman, 2002; Thomson et al., 2003). However, Lawrence (2000) contends that housing and health issues have still not been well understood in terms of both the positive and the negative impacts on health and well-being. Scholars have also called for an extended view of housing and health, integrating the mental and social aspects of housing as a fundamental setting for living (Dunn, 2000; Williams, 2002). Rapoport (1995) argues that an adequate home is a "special place" for its inhabitants. It represents a safe physical harbour for the individual, and mentally provides an opportunity for retreat from the outside world and its pressures. Thus, a more holistic approach is needed to understand the wide range of interactions between place and health (Williams, 1998).

The review of academic literature by Cohen (2011) revealed ten hypothesis regarding the contribution of affordable housing to health. These are:

- Affordable housing may improve health outcomes by freeing up family resources for nutritious food and health care expenditures
- By providing families with greater residential stability, affordable housing can reduce stress and related adverse health outcomes
- Stable, affordable homeownership may positively impact mental health by increasing the control that homeowners have over their physical environment and minimizing the disruptions associated with frequent, unwanted moves. However, the stress and disruption associated with mortgage defaults and foreclosures suggest that unsustainable forms of homeownership may have strong negative impacts on health.
- Well-constructed and managed affordable housing developments can reduce health problems associated with poor quality housing by limiting exposure to allergens, neurotoxins, and other dangers
- Stable, affordable housing may improve health outcomes for individuals with chronic illnesses and others by providing a stable and efficient platform

for the ongoing delivery of health care and reducing the incidence of certain forms of risky behaviour

- By providing families with access to neighbourhoods of opportunity, certain affordable housing strategies can reduce stress, increase access to amenities, and generate important health benefits
- By alleviating crowding, affordable housing can reduce exposure to stressors and infectious disease, leading to improvements in physical and mental health
- By allowing victims of domestic violence to escape abusive homes, affordable housing can lead to improvements in mental health and physical safety
- Use of green building strategies reduces environmental pollutants, lowers monthly energy costs, and improves home comfort and indoor environmental quality
- Affordable and accessible housing linked to supportive services enables older adults and others with mobility limitations to remain in their homes

Akinbamiro (2012) found significant relationship between health status of residents and housing quality measured in terms of age of building, waste disposal method, frequency of collection, management of waste water, type of toilet, use of toilet, walling materials, type of roofing materials, adequacy of electricity, type of kitchen and state of repairs of building in Odi-Oloworesidential district, Osogbo, Osun state, Nigeria. He recommended public health campaign, wider coverage of waste removal agency and public sector intervention in the form of improving access to housing fund for rehabilitation, renovations and redevelopment.

Furthermore, there is growing evidence that housing conditions closely align with the health of individuals and the connections people have with each other and their community. Inadequate in-house space has been identified as a risk factor for the propagation of respiratory infections due to bacterial causes and indoor air pollution. A high risk of acute lower respiratory infection was associated with increasing number of persons per room and high level of indoor air pollution in a study made among children under five years in Addis Ababa (Getahun et al, 2010).

Bonnefor et al (2004) concluded from the study based on empirical data collected from 259 dwellings and 601 residents, that several housing conditions do have impact on the health perception of their residents. Noise annoyance is recognized as one of the most prevalent problems affecting residential health and well-being. However, it proved difficult to identify an aspect having an overall dominant influence on health. The survey clearly indicated the effect of rehabilitation work on residential satisfaction, and raised expectations that housing improvements can lead to better health.

Nicol (2006) in his work on eight European cities identified a definite relationship between damp/mouldy homes and anxiety/depression and migraine/frequent headaches from the group of chronic illnesses; diarrhoea and cold/throat illnesses from the group of acute illnesses; and asthma, wheezing, eczema, watery eyes/eye inflammation, headaches from the list of symptoms. He however cautioned that this relationship does not imply cause and effect. Many illnesses appear to be mental conditions, and even the physical symptoms are of the sort which could be regarded as being the emotional response to circumstances – such as feeling trapped in poor housing.

It is evident from literature that current awareness of the housing-health-relationship varies from country to country. This is due to housing stock differences and climatic conditions, and a product of different policies and scientific knowledge. For instance, the UK has recognized that safety hazards represent a major housing and health problem in its housing stock (Raw and Hamilton, 1995). This is a result of matching and analysing health, safety and house condition datasets. However, a housing and health symposium arranged by WHO in June 2001 showed that next to the awareness, the priority of problems differs strongly from country to country, as they are influenced by cultural, social, economic, building, climatic and geographic factors (WHO, 2001). Therefore, solutions to reduce or remove hazards will vary internationally depending on the cause and on buildings factors in different peculiar environment.

## VI. THE CONCEPT OF HABITABILITY

The concept of habitability reveals the level of satisfaction derived by the tenants or residents. In order to evaluate housing habitability, there are several research approaches that can be adopted, all based on “users reaction”. This concepts reveals that housing is more than shelter and looks at the interaction of four main subsystem; tenant (man), shelter/dwelling, environment and institutional management which interact actively to produce the level of satisfaction and the level of satisfaction in turn determines the level of housing needs in a given place (Onibokun, 1985). However, habitability, as used in the system approach, assume the fact that what constitute habitability varies according to the ambient circumstance and as such the habitability of a housing at a particular point in time can only be defined meaningfully in the relative terms or sense rather than to the absolute sense.

Considering “man” who is the occupant of the house for instance, some of his socio- economic characteristics such as marital status, family size, income level and others need to be examined. In addition, the culture of the group to which the occupants belong should be given adequate attention.



Considering the “shelter” aspect of the concept, there is need to study the adequacy or otherwise of the physical design of the house in terms of ventilation, number of rooms, size of rooms, toilet and storage facilities and the enhancement of privacy of individual and the family. Thus, a house is inadequate if the provision of sewage disposal is not available or faulty. Similarly, a house with water closest toilet system but constantly runs short of water supply reveals a bad situation.

Considering the institutional arrangement, this composed of the management and maintenance of housing. For example, one can talk about how reliable the essential services will enhance healthy living. Also, there is need to consider the availability of protective services such as police, security, mortgage service and cleanness of the neighbourhood by the relevant authority.

Considering the environmental sub-system of the concept, this tends to emphasize the role of physical planning in housing and the provision of environmental facilities such as open space, parking space, recreation, good roads, shopping centres and other amenities like school, post office, club, cinema, night club and so on. Also, the beauty of the environment needs to be considered. Thus, one of the most outstanding environmental problems associated with the pattern of residential landuse in rural areas is the predominance of sub- standard housing built largely in areas having no accessible streets.

## VII. RESULTS AND DISCUSSION

As shown in table 1, 93% of the houses sampled from the two towns were less than 26 years old (91% in Ijeda-Ijesa and 96% in Iloko-Ijesa). Owing to the construction method and materials used, buildings do not last long in the rural areas; more than 50% of the buildings in both towns were built with mud. Regarding flooring materials, the data revealed that 94.2% in Ijeda-Ijesa and 74.0% from Iloko-Ijesa reported cemented flooring. In addition, the data revealed that corrugated iron sheets were predominantly the roofing material in the study areas; 98.0% of the respondents in Ijeda-Ijesa and 74.0% in Iloko-Ijesa. This implies that the two communities have access to similar building materials possibly due to geographical reasons. Access to the houses was mainly by foot as the data indicates.

Typical of most rural communities, toilet facilities were not well developed in the study areas. Table 2 showed that 16% of the total sample do not use toilet, preferring to defecate in the bush while 32% of the total sample use the open space around their houses. Both cases have negative implications for the health of the residents. Sharing of facilities is a common practice in rural communities; hence, respondents in the study areas reported sharing toilet facility among households.

Malaria was the most reported ailment in the two communities as reported by 53% of the total sample (49.3% of respondents in Ijeda-Ijesa and 57.3% in Iloko-Ijesa) as Table 3 reveals. Other notable ailments include dysentery accounting for 20% of the total sample disaggregated as 19.6% in Ijeda-Ijesa and 20.8% in Iloko-Ijesa. 41% of the total sample attributed the cause of the ailment to mosquito bite while 20% attributed it to bad sanitation and hygiene; both of which are traceable to inadequate housing.

Pearson chi-square analysis on the variables that directly affect the health of the residents in the housing condition reveals significant relationship between age of the building and health of residents in Ijeda-Ijesa ( $p$  value  $< 0.005$ ) and the reverse was the case in Iloko-Ijesa ( $p$  value  $> 0.05$ ). The hypothesis was therefore accepted in the case of Iloko-Ijesa while in Ijeda-Ijesa, the null hypothesis was rejected. Furthermore, building type was established to have a stronger effect on the health condition of residents in Iloko-Ijesa than the residents in Ijeda-Ijesa while building design was reported to have direct effect on the health of the residents in Ijeda but the reverse was the case in Iloko. This implies that in totality, there was significant relationship between the housing condition and the health of the residents in the study area. Nonetheless, household size and health of resident revealed direct relationship in Ijeda-Ijesa, ( $P < 0.05$ ) whereas in Iloko-Ijesa the analysis revealed no significant difference between number in a household and the health of residents in such houses ( $P > 0.05$ ).

## VIII. CONCLUSION

This study revealed that housing conditions play a vital role in healthy living and life sustainability. Among the notable findings of this study is the fact that there is a relationship between housing condition and the health of the residents. Although this was more visible in one of the two communities, other studies (Faelker, Pickett & Brison, 2000; Fullilove & Fullilove, 2000; Evans et al, 2000; Krieger & Higgins, 2002; Shaw, 2004) have proved that housing condition did affect the health of residents. From the analysis and the chi-square test, it can be safely concluded that there is relationship between housing condition and human health.

## IX. RECOMMENDATIONS

The following measures are therefore recommended for the improvement of the study area and the quality of housing.

*Effective enforcement of building codes:* The development control department of the local government should properly enforce the building codes right from the plan approval stage up to the implementation stage to ensure that buildings are constructed according to the approved specifications.

*Public Education:* There is need for public enlightenment about the causal relationship between housing condition and healthy living. This will go a long way to improve the health of the people. This could be done by the local government through the sanitation workers working as extension officers to enlighten the public of the importance of maintaining healthy environment and ensuring that minimum requirements for healthy housing are observed.

*Financial assistance to the residents:* Government at all levels should make soft loans available to rural residents for erecting healthy housing units. Such loans should be monitored and properly processed to prevent misuse and mismanagement. Such a loan could also be procured to rehabilitate and renovate buildings to the required standard.

*Housing policy:* Government at the three levels should work together to design and implement housing policies that will ensure easy access to affordable, adequate and safe housing for all.

*Design of master or development plan:* One of the crucial tools of physical planning is the master plan. The two villages have no master plan that will specify the direction of development and give specification for structures in the towns. This led to unregulated and uncoordinated development which allowed the erection of sub-standard and unhealthy buildings in dirty environments. It is imperative that master plan be designed for the towns to regulate their growth and direct their development.

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### Tables

*Table 1 : Physical Structure of the Houses*

Variables	Response	IJEDA		ILOKO	
		N= 138	Percentage	N =96	Percentage
Age of the Building (yrs)	< 5	7	5.1	18	18.8
	6-10	47	34.1	29	30.2
	11-15	34	24.6	20	20.8
	16-20	17	12.3	14	14.6
	21-25	20	14.5	11	11.5
	26 & above	12	8.7	4	4.2
Wall Materials	No response	1	.7	-	-
	Mud	77	55.8	51	53.1
	Cement	55	39.9	42	43.8
	Burnt brick	1	.7	1	1.0
	No response	5	3.6	2	2.1
Roofing Materials	Corrugated iron sheets	98	71.0	71	74.0
	Concrete	8	5.8	-	-
	Aluminum	24	17.4	16	16.7
	Others	1	.7	-	-
	No response	7	5.1	9	9.4
Flooring Type	Cemented	130	94.2	71	74.0
	Not cemented	6	4.3	23	24.0
	System	2	1.4	2	2.1
Ceiling Type	Asbestos	118	85.5	59	61.5
	Sack	3	2.2	6	6.3
	Wood or plank	15	10.9	24	25.0
	Not available	2	1.4	7	7.3
Access to the house	Foot	109	79.0	57	59.4
	Road	29	20.7	39	40.6

*Source: Field Survey, 2013*

Table 2 : Toilet Facilities

Variables	Response	IJEDA		ILOKO	
		N= 138	Percentage	N =96	Percentage
Place of defecation	Do not use toilet	16	11.6	21	21.9
	Public toilet	48	34.8	31	32.3
	Private toilet inside/outside house	73	52.9	40	41.7
	Private toilets in someone else's house/ compound	-	-	2	2.1
	No response	1	.7	2	2.1
Kind of toilet	Water closet	47	34.1	25	26.0
	Pit latrine	50	36.2	38	39.6
	Bush around the house	40	29.0	33	34.4
	No response	1	.7	-	-
Number that shares toilet	No other household	76	55.1	40	41.7
	One to two other household	20	14.5	21	21.9
	Three to five other household	-	-	1	1.0
	Six to ten other household	21	15.2	10	10.4
	More than ten other households	15	10.9	14	14.6
Cleaning water available in the toilet	System	6	4.3	10	10.4
	Yes	45	32.6	35	36.5
	No	87	63.0	58	60.4
	No response	6	4.3	3	3.1

Source: Field Survey 2013

Table 3 : Prevalent ailments and frequency of occurrence

Variables	Response	IJEDA		ILOKO	
		N= 138	Percentage	N =96	Percentage
Common ailments	Malaria	68	49.3	55	57.3
	Typhoid	7	5.1	1	1.0
	Dysentery	27	19.6	20	20.8
	Cholera	5	3.6	1	1.0
	Diarrhea	-	-	2	2.1
	Others	30	22.4	13	13.5
Cause of ailments	Bad water	6	4.3	9	9.4
	Bad sanitation & hygiene	22	15.9	25	26.0
	Crowding	2	1.4	-	-
	Bad food	11	8.0	3	3.1
	Mosquitoes bite	55	39.9	40	41.7
	Polluted air	18	13.0	3	3.1
	Change of season	14	10.1	4	4.2
	Others	8	5.8	9	9.4
	No response	2	1.4	3	3.1
Satisfaction with the services provided at the health centre	Yes	117	84.8	80	83.3
	No	21	15.2	16	16.7

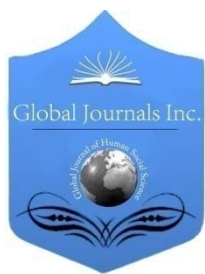
Source: Field Survey 2013

*Table 4 :* Chi-square Test

	IJEDA			ILOKO		
	$\chi^2$	df	p value	$\chi^2$	df	p value
Age of the building and health of residents	41.917	20	.003	25.934	25	.411
Building types and health of residents	4.285	8	.831	95.670	10	.000
Household size and health of residents	14.635	4	.005	7.654	4	.105
Design of the building and health of residents	9.174a	4	.057	7.957a	5	.159

*Source: Field Survey, 2013*





GLOBAL JOURNAL OF HUMAN-SOCIAL SCIENCE: B  
GEOGRAPHY, GEO-SCIENCES, ENVIRONMENTAL DISASTER  
MANAGEMENT

Volume 14 Issue 7 Version 1.0 Year 2014

Type: Double Blind Peer Reviewed International Research Journal

Publisher: Global Journals Inc. (USA)

Online ISSN: 2249-460X & Print ISSN: 0975-587X

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By Dr. Samson Elisha Kasala

*Ardhi University, Tanzania*

**Abstract-** For several reasons, current urban development in Dar es Salaam City has not adhered to requirements of both general and detailed planning schemes. This in turn has encouraged local authorities and other stakeholders to produce planning outputs using a Strategic Urban Development Planning (SUDP) process. The methodology involved appraising a ward environmental profile; holding a stakeholders' consultative workshop and analysing the issues identified. Analysis has shown that, under the current urban development diversities in terms of interests and priorities, the befitting output of an urban planning process cannot be a mere future land use map. It is inclined to be a package of well-thought outputs forming an acceptable future land use plan. The ability to produce an acceptable future land use plan based on core tenets of SUDP is a strength of same. This defeats earlier claims of SUDP weaknesses related to future land use and urban development control.

**Keywords:** *strategic urban development planning process, general planning scheme, detailed planning scheme, development-environment interactions, sinza ward.*

**GJHSS-B Classification :** *FOR Code: 310199p*



*Strictly as per the compliance and regulations of:*



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## I. INTRODUCTION

Urban planning activities in Tanzania generally and Dar es Salaam specifically, are governed by the Tanzania's Urban Planning Act No. 8 of 2007 (URT, 2007). The legislation requires that detailed planning schemes are prepared to implement provisions of existing general planning schemes. A century (1890s to 1990s) of urban planning practice in Tanzania, has witnessed the preparation and implementation of detailed planning schemes being treated as an activity of city planning departments. This has been the case but with limited participation of stakeholders from other government departments, the popular and private sectors. Resulting from such a practice, urban development has not conformed to detailed planning schemes.

As a remedial measure, urban development stakeholders led by local authorities in early 1990s adopted alternative approaches to preparation and implementation of planning schemes as key outputs of planning processes. One of such approaches embodying participation and partnerships is a Strategic Urban Development Planning (SUDP) process (see for

example Healey 1997a, Ogu 2000, Majani 2000, Halla 2002, Albrechts 2004, Steinberg 2005, and Healey 2007). The alternative approach that embodies concepts of democratization and decentralization (Choguill 1999, Nnkya 1999, Burra, 2006), was needed to provide a platform for stakeholder participation and partnerships in the preparation and ultimate execution of detailed planning schemes. Preparation and implementation of detailed planning schemes has continued to be practiced through SUDP in cities of developing countries worldwide (Halla 1997, Kombe and Kreibich 1997; Albrechts 2001, 2004; Giddings and Hopewood (2006)

The purpose of this paper was to explore options of turning attracted activities into an acceptable future land use plan as opposed to future land use map. This aims at addressing a documented weakness of SUDP Halla (2002, p.291) related to difficulties encountered in turning attracted activities into a graphically acceptable future land use map. Findings of this study have shown that production of future land use plans in the context of SUDP is technically viable and ensures effective future land use planning and efficient urban development control.

Sinza ward is found in Kinondoni Municipality, Dar es Salaam Region. It is located 8 km from the Dar es Salaam City's Central Business District (CBD). The ward is accessible by Sam Nujoma and Shekilango roads. It constitutes five sub wards namely Sinza A, B, C, D and E. According to census statistics of 2012, the population of sinza ward was 40,546 people in 2012 with a total of 9889 households (URT, 2012). Proximity of Sinza ward to the Central Business District (CBD) and availability of social services, have attracted people to reside in the area. Increasing population demands have prompted changes of land uses and invasion of reserved lands. Until recently, responsible authorities have shown concerns on the rate of haphazard land use changes, the related encroachments and invasion on reserved lands. The urban development trend evident in Sinza is characterised by change of all other forms of land uses into commercial. There is an increasing number of developers acquiring land and develop it for commercial activities such as office accommodation, lodging, restaurants, bar/pubs, hotels, car yards, garages, functional halls and salons. Resulting from

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such demands, the ward has experienced a number of urban land use challenges. They include: invasion of reserved areas such as open spaces, road reserves, and river valleys; house extensions leading to blockage of access roads and plot setbacks; unresolved land use conflicts and loss of environmental quality. To address these issues, Sinza ward stakeholders in 2014 started the process of preparing and implementing a detailed planning scheme for Sinza ward using strategic urban development planning (SUDP) approach.

## II. METHODOLOGY

The following methodological approach was adopted in the Sinza Strategic Urban Development Planning process.

### a) Preparation of environmental profile

Stakeholders in Sinza engaged, through their Ward Development Committee, experts to prepare an Environmental profile (EP). The environmental profile was prepared in consultation with Kinondoni Municipal Council which is the local and preparatory authority for Sinza. In addition to Kinondoni Municipal Council, other key stakeholders involved were: Sinza residents, developers, the Ministry of Lands for Housing and Human Settlements Development (MLHSD), utility agencies like Tanzania National Roads Service Agency (TANROADS), Dar es Salaam Water and Sewerage Corporation (DAWASCO), and Tanzania Electricity Supply Corporation (TANESCO). The profile was intended to generate information that would aid in understanding the existing situation that is usable in the planning process. In that regard, the environmental profile for Sinza ward, generated information related to: environmental characteristics, development activities, development-environmental interactions, urban development issues spurred by land use changes, as well as stakeholders with interests and intervention mandates in addressing the issues identified.

In the process of appraising a ward environmental profile, an analysis of environmental and development characteristics of wards in Dar es Salaam City was carefully done. Resulting from that, Sinza ward was selected as a suitable case for this study. Socio-economic data of the residents in Sinza ward were sourced through questionnaire administration. The questionnaire was distributed in proportion to predetermined respondents in selected households and key stakeholders in Sinza. Selection of respondents for interview was as well systematically done and a total of 423 respondents participated in the study. A simple proportional percentage was adopted for data analysis for ease of comprehension.

### b) Stakeholders' consultative workshop

A ward environmental profile was then presented to stakeholders in a consultative workshop. The key actors in urban development at wards level

were invited. During the workshop, the following issues were presented and endorsed. The concept of strategic urban development planning was introduced and adopted, the identified pressing issues namely: invasion of reserved areas such as open spaces, road reserves, and river valleys; house extensions leading to blockage of access roads and plot setbacks; unresolved land use conflicts and loss of environmental quality, were amalgamated and characterised as chaotic urban land development. Stakeholders decided to engage a SUDP process for managing chaotic urban development in Sinza ward. Understandably, there was a felt need to prepare a future land use plan that would guide the future development of Sinza. To be able to do that, analysis of parameters that have influence in determining the form and pattern of land development was carried out and outputs generated. The parameters of analysis in this case were: environmental characteristics, development characteristics, interactions between environment and development, and development conditions

## III. FINDINGS: A FUTURE LAND USE PLAN

Resulting from an analysis of land development parameters, this research has revealed that, a befitting output of the planning process in city contested places like Sinza, cannot be a mere future land use map, but rather a package of well thought planning outputs that reflect existing diversities and realities. In the context of this research, such outputs include: a map of designated development areas, a matrix (characterising environmental characteristics, existing and attracted activities, as well as development conditions for accommodating attracted activities), scenarios of acceptable future land use maps, and guidelines for development coordination and control. These outputs are as presented in the section that follow:

### a) Development areas

A development area map or image (Fig.1) that basically designates, on the basis of activities, certain zones as environmentally sustainable development areas. The development areas are for the purpose of accommodating existing and anticipated environmentally friendly development activities. In this regard, Sinza sub wards are designated as environmentally friendly development areas.

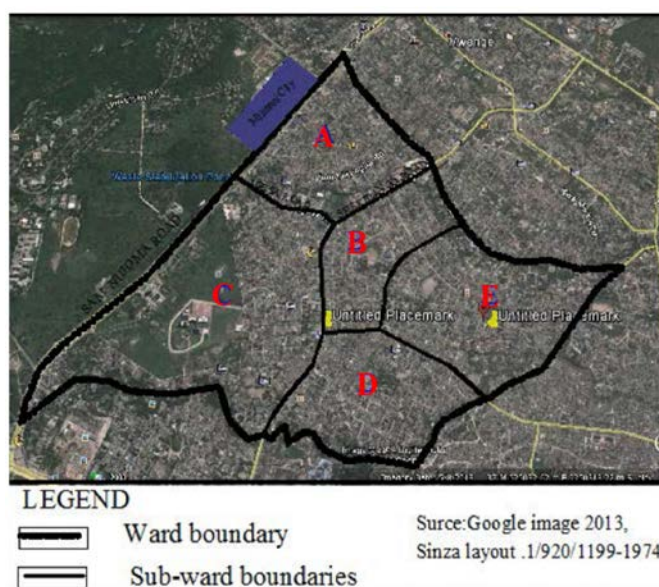


Figure 1: Sinza sub wards as development areas.

Table 1: Development areas and conditions for accommodating activities in Sinza Sub Ward.

Development area	Environmental characteristics	Existing activities	*Attracted activities	Development condition
Sinza A	<p>Haphazard land use change/Mixed land uses,</p> <p>Encroachment of vacant spaces</p> <p>Newly developed buildings</p> <p>Blockage of setbacks and access roads</p> <p>Inadequate storm water drains</p> <p>Indiscriminate solid waste disposal</p> <p>Indiscriminate parking</p> <p>Narrow and unpaved access roads.</p> <p>Polluted river stream</p> <p>Noise and Air pollution</p> <p>Inadequate bus stops</p>	<p>Residential</p> <p>Commercial</p> <p>Hotels,</p> <p>Office accommodation</p> <p>Functional halls</p> <p>Car park and repairs</p> <p>Bus stops</p> <p>Entertainmments</p> <p>Small scale/Service industries</p>	<p>Residential</p> <p>Commerce/Trade</p> <ul style="list-style-type: none"> <li>Hotel</li> <li>Office accomodation</li> <li>Small scale/service industries</li> <li>Functional hall</li> <li>Institutions</li> <li>Religious</li> <li>Academic</li> </ul>	<p>Comply with development control protocol</p> <p>Improve service infrasstructure</p> <p>Attain rent-paying capability</p> <p>Comply with environmetal sustainability protocol</p>
Sinza B	<p>Mixed land uses</p> <p>Inadequate storm water drains</p> <p>Indiscriminate parking</p> <p>Narrow and unpaved access roads.</p> <p>Street based informal activities</p> <p>Noise pollution</p>	<p>Residential</p> <p>Commercial</p> <p>Car park and repair</p> <p>Small scale/service industries</p>	<p>Residential</p> <p>Commerce/Trade,</p> <ul style="list-style-type: none"> <li>Hotel</li> <li>Small scale/service industries</li> <li>Office accomodation</li> <li>Functional</li> </ul>	<p>Comply with development control protocol</p> <p>Improve service infrasstructure</p> <p>Attain rent-paying capability</p>

#### b) Development area Matrix

A development areas matrix (Table 1) which basically analyses each development area in terms of environmental characteristics, existing and attracted activities, as well as development conditions for accommodating attracted activities

Development area	Environmental characteristics	Existing activities	*Attracted activities	Development condition
	Deteriorated sewerage system Dilapidated buildings	Institutions	hall Institutions • Religious • Academic	Comply with environmental sustainability protocol
Sinza C	Newly developed buildings Mixed land uses Gardening/urban farming Encroachment of vacant spaces Delapidated buildings Inadequate storm water drains Indiscriminate solid waste disposal Indiscriminate parking Narrow and unpaved access roads. Road based informal activities Noise pollution and Air pollution Lack of bus stand	Residential Commercial Hotel Small scale/service industries Offices Entertainment Car park and repairs	Residential Commerce/trade • Hotel • Office accomodation • Small scale/service industry • Functional halls Institutions • Religious • Academic	Comply with development control protocol Improve service infrasstructure Attain rent-paying capability Comply with environmental sustainability protocol
Sinza D	Newly developed buildings Mixed land uses Encroached river stream and vacant lots Dilapidated buildings Lack of bus stand Deteriorated sewerage system Inadequate storm water drains Indiscriminate solid waste disposal Indiscriminate parking spaces Narrow and unpaved access roads. Road based informal activities Noise pollution	Residential Commercial Small scale/service industries	Residential Commerce/Trade • Hotel • Office accomodation • Small scale/service industries • Functional hall Institutions • Religious • Academic	Comply with development control protocol Improve service infrasstructure Attain rent-paying capability Comply with environmental sustainability protocol



Development area	Environmental characteristics	Existing activities	*Attracted activities	Development condition
Sinza E	Air pollution			
	Newly developed buildings	Residential	Residential	Comply with development control protocol
	Mixed land uses	Commercial	Commerce/Trade	
	Dilapidated buildings	Small scale/Service industries	<ul style="list-style-type: none"> <li>Hotel</li> <li>Office accomodation</li> </ul>	Improve service infrasstructure
	Lack of bust stand		<ul style="list-style-type: none"> <li>Small scale/service industries</li> </ul>	Attain rent-paying capability
	Deteriorated sewerage system		<ul style="list-style-type: none"> <li>Functional hall</li> </ul>	
	Encroachment of vacant spaces		Institutions	Comply with environmental sustainability protocol
	Inadequate storm water drains		<ul style="list-style-type: none"> <li>Religious</li> <li>Academic</li> </ul>	
	Indiscriminate solid waste disposal			
	Indiscriminate parking			
	Narrow and unpaved access roads.			
	Road based informal activities			
	Air pollution			

Source: Fieldwork and Analysis, May – August 2014

\*Attracted activities are analysed based on concepts of rent-paying capability and environmental sustainability.

#### c) Scenarios of acceptable future land use maps

Since stakeholders in each development area do not share the same interests and priorities, so are their planning requirements. That being the case, no single activity pattern can be determined accross the development areas as a desired or blueprint future land use map. Instead, based on stakeholder priorities and suitability analysis of attracted activities, options of future land use maps are generated. An attracted but dominant activity is taken and used to present a future land use map. Following that logic, each development area represents a single preferable land use pattern based on an attracted but dominant activity (Fig. 2).

#### d) Scenarios of acceptable future land use maps

Since a development area may have more than one attracted but dominant activities at different times, all these must be mapped as possible future land use scenarios for each development area. The resulting output is a series or layers of future land use map alternatives based on attracted but dominant activities in each development area over time (Figure 3). A dominant activity in this case refers to a major activity or land use under which there are sub activities belonging to the major activity or land use. Commerce for example is a major activity or land use under which there are sub activities classified as commercial.

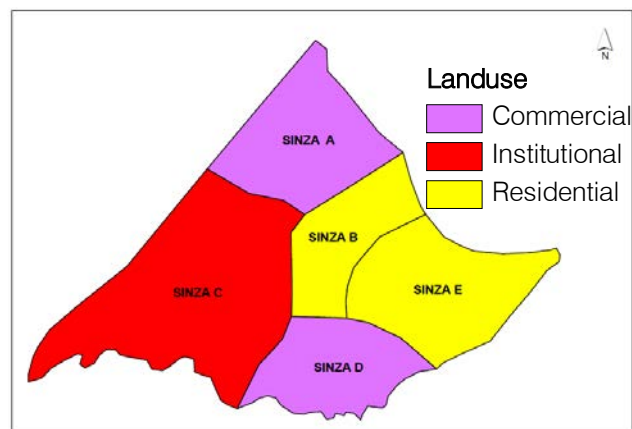
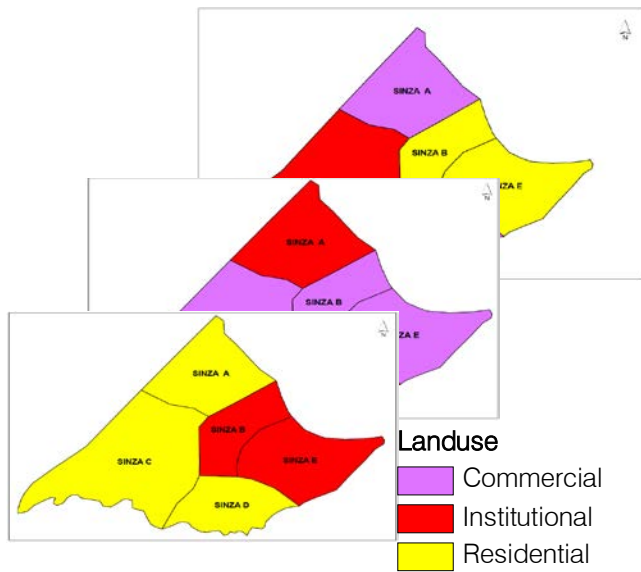


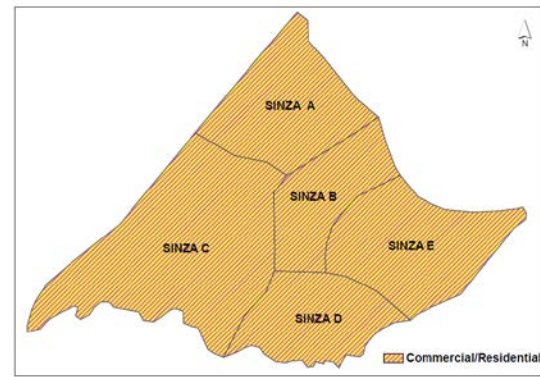
Figure 2: Future land use pattern based on attracted but dominant activity.



*Figure 3 : Future land use map alternatives based on an attracted but dominant activity in each development area.*

Implied in Figure 3 therefore is that, attracted but dominant activities in the development areas are commercial, residential, institutional or a combination of those. Depending on demand, the possibility of each development area to be transformed from residential to either an institutional or a commercial zone and vice versa exists. Urban development dynamics in Sinza depict that any of these dominant activities can be executed in any of the development areas A to E. In this case, a befitting future land use plan, would be one that takes into account such a diversity in terms of attracted activities. As such a future land use plan in any of the development areas would suitably be presented on series or alternatives of "development area-based maps". On such maps, a pattern or colour in each development area depicts an attracted but dominant activity.

If it happens that, development areas have similarities in terms of attracted but dominant activities, then a single or mixed land use pattern may be determined across the development areas (Fig.4). This invalidates the earlier claim (Halla, 2002, p.291) that, there is no single activity pattern that can be determined across the development areas.



*Figure 4 : Future land use map based on two attracted but dominant activities across the development areas.*

*e) Stakeholder based guidelines for development coordination*

Each prospective developer is required to submit development proposals to Ward Development Committee (WDC) in Sinza. The committee should in turn scrutinise proposals against stated development conditions for each development area. If the activity is among those identified under the development areas matrix, then the WDC will recommend the proposals to a responsible preparatory authority (in this case, the Kinondoni Municipal Council) for scrutiny and compliance with planning requirements and development conditions. If the proposed activity is not on the list of activities in the development area matrix, then the potential developer will have to consider the proposed activity in a development area where it is listed and resubmit to WDC

*f) Local authority based guidelines for development control*

The preparatory authority receives and scrutinises the recommendations from WDC and proposals of the potential developer against planning standards and development conditions. If the recommendations and proposals are within acceptable standards, then they are forwarded to the lands department for land title processing. After that, title processing continues at the Ministry of Lands for Housing and Human Settlements Development (MLHSD) before a development permit is issued by relevant authorities.

## IV. DISCUSSION

It is an indisputable fact that the role of urban planning has changed. This in turn has spurred changes in the manner urban planning needs to be conceptualised and executed. Increasing new demands and interests of stakeholders require that urban planning is considered differently in terms of the planning process, how planning outputs are presented, and the

manner in which are implemented. In order to capture that, urban planning needs to be considered not as a function of physical planning (design and space organisation) alone, but also as a function of coordinating interests (social, economic, political) and priorities of stakeholders in the urban development planning process (Kasala, 2013) and how those could be realised. Upholding this view, Sandercock (1998a) and Fainstein (2000) have pointed out the need for urban planning processes to be inclusive. This relates to the interpretation that urban planning processes need to ensure that all groups of stakeholders have a right to be heard or to inform and influence policy and practice. Such a participatory view of planning is enforceable by authorities in order to regulate, control and ultimately weaken powers of the market forces, argues McConnell (1981), in the urban development process. This comes from the criticism that market forces lack, argues Fainstein (2000), "redistribution, equity and justice" values on matters of concern to public interests. Public interest in this case relates to access to freedom, justice, services, land and housing, to mention but a few. Considering the diversity of stakeholder interests in urban planning, Albrechts (2004) concludes that urban planning is not confined to itself; it needs to be viewed from a broader perspective (Albrechts, 2004, p.748). Critics (Albrechts et al, 2001; 2003; Healey et al, 1997; Pascual and Esteve, 1997; and Pugliese and Spaziant, 2003) back up this broader view of urban planning, if desirable outcomes are to be attained (Bryson and Roering, 1996).

The outputs presented under item 3 above reaffirm the case in point. In a research toward the production of this paper, the broader view of urban planning was captured through a consideration of the physical and non-physical aspects of urban planning. These are taken care of as follows: In the development area matrix as well as the guidelines for development coordination and control-the views of stakeholders are captured in terms of attracted activities and development conditions. In future land use map scenarios the physical aspects of planning are captured in terms of design and space function organisation. The scenarios provide developers with options for sustainable urban development in Sinza. Whatever an option a developer chooses, it will have to be coordinated in accordance with provisions under a development area matrix (Table 1). While the physical factors in this case relate to design and functional space organisation, the non-physical factors of planning relate to other factors that impact on the process and outputs of planning. Such factors have been reported to include interests related to politics, economy, environment and the society.

## V. CONCLUSION

When the current situation accommodates diversities in terms of land uses, we are bound to have,

not a homogeneous, but rather an equally diverse future land use situation that must be carefully regulated and coordinated. Current urban development in Dar es Salaam and Sinza in particular is based on diverse, as opposed to, homogeneous stakeholder interests and urban development values. Based on that, it is possible to have a single or mixed future land use pattern. The possibility of a single or mixed pattern of future land uses across development areas, depends very much on the nature of attracted but dominant activities.

The way a future land use map is presented traditionally, needs to be improved to reflect the diversity or homogeneity in current situations. In this regard, the desired future development state of an area has to be presented not on a mere map, but rather on a well thought plan involving an analysis of urban development diversities in terms of interests and activities. In this context, attracted activities are placed in categories that conform to a specific land use. Resulting land uses are then mapped individually to produce not a single, but rather series or layers of future land use maps. Thus a future desired state of an area may be presented on series or layers of maps each with a specific land use. When it comes to execution, the activities proposed on any of the alternative future land use maps may be implemented but after scrutiny and compliance with provisions of (i) the development area matrix, and (ii) guidelines for coordination and development control. Through the mechanisms of SUDP, it is possible to prepare not merely a future land use map, but rather a future land use plan by turning the attracted activities into series or layers of graphically acceptable future land use maps. This therefore warrants listing the production of future land use plan not as a weakness, but rather as strength of the SUDP process.

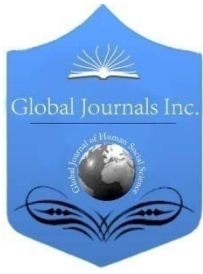
## VI. ACKNOWLEDGEMENTS

Acknowledgements are due to the following parties. First, Conreeb Company Limited for extending financial assistance in support of a research from which this paper was produced. Secondly, Kinindoni Municipal Council for availing us with all the permits required to conduct this research in Sinza Ward. Thirdly, my colleagues in the School of Urban and Regional Planning as well as a team of 7 M.Sc. UPM students for their cardinal contribution in this research.

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GLOBAL JOURNAL OF HUMAN-SOCIAL SCIENCE: B  
GEOGRAPHY, GEO-SCIENCES, ENVIRONMENTAL DISASTER  
MANAGEMENT  
Volume 14 Issue 7 Version 1.0 Year 2014  
Type: Double Blind Peer Reviewed International Research Journal  
Publisher: Global Journals Inc. (USA)  
Online ISSN: 2249-460X & Print ISSN: 0975-587X

## Southeastern Mediterranean: The Case-Study of Geopolitics and Maritime Delimitation Issues

By Petros Siousiouras & Georgios Chrysochou

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**Keywords:** *maritime delimitation law, southeastern med, EEZ, energy deposits, greece, cyprus, turkey.*

**GJHSS-B Classification :** *FOR Code: 091101, 260199p*



*Strictly as per the compliance and regulations of:*





# Southeastern Mediterranean: The Case-Study of Geopolitics and Maritime Delimitation Issues

## Maritime Delimitation and Geopolitics in Se Med

Petros Siousiouras <sup>α</sup> & Georgios Chrysochou <sup>ο</sup>

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### 1. INTRODUCTION

The geopolitical importance of Eastern Mediterranean region It is obvious that the role of the broader area of the Eastern Mediterranean Sea<sup>1</sup> is paramount in the evolution of history<sup>2</sup>. It should be noted that the land mass of the Balkans' peninsula and the various countries along the Mediterranean coastline constitute basic targets of any attempt coming from the classical continental powers that concerns access to warm seas. With the collapse of the socialist block and the advent of globalization, the role of the Eastern Med in international politics has become more multidimensional. Thus, besides the geostrategic dimension of the Eastern Med - manifested in the backstage or the aftermath of intrastate conflicts, both during the overthrow of supposedly everlasting ruling regimes in Libya and in Egypt or in the unceasing relentless civil war in Syria - the wider region of the Eastern Med has additionally acquired an upgraded role

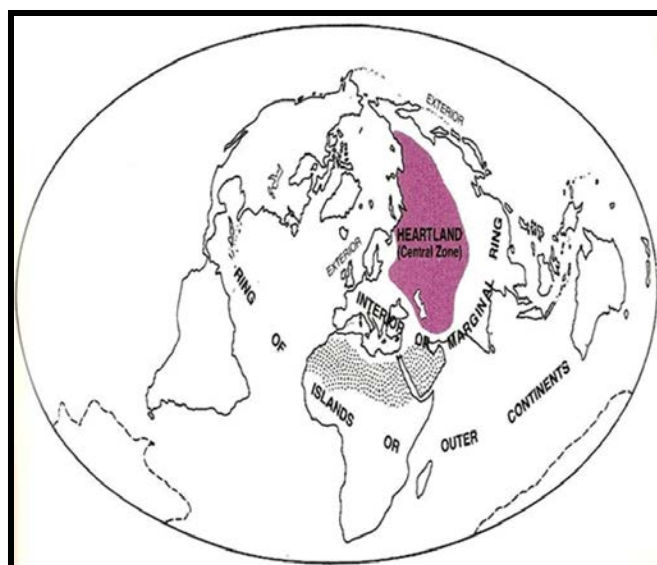
in energy geopolitics due to the recently discovered deposits of energy resources deep in its sea-bed. The Greek historian Thucydides was the first to conceive what geopolitical analysis really is, interpreting the political decisions of the protagonists of the Peloponnesian War -and in that particular period of time- in terms of power. However, the formation of concrete analytical tools for the comprehension and apparently the increase of power were considered indispensable only after the culmination of the industrial revolution and the rapid socio-political changes that the specific phenomenon created. Thus, geopolitics officially appeared as an academic discipline roughly two hundred years ago, in a politically unstable period of history, during which the exploration of the earth had been completed and the major (colonial) powers focused on searching for new methods of increasing their power and establishing their dominion. As a consequence, concepts such as war, secret diplomacy and imperialism, are interrelated with geopolitics (Flint, 2006: 13). During the second half of the 19th century two important geopolitical theories were developed; these approaches appear to be contradictory at first sight, but in essence they are complementary to each other. The first influential idea was put forward by the British geographer Sir Harford Mackinder, who emphasized the control of 'Heartland' (see Figure 1) as an interim step towards world dominance (Mackinder, 1902, 1904).

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<sup>1</sup> From now on: Eastern Med.

<sup>2</sup> In this area of intense interaction, the location of Greece was and still is of primary importance for the West, especially in its attempt to isolate and contain any continental power.



Source: Chaliand, G. and Rageau, J. P. (1985) *Strategic Atlas*, Harmondsworth: Penguin Books, p.21.

Figure1 : Mackinder's 'Heartland'

The specific term was conceived in order to describe vast land masses of Europe and Asia (Eurasia), which are protected from the glaciers of the Arctic North. One of their most significant characteristic is that they have easy access to the sea and overlook canals and important straits (maritime traffic choke-points). Subsequently, he suggested that if a state (or a confederation/bloc of states) manages to control that specific area (continental power) the way to world domination is open. History testifies that two great powers have attempted to dominate over the aforementioned geographical area: Russia and Germany. According to Mackinder, Russia, already very close to the epicenter (heart) of three different continents (Europe-Asia<sup>3</sup> and Africa) is covering many prerequisites; in case it expands its sphere of influence to the 'warm' coasts of Eurasia (Petersen, 2008: 59), then the combination of its huge resources and free access to major trade routes will make the prospective of a global empire visible<sup>4</sup>. Central European territories, as well as the countries around the Baltic and the Black Sea constitute a very vital region, which offers the possibility to the continental power that has control over them to both avert every inimical action coming from the sea and to profit by all the routes of land transport (i.e. rail) in a way that surpasses all the competitive advantages that maritime transport offers. Indeed, Mackinder's best-known saying is the following: 'The

one that governs Eastern Europe prevails over the Heartland. The one that governs the Heartland prevails over the Global Island. The one that governs the Global Island prevails upon the globe' (Mackinder, 1962: 150), (Chaliand and Rageau, 1985: 20-25).

The second theory under discussion was expounded by the American naval officer Alfred Thayer Mahan, who delved into how Great Britain utilized in a variety of ways its fleet to become dominant in the international system of the 16th-17th century era (Mahan, 1890). Mahan put forward the idea that 'The nation which will dominate the seas shall control the whole world'. His theory is very simple in its conception, since he focused mainly on the fact that maritime power is the 'servant of expansion', since control of the oceans and the seas provides with the opportunity to deliver passengers and goods more easily and economically than all means of transport moving on land. Mahan is the greatest theoretician on maritime power. According to his dogma, no country can be regarded as a global power if its navy is not potent and sufficient enough to promote its power and presence all over the world. At the same time, Mahan underlined the fact that the objective of naval power should be the control of maritime routes, which is achieved by a vast number of large and mighty warships which circulate all over the globe.

Even today, the aforementioned models of how states should behave in order to become a global player strongly influence international relations, as well as the lives of ordinary people. To sum up, according to the predictions of these theories, the access to warm seas, with the long-term objective of global dominion is a diachronic aspiration of any great continental power. Thus, it is obvious why in the past both Kaiser and Hitler followed a similar policy as leaders of Germany, the

<sup>3</sup> A certain number of geopolitical analysts hold the opinion that a substantial distinction between the continents of Europe and Asia does not exist and that these continents should be regarded as an indivisible entity under the name Eurasia.

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other contestant (besides Russia) for the trophy of great continental power. And even the USA is moving towards the same direction today, aspiring at securing the entrainment, or else, the encirclement of the heartland, since it is unlikely to conquer it. It is interesting to note that during the Cold War, conflicts between the great powers of that era -USA and USSR- around the Eastern Med were mainly related to a specific strategic objective that as already discussed would pave the way towards global dominance. More specific, the USSR numerous times tried to secure 'access to the warm seas' and the USA concentrated upon avoiding that, in the terms of forming alliances (i.e. both Greece and Turkey joined NATO) or even resorting into proxy wars.

It is also obvious that similar (low-level) confrontations between the USA and Russia (being the successor of USSR in global politics) have taken place in more recent times. For instance, the Russian attempt to construct an oil-pipeline from Burgas (Bulgaria) to Alexandroupolis (Greece) that would deliver oil from the Black Sea into a Mediterranean port without the use of the Bosphorus-Dardanelles straits should be viewed under the framework of the easy access for Russia to warm seas (Dalaklis, Siousiouras and Karkazis, 2008). It is important to point out that the emerging failure of the aforementioned project will probably result in a more aggressive Russian attitude towards other energy transport infrastructures, i.e. natural gas pipelines. Certainly, the pipelines' confrontation will be in the epicenter of Southeastern Europe's politics for the years to come since it enables many geopolitical complexities with wide impact. This is evident through the Russian support for South Stream, a pipeline for the implementation of the southern natural gas supply itinerary of Western and Central Europe<sup>5</sup>, as well as the recent events of the de facto annexation of the Crimea, which, among other expedencies, suggest that Russia wants to be less dependent on Ukraine – a former Russian satellite state that gradually turns on a western oriented country (Desipris, 2011).

In any case, it is clear that with the collapse of the socialist block and the advent of globalization, the role of the Eastern Med in international politics has become more multidimensional. More specifically, during the current period of time, apart from the various geostrategic objectives, which are intensely manifested in events such as the change of regimes in Libya - marked by Gaddafi's execution without a trial- and in Egypt, in the context of the social phenomenon also known as the Arabic Spring, or in the continued up till now civil war in Syria, the expanded area of the Eastern

Mediterranean has also have an increased importance in issues of possession-exploitation of very large deposits of energy resources. All the afore mentioned conflicts should be viewed as a different expression of the notorious 'Eastern Question' (the dissolvent of the Ottoman Empire), as the specific issue has not been finally retained yet, although it drastically influenced the history of the Balkan Peninsula and the Mediterranean Sea during the past two centuries<sup>6</sup>.

## II. THE SOUTHEASTERN MED BASIN'S GEOPOLITICAL VALUE NOWADAYS

Recently, according to the data of a United States Geological Service (USGS) study, great deposits of natural gas and petroleum have been discovered in the bed of the Levantine Basin, (which is environed by Cyprus, Israel, the strip of Gaza, Lebanon and Syria). Companies which serve American-Israeli and Norwegian interests have already been granted the permission to research the sea area between Cyprus and Israel and they have announced their discovery of large natural gas deposits. Political events and decisions in the wider region are decisively influenced by the discoveries of new energy resources of carbohydrates in the sea bed between Cyprus and Israel, as well as in the area of the triangle formulated by the (Greek inhabited) islands of Crete-Kastellorizo-Cyprus<sup>7</sup>. The greatest deposits of natural gas seem to exist in the common boundaries of the Exclusive Economic Zones (EEZs) between Cyprus and Israel promising an alternative more stable corridor for the energy sufficiency of the EU in the latter's effort to reduce the dependency from Moscow. .

However, not all the EEZs between the neighboring states have yet been determined (except for the zones between Cyprus and Israel, Cyprus and Egypt, Cyprus and Lebanon), even though intensive consultations among the interested parts have commenced for the delimitation of these zones. It should be noted that there are major disputes regarding the issues of the territorial waters and the EEZs (e.g. between Lebanon and Israel, or Israel and the Palestinians in Gaza). Additionally, the existence of a significant amount of natural gas deposits is possible not only in the areas between Cyprus and Israel and between Cyprus and Egypt, but also in the sea area in the west of Cyprus, which is, between the islands of Cyprus and Crete. This widespread belief that the

<sup>5</sup> This itinerary is called also as 'South Corridor' and both Russia and US/Europe are in a continuous rivalry for the dominance of the pipelines of their sole interest. However, there are many parameters that influence the final choice, i.e. the decision of the deposits owner country, the financial and political cost and risk, the course of the pipeline etc.

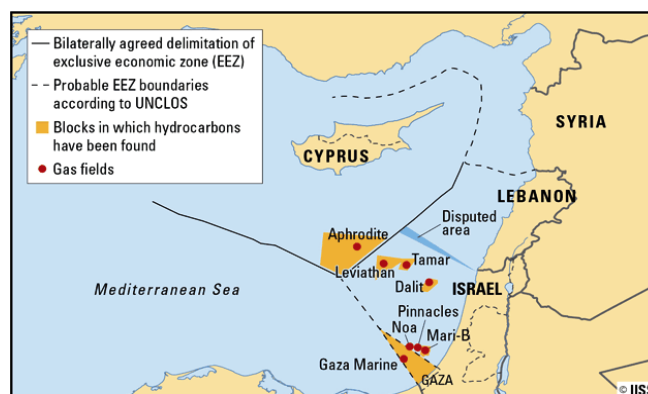
<sup>6</sup> A result of this pendency is the fact that several of its aspects, such as the Albanian or the FYROM nationalism, as well as various attempts to change the borders of countries in Southeastern Europe and, more recently, in the Middle East, affect to a great extent international relations up until now.

<sup>7</sup> Needless to mention, these discoveries create new tensions both in the Greek-Turkish relations, have the potential to intensify the Arabic-Israeli conflict and further complicate the Cypriot and the Kurdish issues.

surrounding area is very rich in energy resources, cause since 2008 frictions among the key-players.

Having also in mind the consequences of the recent uprisings against the authoritarian regimes in the Middle East and North Africa, such as the imperilment to the energy security of the western world as well as the increase of the price of energy resources, these frictions result in the creation of a confrontational situation of pulsated intensity over time, while at the same time create significant opportunities for some of the state-actors.

Cyprus, being one of them, took the advantage of the aforementioned geopolitical circumstances and came in 2010 in collaboration with Israel by achieving an agreement on a common exploitation of the adjacent energy deposits 'Leviathan' and 'Venus' (which lie within Block 12 of Cypriot surveys), of the 'Levantine' basin, considering them a unified area of common interest for the two states (see Figure 2). At the same time, Cyprus legitimated internationally this cooperation by signing an agreement on the delimitation of the EEZ with Israel (Chrysochou and Dalaklis, 2012: 245-263).



Source: International Institute for Strategic Studies (IISS).

Figure 2: The Cypriot and Israeli energy deposits in Southeastern Med

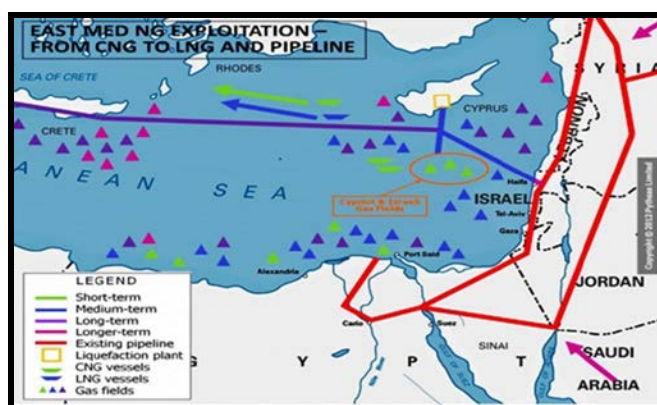
In the aftermath of the abovementioned agreement, there is a diffusive belief that Israel has seriously considered Greece and Cyprus as a transfer node towards Europe of the gas (the so called 'East Med Pipeline') that will be found in its EEZ. That may stand true both because Israel has estimated that the construction of relevant infrastructures could possibly receive financing from Europe and because the alternative route (via Turkey) seems for the moment not to be feasible, on the grounds that Tel-Aviv regards (correctly according to what has been recorded so far) its relatively recent crisis in its relationships with Ankara as not something temporary (Chrysochou and Dalaklis, 2012: 245-263). On the other hand, of course, the option of transferring the Cypriot-Israeli gas to the West via pipeline linked to the Arab Gas Pipeline<sup>8</sup> and through the projection to Turkey seems difficult for the time being because of the increased pipeline security issues due to the volatility in the specific region. Needless to mention, that the option of the cheapest solution, namely the construction of a pipeline from Cyprus to Turkey and then to Western and Central Europe is politically forbidden, at least for the near future, because of the 'Cyprus Question' (Samaras, 2013), (Defencegreece.com, 2012).

An optimistic perspective of the abovementioned project of the EastMed Pipeline was confirmed by the President of the European

Commission during the proceedings of the Council of 22 May 2013, in the general context of determining the future energy priorities of the EU. The energy dependence of the EU by countries belonging to the Arab-Muslim world, which are in a highly sensitive political and geostrategic transition, but also by countries like Russia, which demonstrate a high level of geostrategic competition against the dipole 'Great Britain-USA', forces the Western world, and particularly the EU, to pay attention to the promising hydrocarbon reserves of Cyprus Republic, Israel and Greece. Of course, Israel has not yet decided how to exploit its own deposits, thus what quantities will export to Europe and how will do this - by Liquefied Natural Gas (LNG) or via pipeline or even in a combined way (see Figure 3)., thus via LNG in the short-term and via pipeline in the long term (Dokos, 2012). The type and depth of strategic relationship that Israel will develop with Cyprus, Greece as well as the EU will largely depend on this decision.

<sup>8</sup> Which connects Egypt, Israel, Syria and Lebanon.





Source: Pytheas Ltd.

Figure 3: The suggestions of transferring the Southeastern Med natural gas to the West

However, it is important to note that there are many interested parts meeting in the region, apart from Cyprus, Greece, Turkey and Israel. Except the classical geopolitical pair of USA and Russia, the factor of the EU should also be taken under serious consideration. In addition, the Southeastern Med energy deposits implicate, except the aforementioned countries, Lebanon but also Egypt, Syria, NATO, China, UK as well as Asian, Middle Eastern and African natural gas producing countries. They also implicate the world's most important energy companies, both for their aspirations for a piece of the action but also for the imposed threat of the hydrocarbons deposits to their planned projects.

Nevertheless, as mentioned above, it is too early to speak with absolute optimism for a further development of the other energy deposits of the wider region, since a series of interstate agreements concerning the delimitation of the relevant maritime economic zones is required, while at the same time a series of long-term conflicting issues like the so-called Cyprus Question, the Aegean Dispute and the Middle-East Issue, render the possibility of a comprehensive settlement of the maritime zones rather low (Chrysochou, 2011).

At this point, in order to obtain a thorough view of the parameters taken into account for the delimitation of EEZs of the adjacent states of the wider area of Eastern Med, it is prudent to first set out a brief outline of the relevant theory for the EEZ delimitation and secondly, to depict a comprehensive picture of the maritime delimitation status of the Eastern Med region. Since the aim of the writer is not to induce premature and partial speculations for a 'just' result of EEZ delimitation in the relevant region, this paper, will be limited to a mere depiction of the relevant maritime delimitation situation in Eastern Med.

### III. THE DELIMITATION ASPECTS OF THE EXCLUSIVE ECONOMIC ZONE AND THE MARITIME DELIMITATION STATUS OF THE EASTERN MED

According to the 1982 United Nations' Convention of the Law of the Sea (UNCLOS), the Exclusive Economic Zone (EEZ) is a maritime zone which can extend up to 200 nautical miles. Hereinto, the Mediterranean coastal state can exercise its the sovereign rights upon the continental shelf up to 200 nautical miles (nm) for research and exploitation purposes (Convention on the Continental Shelf, 1958: Art. 56(3), 57 and Part VI), (UNCLOS, 1982: Art. 76(1) and 77), except the case where the Continental Shelf (CS) extends beyond 200 nm (Oikonomidis, 1985: 182). However, the extension of coastal state jurisdiction in the EEZ limited by 36% the area covered by the open sea accumulating in their favor 95% of world fishery (Karakostanoglou, 1994). Along with the adoption of the EEZ, occurred the problem of its delimitation, given the close linkage of the Continental Shelf and the EEZ. According to UNCLOS article 74(1), the EEZ delimitation between states with adjacent or opposite coasts, is regulated following an agreement, aiming to achieve a fair solution. In case reaching an agreement is not possible, according to UNCLOS Part XV, the interested parts must resort to conciliation for the settlement of the difference (article 74(2)).

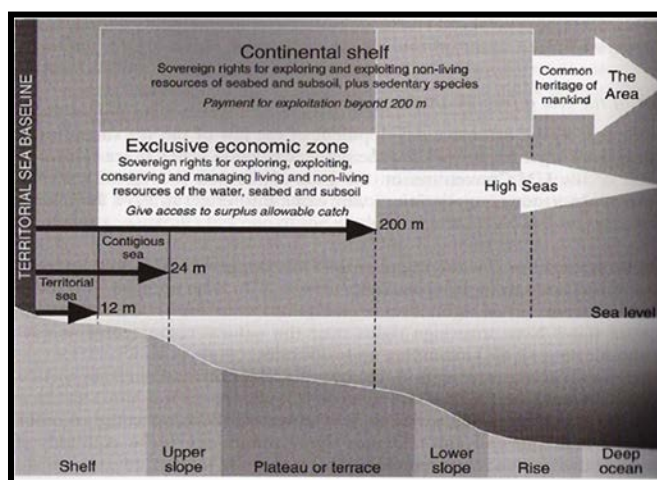
Anyhow, the EEZ delimitation line needs to identify with the corresponding line of the Continental Shelf (see Figure 4), to the degree that the very same sovereign rights in the seabed and the submerged lands of the continental shelf are recognized in favor of the coastal states (Evans, 1989). Self-evidently, despite the obscurity of the clauses concerning the EEZ delimitation, given the overlap of the continental shelf zone and the EEZ, the international application and the corresponding case-law, the clauses on the continental shelf delimitation are applied *mutatis mutandis* for the EEZ as well, with the following highlights: the equity



provided by UNCLOS for the delimitation of overlapping continental shelves (UNCLOS, 1982: Art. 83), has as a starting (provisional) delimitation line the median line (as a general customary delimitation rule), which is then examined to be modified in the light of the relevant circumstances of the delimitation area, mainly the geographical configuration of the coastline and the proportionality criterion. It is also necessary to point out that the principle of equity as a delimitation method has a technical character, when compared to the median line or to equidistance (Rozakis, 1988: 326).

The above are much more valid in the case of EEZ, to the degree the standard of the distance from the land deadens the corresponding geological standard (natural prolongation) of the Continental Shelf. At this point it is reminded that the Geneva Convention (1958) on the Continental Shelf defines the legal Continental Shelf by emphasizing on the geological standard, an emphasis based on the Truman Declaration influence, particularly for the point it referred to the geological linkage of between the coastal state and the bottom of the sea (Convention on the Continental Shelf, 1958: Art. 1).

On the other hand, UNCLOS by introducing invariable standards for the EEZ and Continental Shelf delimitation (in particular the equidistance standard) limited to a minimum any controversies its estimation could cause (UNCLOS, 1982: Art. 76(1)), while it fortified the equidistance rationale during delimitation (Strati, 2004: 176). In favor of this reasoning it is the fact that the distance standard is the decisive one for the Continental Shelf measurements well until the 200 nm, whereas the geological standard maintains its importance only for the continental-shelf extending beyond the 200 nm margin. The fundamental turn of the case law was made in the 1985 decision of the International Court on the Case of the Malta-Libya Continental Shelf, with this turn already apparent in the 1982 International Court decision for the Tunisia-Libya Continental Shelf (par. 47), where the distance standard was mentioned, following the Third United Nations Conference on the Law of the Sea, it modified the geological standard of the rights over the continental shelf (ILM, 1985).



Source: Till, G. (2009) *Sea power: A Guide for the Twenty – First Century*, London: Routledge, Taylor & Francis, Group LLC, p. 312.

Figure 4: The Maritime Economic Zones

With regard to the Eastern Med, the fact that many states are not signatories to the UNCLOS (Turkey, Israel, etc), combined with the number of maritime delimitations which are required to be settled between countries with contradictory interests and historic rivalries in the wider area, leaves no big room for plotting commonly accepted applicable rules for delimitation purposes. Nevertheless, the Continental Shelf and EEZ boundaries delimitations that have taken place in Eastern Med through agreements and unilateral declarations are the following ones:

- In 1968, Italy and Federal Yugoslavia, delimited by agreement between them their Continental Shelf, and after the collapse of the latter, Croatia

announced in 2000 that considers this delimitation boundary to be valid for the EEZ as well, yet in some sections.<sup>9</sup>

<sup>9</sup> Croatia even named this area as an 'Area of Ecological Protection'. However, other adjacent states of the Adriatic Sea which have emerged from the ex-Yugoslavia, namely Montenegro, Slovenia and Bosnia – Herzegovina, assert their participation in the delimitation procedure. However, there's been no result yet, because the last two countries either haven't got any front on the Adriatic Sea or the front they've got is very limited, rendering pending so far a possible settlement of the delimitation boundary. Moreover, there hasn't been yet an official confirmation of the delimitation agreement between Croatia and Montenegro. Finally, in 2005, Slovenia unilaterally defined the coordinates of a specific but temporary as stated area in the

- In 1977, Greece and Italy delimited by agreement their Continental Shelves, based on the principle of equidistance / median line.
- France proceeded to unilateral declaration of its EEZ in the Mediterranean in November 2013.<sup>10</sup> However, the designated area overlaps a part of the EEZ delimitation area between Spain and Italy. This fact causes friction between France and Spain, with the latter state considering that France encroaches part of its EEZ. Furthermore, Spain has declared an EEZ up to the isobaths' limit of 50m in the Gulf of Gabès (UN Division for Ocean Affairs, 2011).
- Additional unilateral proclamations of EEZ have been issued as well by Syria and Morocco, while Libya asserts a fishing zone of 62 nm (UN Division for Ocean Affairs, 2011).
- Between Egypt and Cyprus in 2003, there's been an EEZ delimitation agreement on the basis of median line principle (Agreement between the Republic of Cyprus and the Arab Republic of Egypt on the Delimitation of the Exclusive Economic Zone, 2003)<sup>11</sup>. This bilateral agreement between Cyprus and Egypt entered into force on 7 March 2004 (Strati, 2004: 145-209). A fact of particular importance was that the approach taken in determining the westernmost point of the median line between Cyprus and Egypt. On the advice of Greece, citing reasons of avoiding tension with Turkey, the set point of EEZ between Cyprus and Egypt was shifted about 15 to 20 km east of its actual location, so as to keep a potential Greek-Turkish issue of awarding or not a delimitation effect to the Greek island of Kastellorizo temporarily neutral and out of the context of the actual agreement (Kassinis, 2012: 72). The different approaches between Greece and Turkey, concerning maritime delimitation of the Continental Shelf and EEZs in Southeastern Mediterranean, are depicted on Figures 5 and 6.

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Adriatic region, while naming that region as an 'Area of Ecological Protection', until the settlement of the Continental Shelf between her and Croatia.

<sup>10</sup> Until 2013 France had only declared an EEZ for its western coastal side in the Atlantic Ocean.

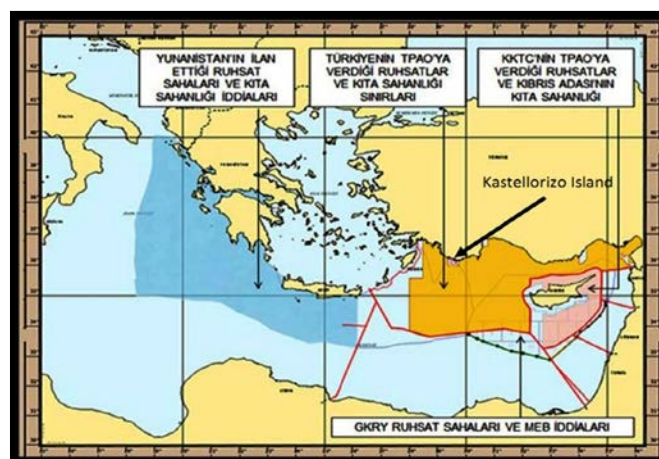
<sup>11</sup> Article 1(a) of the agreement provides that '*The delimitation of the exclusive economic zone between the two Parties is effected by the median line of which every point is equidistant from the nearest point on the baseline of the two Parties*'.





Source: Sea Around Us Project

Figure 5 : The EEZs of Southeastern Mediterranean based on the principle of equidistance / median line (Greek supported view)



Source: Turkish Marine Research Foundation

Figure 6 : A Turkish view with regard to Maritime Delimitations in Southeastern Mediterranean

Taking into account that the concept of the Continental Shelf is closely connected to the one of the Exclusive Economic Zone (EEZ), with the latter referring to a littoral state's control over fishery and other similar rights<sup>12</sup> and as it derives from the above figures, Greece supports that the delimitation of the respective zones (both Continental Shelf and EEZ) must be done on the basis of equidistance / median line, asserting full-effect to the southeastern Greek islands of the Aegean - including Kastellorizo island. On the other hand, Turkey

seems arguably to support that there is a reduced delimitation effect to those particular islands due to its assertion for the handling of the relevant area as an area of special legal status that justifies the use of equity principles. In this context, Greece claims that all islands must be taken into account on an equal basis for a full effect when it comes to maritime economic zones. In this matter, Greece claims to have the UNCLOS on its side, since UNCLOS provides that islands (with the exception of 'rocks') have the right to generate all the maritime zones recognized under international law regardless of their size (UNCLOS, 1982: Art. 121(3)). On the contrary, Turkey argues that the notion of the Continental Shelf, by its very definition, implies that distances should be measured from the continental mainland, meaning that the sea-bed of the Aegean geographically forms a natural prolongation of the Anatolian land mass.<sup>13</sup> In the

<sup>12</sup> Both concepts were developed in the context of international law from the middle of the 20th century, and were codified in the United Nations Convention on the Law of the Sea (UNCLOS) in 1982. Moreover, the ICJ in its judgment in the *Libya-Malta Continental Shelf Case* asserted that '...the two institutions—continental shelf and exclusive economic zone—are linked together in modern law. Since the rights enjoyed by a state over its continental shelf would also include the seabed and subsoil of any exclusive economic zone which it might proclaim, one of the relevant circumstances to be taken into account for the delimitation of the continental shelf is the legally permissible extent of the exclusive economic zone appertaining to that same state'.

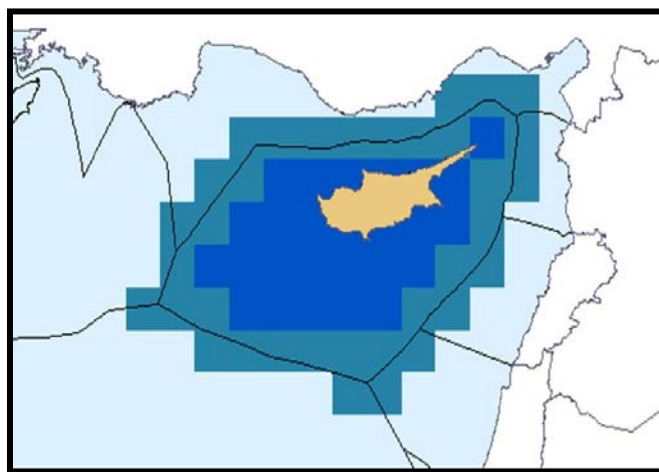
<sup>13</sup> This would mean for Turkey to be entitled to economic zones up to the median line of the Aegean (leaving out, of course, the territorial waters around the Greek islands in its eastern half, which would remain as Greek exclaves).

same context, according to the Turkish aspect the delimitation of the EEZs in the Eastern Mediterranean should follow the principle of natural prolongation, thus not awarding any EEZ effect or CS effect to the islands of the Eastern Aegean and especially to the Dodecanesian small island of Kastellorizo, which is vital for the Greek national interests, as its influence, if recognized, can connect the Hellenic EEZ to the Cypriot EEZ (Chrysochou and Siousiouras, 2013: 112), (Siousiouras, Chrysochou, 2014: 12-49).

- A similar agreement with Egypt was reached between Cyprus and Lebanon in 2007 (see Figure 7), following a decision by Cyprus to undertake in 2007 the initiation of the first licensing round for hydrocarbon exploration activities and the resulting pursuit of reaching EEZ's agreements with other neighboring countries. The delimitation has been done by agreement on the basis of equidistance / median line on the same content and procedure followed in the respective agreement between Cyprus and Egypt. However, the prolonged instability that prevailed in Lebanon's political scene together with border disputes with Israel, were the main reasons why the ratification of the agreement by the Parliament of Lebanon has not been possible to date (Kassinis, 2012: 77-78). The border dispute between Lebanon and Israel concerns an area of 850 sq.km. Nevertheless, in the margin of an official visit to Cyprus in 2012, the President of the Parliament of Lebanon expressed the intention of

the Lebanese Government to sign the agreement immediately after the border settlement with Israel (Press General Secretariat of Cyprus Republic, 2012: 3).

- Finally, on 17 December 2010, the sign of the EEZs' delimitation agreement between the Republic of Cyprus and Israel (see Figure 7) was taken place, based on the delimitation method mentioned above in the already existing agreements with Egypt and Lebanon. This agreement was ratified by the relevant law of the House of Representatives of Cyprus on February 2011. Israel, being a non-contracting party to UNCLOS, and, therefore, not contractually bound by its provisions - except those which constitute rules of customary international law, and only if they are not in conflict with the rules of Israeli domestic law - should have adopted a relevant domestic law as a basic condition for the initiation of official negotiations before concluding an EEZ delimitation agreement with another country. That kind of law was adopted in mid-2010 (Kassinis, 2012: 81-82).
- Referring to the possibility of delimitation of the EEZs between Greece and Cyprus, there hasn't been any agreement so far, despite the insistence by the side of Cyprus Republic. However, the length of the maritime border between the two countries is estimated at 27 nm approximately (Strati, 2012: 150).



Source: *Sea Around Us Project*.

**Figure 7:** The EEZs of Cyprus Republic according to UNCLOS provisions (EEZ delimitation agreements have been reached between Cyprus and Israel, Egypt and Lebanon respectively)

In addition to the abovementioned agreements of maritime delimitation as well as unilateral declarations of EEZs in the Mediterranean region, there are also two maritime delimitation decisions by the ICJ for the cases of Continental Shelves of Tunisia-Libya and Libya-Malta

(ICJ, 1982, Judgment, Reports)<sup>14</sup>, (ICJ, 1985, Judgment, Reports). Moreover, lately, there's a growing desire on

<sup>14</sup> Libya has not ratified yet the UNCLOS, remaining though over time committed to the principles of equity / relevant circumstances for the delimitation of maritime zones. In the cases of the delimitation of Continental Shelf boundary with Tunisia in 1982 and Malta in 1985, Libya claimed respectively that the islands have no effect at all in the determination of delimitation line and that the Continental Shelf



behalf of the Greek side to start negotiations with the Libyan side in order to reach agreement on maritime delimitation.<sup>15</sup> However, according to the Libyan side, these issues will need to be addressed within a framework which will include third countries with common maritime borders, namely Turkey and Egypt (Hellenic Ministry of Foreign Affairs, 2012).

Over and above, it should be made clear that the non-declaration of EEZ by any coastal state in the region is not a factor that reduces its full sovereign rights in the seabed and subsoil, which are fully guaranteed by the legal regime of the Continental Shelf. Given that the EEZ is - if the coastal State wishes - the possible extension of its sovereign rights at the overlying bottom water column, aiming to control fishery and energy production, in accordance with Article 56 of UNCLOS, the sovereign rights over the Continental Shelf exist for a coastal state ab initio and ipso facto, regardless of any express proclamation (UNCLOS, 1982: Art. 77).

#### IV. CONCLUSIVE REMARKS

The abovementioned analysis examined the new geopolitical aspect of the Mediterranean Sea, and, particularly what is currently happening in the Southeastern Med basin, namely the geopolitical implications of the recent discoveries of significant energy reserves in that region. The discovered hydrocarbon reserves of the Southeastern Med can and should play an important role in supplying the EU with natural gas in the long run. It comes up, therefore, that any decisions must be taken immediately in order to ensure the primacy of the neighboring states of Eastern Med, especially Cyprus, Israel, Greece and Turkey, regarding their role as alternative suppliers of the European Union. This prospect, with the expected future outcome of providing the first non-Russian gas of the so-called southern European energy corridor, imposes considerable benefits, particularly in relation to potential European funding for a pipeline construction (Eastern Med Pipeline), which will transfer to Central and Western Europe large amounts of natural gas, as well as other relevant projects.

However, linked to the geopolitical dimension there is one more essential parameter; that of International Law of the Sea. UNCLOS provides the necessary framework to define the limits of maritime

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boundary should not be determined under the principle of equidistance / median line sought by Malta. Moreover, in the latter case Libya asserted as relevant circumstances to be taken into account by the Court, the geomorphologic criteria and the principle of proportionality between the length of the coastline of each state and the respective allocated Continental Shelf areas.

<sup>15</sup> Consequently, there have been some contacts at the level of competent experts from the two countries, but also at the level of Foreign Ministers during a meeting held in Tripoli on 21 December 2012. The outcome of that meeting was the agreement between the two sides on a roadmap for issues relating to maritime zones.

boundaries between adjacent states, being the main document of international law, which regulates the various issues concerning the establishment of EEZ. For the moment the question of delimitation of maritime zone boundaries in Southeastern Med remains a point of friction for many of the states involved in. The abovementioned analysis highlighted, inter alia, the decisions made from the Republic of Cyprus and their conformity with international law provisions. Now, it is the turn of the Greek government to take decisive action upon the question of the EEZ in full conformity with international law and in trusting cooperation with its neighboring states, since there are many interested parts meeting in the region, as well as other important protagonists of the international arena with NATO and EU standing out.

In summary, as it is obviously derives from the analysis given in the text, the presence of energy resources in the sea-bed of the Southeastern Med, combined with maritime delimitation issues among the adjacent states, complicates further the geopolitical equation of the region. That's why this particular part of the world constitutes justifiably a perfect case-study of a combined examination of Geopolitics and International Maritime Delimitation Law scientific fields.

#### V. ACKNOWLEDGEMENTS

The authors of the paper would like to thank the editor and the rest of the editing team of this journal for their excellence in the way of promoting and processing the research in the particular academic field.

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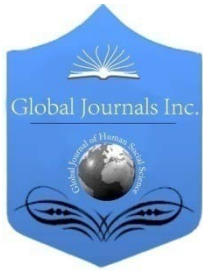


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GLOBAL JOURNAL OF HUMAN-SOCIAL SCIENCE: B  
GEOGRAPHY, GEO-SCIENCES, ENVIRONMENTAL DISASTER  
MANAGEMENT  
Volume 14 Issue 7 Version 1.0 Year 2014  
Type: Double Blind Peer Reviewed International Research Journal  
Publisher: Global Journals Inc. (USA)  
Online ISSN: 2249-460X & Print ISSN: 0975-587X

## Religion and Environment

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*Abstract-* The Holy Quran is a book that explains the phenomenon of fate which is hidden beneath the physical event and enables us to realize the cause of the disaster and uncover them. It is said in the Qur'an "Corruption has appeared throughout the land and sea by (reason of) what the hands of people have earned." We understand under the light of this verse that the tsunamis, floods and storms which destroy cities and settlements are a result of deterioration caused by human hands in land and seas. With this statement Qur'an point out a universal law in the universe and who acts opposite to it will have an equal pain. For this reason Qur'an and hadiths ordered us to treat our environment delicately and sensitively. Those who not have any awareness of these fact will be punish in the world and hereafter. So the article is looking at the problem of environmental pollution from the perspective of fate.

*GJHSS-B Classification : FOR Code: 961006*



*Strictly as per the compliance and regulations of:*



# Religion and Environment

## Environmental Responsibility of Man and the Bad Reflection of it (as Destiny) to Himself

Prof. Dr. Hayati Aydin

**Abstract-** The Holy Quran is a book that explains the phenomenon of fate which is hidden beneath the physical event and enables us to realize the cause of the disaster and uncover them. It is said in the Qur'an "Corruption has appeared throughout the land and sea by (reason of) what the hands of people have earned." We understand under the light of this verse that the tsunamis, floods and storms which destroy cities and settlements are a result of deterioration caused by human hands in land and seas. With this statement Qur'an point out a universal law in the universe and who acts opposite to it will have an equal pain. For this reason Qur'an and hadiths ordered us to treat our environment delicately and sensitively. Those who not have any awareness of these fact will be punish in the world and hereafter. So the article is looking at the problem of environmental pollution from the perspective of fate.

### I. INTRODUCTION

Since environmental pollution has reached high levels globally, the alarm bells have begun to ring out for human beings as well as all living creatures. If people do not work together to sort out this global problem, then they will pay a huge price for this and many countries will be inundated in near future, and, as a result, the natural disasters might be non-preventable. In order to help remind people their moral environmental responsibilities, there is a great need in teaching people religious responsibilities and duties regarding environmental issues. Therefore, this article focuses on environmental pollution and responsibility from a religious perspective and aims to draw human beings' attention to such a vital issue.

### II. THE QUR'ANIC VERSES RELATED TO ENVIRONMENT AND ITS RESPONSIBILITY

We as muslims believe the Holy Quran is a commentator of the book of the Worlds of the Seen and the Unseen, the key to the truths concealed beneath the lines of events; the tongue of the Unseen World in the Manifest World.

What does that mean? Namely the Holy Quran is a book that explains the phenomenon of fate which is hidden beneath the physical event and enables us to

realize the cause of the disaster and uncover them. For example the holy Quran says:

"Corruption has appeared throughout the land and sea by (reason of) what the hands of people have earned. So He (i.e. Allah) may let them taste part of (the consequence of) what they have done that perhaps they will return (to righteousness)" (Ar-Rum, 30/41)

In the light of this verse we understand that the tsunamis, floods and storms which destroy cities and settlements are a result of deterioration caused by human hands in land and seas.

Again, in other verse God clearly emphasises this truth: "And whatever strikes you of disaster-it is for what your hands have earned; but He (Allah) pardons much" (Ash-suhârâ, 42/30)

So this expression in the Qur'an, tells us that there is a universal law in the universe and who acts opposite to it will have an equal pain. When we look at according to the perspective of Qur'anic holistic background we understand the cause of arrival of bad events whoever has. We call this secret law the law of nature.

Then these natural disasters which occur today on the earth always occur because of what we do. Nature is punishing us. Namely God is punishing us through nature for all our hands have earned.

In reality this earth was created for us. It has been adapted for our lives. We borrow the earth created by God in a way we're immaculate. We have to protect the earth as we protect our eyes. Let us know the cost of damage which we do to the earth we have to pay in both the world (as we told above) and the hereafter. Allah says.

"Do not spread corruption on earth after it has been so well ordered. And call unto Him with fear and longing; verily, God's grace is ever near unto the doers of good!" (Al-A'râf, 7/56)

Dahhak's commentary on the verse is this: "Do not destroy water resources. Do not damage the fruity trees by cutting" (Al- Qurtubî, 1988: VII. 145) The commentators say in the commentary of this verse: God created the earth, laid it in order, the suitable kind according to the best interests of the people has allocated in a manner conducive to living. The benefit and damage caused by people are rather related to the detriment they cause to the development and corruption of the environment. People have been seen as responsible for its rehabilitation. Human beings do not

destroy anything as harshly as they do to environment (Yazır, 1979: III. 2195).

All of celestial religions were revealed for the happiness of man in both the world and the hereafter. As Islam is the last religion of them, it has brought a rule and a more perfect way of human life and did not leave him unattended, made him responsible for environment.

The Qur'an ordered us to use the earth's resources and opportunities in a measured way without wasting. For example the Quran says:

"Eat and drink, but be not excessive. Indeed, He likes not those who commit excess." (Al-A'raf, 7/31)

The order of eating and drinking but not being excessive is not related to eating and drinking only but related to all of the issues. Therefore, in any case wasting is forbidden in religion.

In the Qur'an it is said that God created the universe in a delicate balance and coherence, and therefore there are a lot of verses that order us to protect the balance and harmony. Allah says:

"Behold, everything have we created in due measure and proportion " (Al-Qamar, 54/49)

In another verse Allah says:

"And the heaven He raised and imposed the balance. That you not transgress within the balance and established weight in justice and do not make deficient the balance" (Ar-Rahman, 55/7-9)

From the expression of "observe the weighing and measure", it is understood that we have got to comply with all sorts of fairness among the people as well as we have to maintain the natural balance in nature. The assumptions underlying these are that the facilities and assets have been distributed to a certain extent in nature. Each one has its own place and importance in nature and has been an integral part of the existing beautiful divine balance.

In the Qur'an it is explained that in the earth there are a lot of military of Allah, and they are manipulated according to his wisdom. Allah says: "To Allah, belong the soldiers of heavens and earth. God is indeed almighty, truly wise!" (Al-Fath, 48/7) Therefore, every kind of creature on the earth is an army of God. For this reason damaging them is destroying God's army and the balance of nature. Indeed, the Prophet. Muhammad (Peace be upon him) in one hadith says:

"Do not to kill grasshoppers, because they are the largest armies of Allah." (Ahmad b. Hanbal, 1992: II. 19, 210)

As seen in this word harming animals is one action that requires responsibility in the religion.

Now let's listen to Bediüzzaman who the great scholar of the last century. He is says that: "The universe is a vast, constantly working factory and the globe of the earth a hostel and guest-house which is continually filled and emptied. Generally, factories, hostels and guest-houses which are thus used become much dirtied and soiled with, debris and rubbish, and putrid matter

accumulates in all parts of them. Unless they are kept with care and cleaned and swept, they cannot be occupied; human beings are overwhelmed by the dirt. The factory of the universe and guest-house of the earth, however, are totally pure, clean and spotless, and completely unsoiled, untainted and fresh; there is nothing unnecessary, nothing without benefit, not a random piece of dirt to be found. Even if there is apparently, it is quickly thrown into a transformation machine and cleaned. This means that the One Who looks after this factory does so very well. And its Owner is such that He sweeps and cleans and orders the vast factory and extensive palaces as though they were small rooms. In relation to the size of the huge factory, there is no dirt or rubbish remaining from its filth and debris. Indeed, considering its size, its cleanness and tidiness are remarkable. If someone does not wash himself and clean his small room for a month, they will become extremely dirty and soiled. That is to say, the cleanliness, purity, and luminosity in this palace of the world arise from a continuous, wise, and diligent cleaning. If it was not for this cleaning, sweeping and careful tending, in over year all the hundred thousand animal species would have been choked on the face of the earth.

Furthermore, the corpses of a hundred thousand animal species and the debris of two hundred thousand plant species each year on the face of the earth resulting from the alternation and struggles of life and death would have so utterly filthied the land and the sea that conscious creatures, rather than loving and delighting in the face of the earth, would have felt disgust and aversion at such ugliness and fled to death and non-existence. Just as a bird cleans its wing with ease and a scribe his pages, so also are the wings of the aircraft of the earth and the birds of heavenly bodies and the pages of the book of the universe cleaned and made beauty of the Hereafter and think with belief become lovers of this cleanliness and beauty of the world, they worship it.

That is to say, this palace of the world and factory of the universe display a greatest manifestation of the Divine Name of Most Holy whereby it is not only the carnivorous cleaners of the seas and the eagles of the land which obey the commands preceding from that sacred cleansing, but also its cleansing officials which gather up corpses, like worms and ants. They are impelled by a hand of wisdom" (Nursi, 20014: p. 396-397).

### III. HADITHS AND THEIR COMMENTS ON THIS ISSUE

In the same way there are a lot of words that related to the protection of the environment and its development in the hadith of the Prophet.

1. Anas İbn Malik reported that the Prophet, (may Allah bless him and grant him peace), said, "If the Final



Hour comes while you have a palm-cutting in your hands and it is possible to plant it before the Hour comes, you should plant it". (Bukhari, 1992: Adab al-Mufrad, 222/479, Ahmad b. Hanbal, 1992: III. 184,191)

2. "There is none amongst the Muslims who plant a tree or sows seeds, and then a bird, or a parson or animal eats from it, but is regarded as a charitable gift for him" (Bukharî, Hars 1, Adab, 27)

Allah has granted on us all of nature's richness. We are going to be questioned if we wasted them and how we used those blessings. This verse clearly emphasises it: "Then you will surely be asked that Day about pleasure" (At-Takthur, 102/7)

In the Quran the people who damage the natural balance, are presented as a worse man's portrait:

"And when he goes, he strives throughout the land to cause corruption there in and destroy crops and animals. And Allah does not like corruption" (al-Bakarah, 2/ 205 )

Abdullah İbn Umar narrated that the apostle of God (Peace be upon him) said: "A woman was tortured and was put in Hell because of a cat which she had kept locked till it died of hunger." Allah's Messenger further said, "Allah said (to the woman), 'You neither fed it nor gave it water when you locked it up, nor did you set it free to eat the insects of the earth (Al-Bukhari, Anbiya, 54, Azan, 90, Ahmad b. Hanbal, IV. 351 )

As seen in this hadith a woman was punished because she imprisoned a cat until it died. For this reason she was doomed to Hell while she imprisoned the cat, she did not give it food or drink, nor did she free it to eat the insects of the earth. Hence mercy to animals is an obligation for every believing person. As the action of keeping animals from feeding is a cruelty and thus, this cruelty landed person in Hell. This shows us that committing actions like this to animals is very big sin. In fact mercy, benevolence and compassion are the attributes of Allah. Namely, he is Ar-Rahman and Ar-Raheem. For this reason Muslim have to be merciful, beneficent and gracious to every creature.

In another holy hadith, Allah promises a woman a divine reward for a kindness which she had done to a thirsty dog (Bukharî, 1992: Wudu, 33; Muslim, 1992: Salam, 154).

Islam has ordered us to behave towards animals very good kind. Mercy, benevolence and compassion are the attributes of Allah. Because, He is Ar-Rahman and Ar-Rahîm. Who reflects these attributes on himself he /she becomes nearer to Allah.

There is no escaping for a servant from being questioned about certain things.

Prophet Muhammad (Peace be upon him) said: On Judgment Day, no one can move away from his tracks unless he is questioned from four thing: Where he

spent his life, his actions, how he made a living, what he spent his money on, how he used his body and health (Tirmizî, 1992: Kiyame, 1) Then we are responsible about our lives, our actions and use of our opportunities. We must use them in the best way. Otherwise we need to know that we have to pay a price in the world and the hereafter for the errors and mistakes we do.

As a consequence, religion gives us responsibility towards the environment we live in as well as regarding its protection. Quran clearly and openly reveals that the nature and natural resources are the result of a plan, and maintaining this valuable balance is the responsibility of human beings. However, the Holy Qur'an, in spite of this, says that the balance of nature will be destroyed by the hand of human beings and human beings will suffer from this action by themselves.

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- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

*Acknowledgements: Please make these as concise as possible.*

## References

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<b>References</b>	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring





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ISSN 975587

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