

Alexandria University  
Alexandria Research Center for Adaptation to Climate Change  
(ARCA)

# Stakeholder analysis

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*Nile Delta and climate change*

By  
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*January 2014*

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## ***ARCA Working Paper***

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# Stakeholder Analysis

*Climate Change and the Nile Delta*

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# 1. Introduction

Climate change is expected to have a wide range of impacts on almost all sectors and/or communities, which would affect a wide range of groups, bodies and/or individuals, typically called stakeholders<sup>1</sup>. Accordingly, involvement of such groups, bodies and/or individuals is considered essential when studying and assessing climate change impacts, vulnerabilities as well as potential adaptation options. Such involvement would support more informed decisions and/or policy in relation to climate change impacts, vulnerability and adaptation. It would also allow for better chances for increasing resilience to climate change and clear ownership of the outcome of such work by different stakeholder groups. As a prerequisite for stakeholder involvement, stakeholder analysis can play a crucial role in identifying key individuals, groups and bodies that may have vested interest in climate change issues. Such an analysis may enable ARCA to:

- Develop more effective and efficient work mandate on climate change and sea level rise impacts, vulnerability and adaptation;
- Identify potential policy making stakeholders, their interest and areas of concern that may be addressed by researchers;
- Interact more effectively with key stakeholders;
- prevent potential misunderstandings about and/or opposition to ARCA activities and messages;
- Create more favorable environment for ARCA activities among stakeholders; and
- Develop an efficient and effective communication strategy for ARCA.

Stakeholder analysis is concerned not only with identifying and assessing the attitude of different individuals, bodies or groups about any proposed action. Rather, the process of identifying stakeholders as well as well their powers and attitudes should be complemented by considering socioeconomic context and institutional, legal and policy frameworks, within which these stakeholders act (Figure 1).

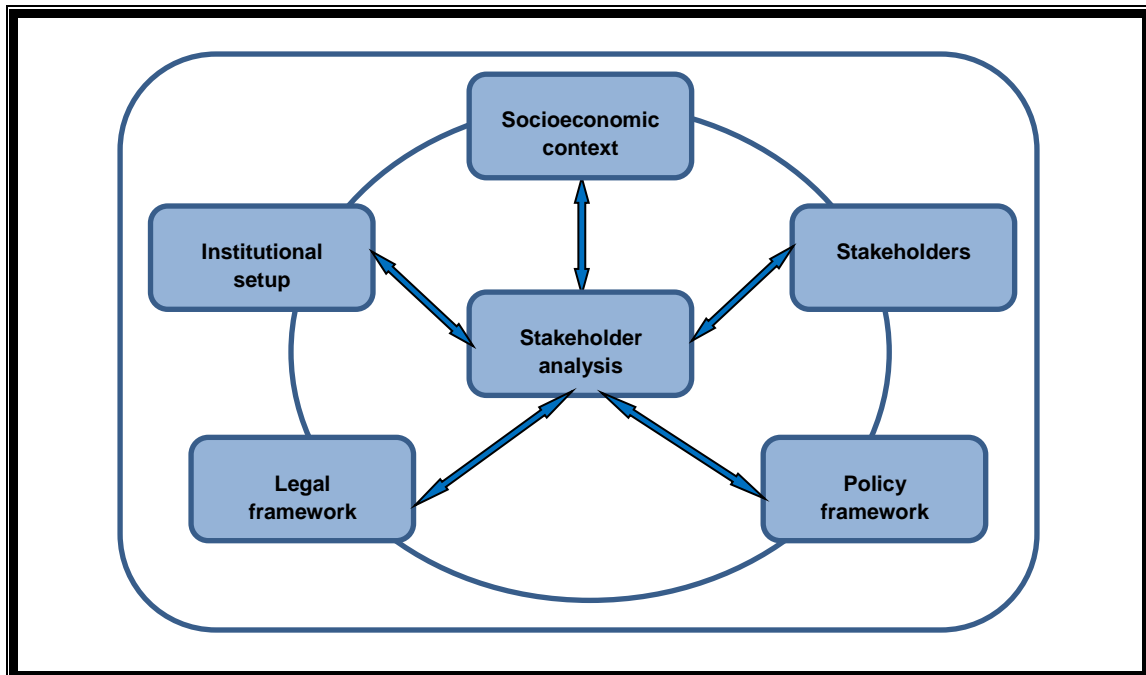


Figure (1): Contextual framework of stakeholder analysis

<sup>1</sup> Stakeholders refer to actors (persons or organizations) with a vested interest in the issue under consideration and/or the decision or policy being promoted.

## 2. Objective

The main Objective of the stakeholder analysis is to identify the key stakeholders in the case of the Nile Delta vulnerability and adaptation to climate change and sea level rise under socioeconomic, legal, institutional and policy frameworks prevailed in Egypt. This would in turn enable better understanding, more effective and efficient and more focused work on of climate change adaptation in the Nile Delta area.

## 3. Socioeconomic context

The Nile Delta is very heavily populated, with about 1600 inhabitants/km<sup>2</sup>, and contributes 30-40% and 60% of agriculture and fish catch (marine and lagoon) production, respectively (Figure 2). It also includes important urban centers with concentration of economic activities, with as much as half the industrial production located there.

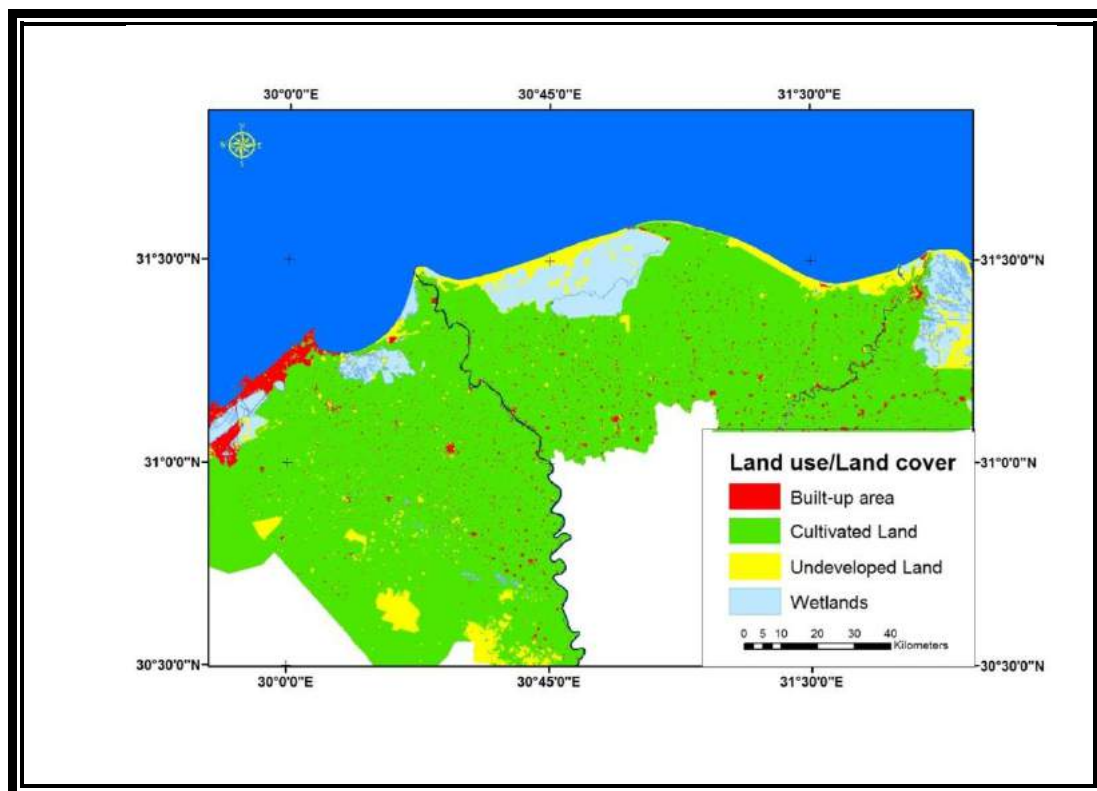


Figure (2): Land use/Land cover in the northern Nile Delta governorates

The Nile Delta shoreline extends from Alexandria in the west to Port Said in the east, with a total length of about 240 kilometers, consisting mostly of sandy arcuate beaches. The beaches are backed by coastal flats followed by coastal dunes and three lagoons from east to west, Manzala, Burullus, and Idku, which are connected to the sea. There are five harbors located along the coast, of which three are fishing harbors namely Idku, New Burullus, and El Gamil and two commercial ports namely Damietta and Port Said.

Administratively, the coastal zone of the Nile Delta consists of six governorates namely; Port Said, Damietta, Dakahlyia, Kafr-El-Sheikh, Behaira and Alexandria; consisting of 66 districts, which are further subdivided into 1342 localities. The main land uses/land covers in the study the northern Nile Delta Governorates consists of cultivated land, Built-up area, wetlands and undeveloped areas (Figure 3).

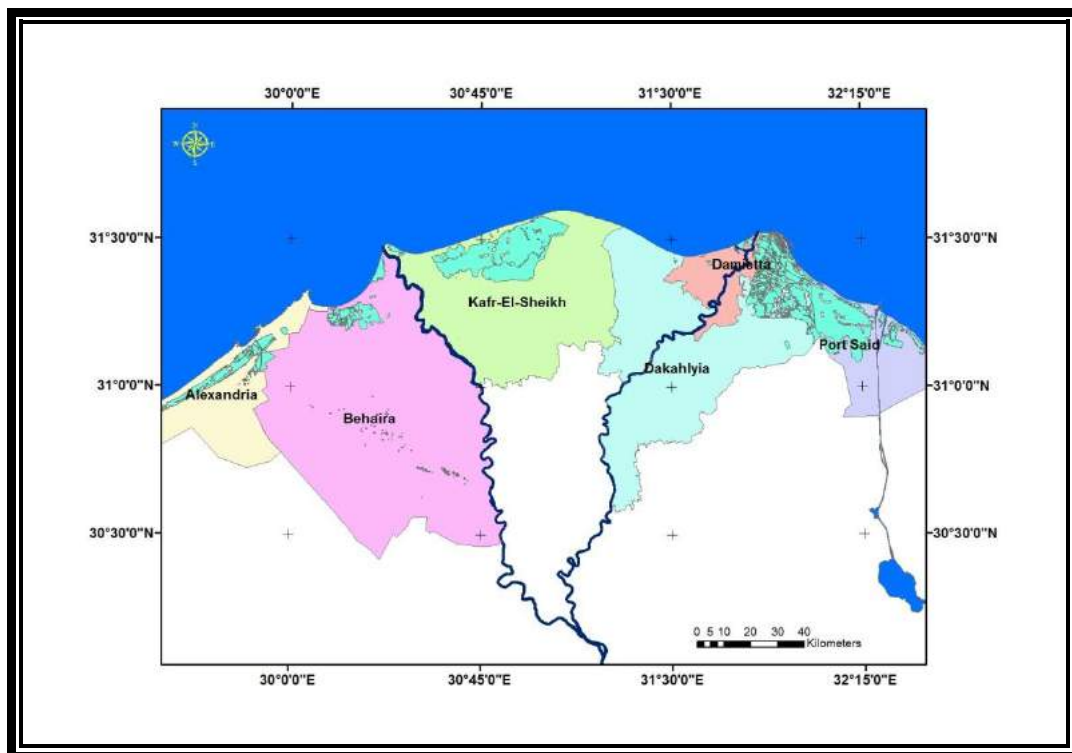


Figure (3): Administrative subdivisions of the northern Nile Delta governorates

## 4. Stakeholders identification and attributes assessment

The assessment process of various groups of stakeholders typically utilizes a number of criteria including; stakeholders' attitude and influence which are largely determined by their interests and power, respectively. The first step in this process thus was to develop a list of main categories (groups) that may be working in areas related to climate change and ARCA activities and areas of interest. The list included the four main categories; namely government bodies, researchers and research institutions, NGOs and elected local councils and local organizations. These categories were then populated by specific bodies, individuals and groups associated with each type of work and these categories. Thereafter, each stakeholder's interest and attitude were evaluated<sup>2</sup>. Also, the level of power and the degree of influence

<sup>2</sup> Stakeholders' interests refer to their motives and concerns on the issues being addressed and their potential, which will define their potential reaction to the activity in hand and possible measures to address their concerns. Meanwhile attitude refers to the potential reaction of various stakeholders to different decisions related to the action in hand.



that each stakeholder can exert over the proposed action and associated activities were estimated<sup>3</sup>. Figure (4) and Table (1) represent the outcome of the stakeholder analysis in the case of the Nile delta under prevailed socioeconomic conditions.

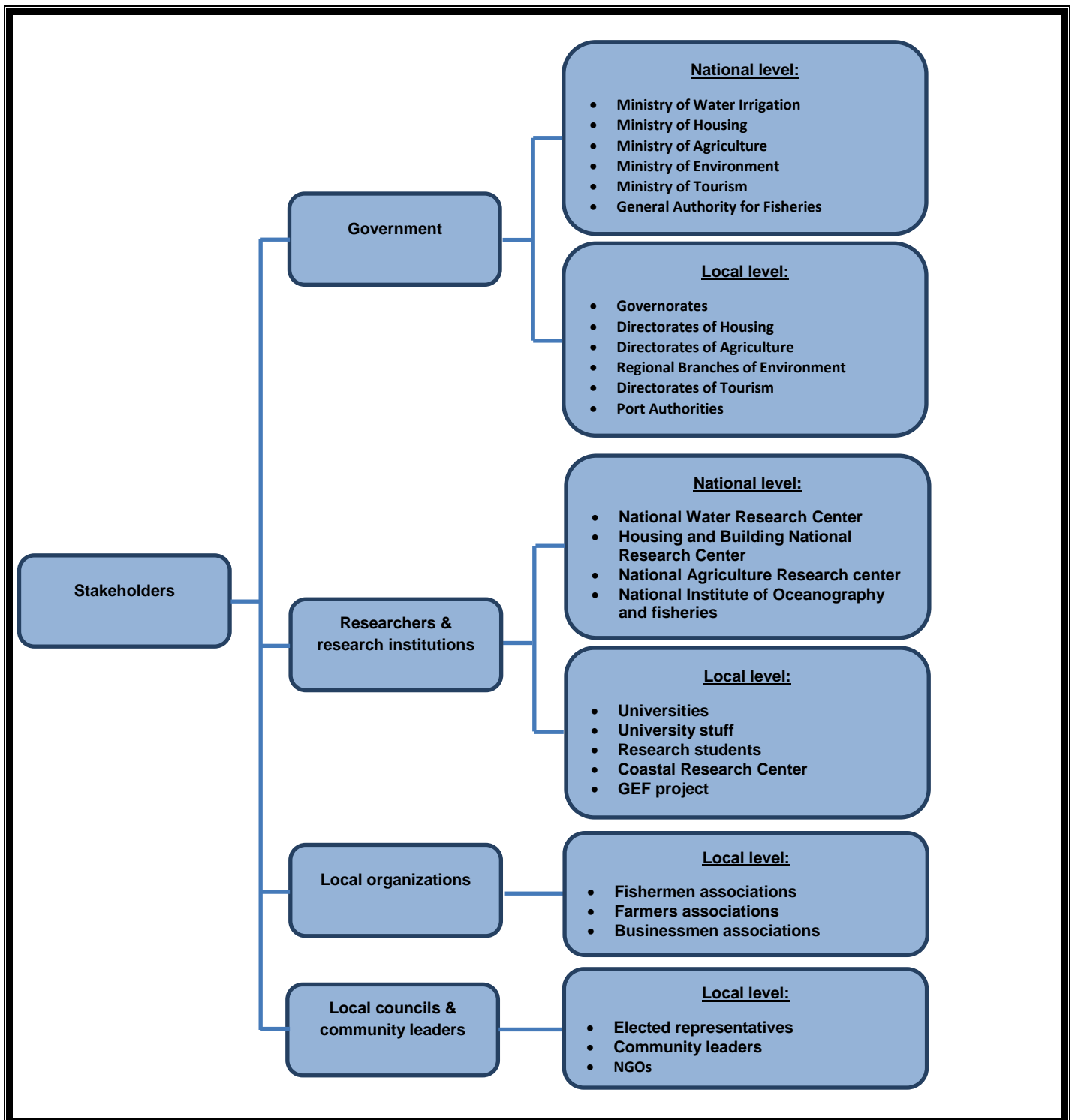


Figure (4): Various stakeholder groups and entities in the case of the Nile Delta

<sup>3</sup> A stakeholder power refers to the scale of resources -human, financial, technological, political ... etc. - available to a stakeholder and its ability to mobilize them. This may determine the level of power with which a stakeholder can support or oppose the policy. Meanwhile, stakeholder influence means the type of opposition, which can be categorized into three main types; a power of veto, a power than can be mitigated, or can be neglected.

Table (1): Stakeholders' Roles, Interests and Potential for supporting and be involved and/or supported by ARCA

Name of Stakeholder	Description of stakeholder	Stakeholder's Interest (s) in the Project	Powers of stakeholder	Potential Strategies for Obtaining Support and Reducing Obstacles
1. Ministry of Housing, Infrastructure and New Communities	The Ministry is responsible for structural urban development plans, which are then translated into detailed plans from roads networks to the infrastructure stations of drinking waters and sewerage to housing. The Ministry is also responsible for the new communities program as well as the building sector as a whole.	The Ministry is interested in pursuing development schemes and protected what has been already achieved, e.g. the new communities in Egypt in the north eastern part of the Nile Delta as well as the desert road. The Ministry could also benefit from technical support concerning identifying areas vulnerable to SLR as well as the viability of various adaptation options.	The Ministry enjoys considerable powers in terms of staff powers and finances. The Ministry is also assigned considerable power concerning direction construction and urban development	This means that this Ministry is expected to be highly concerned by climate change and sea level rise and thus should be considered as a potential client to ARCA
2. Ministry of Irrigation and Water Resources	The Ministry is charged with providing the main supply of water to all sectors in Egypt. To do this, it is responsible for drafting water policies through which it manages all available water resources, including rationing. The Ministry is also responsible for water drainage networks.	Studies have shown that SLR will have a drastic impact on groundwater in the Nile Delta. The Ministry is responsible for managing and maintaining drainage water networks in Egypt. This means that it has a major role to play concerning quality and levels of groundwater in the coastal area of the Nile Delta.	The Ministry has considerable powers concerning water management and the management of drainage water systems. Thus, it enjoys considerable influence concerning water-related issues	This means that this Ministry is expected to be highly concerned by climate change and sea level rise and thus considerable efforts should be made to ensure close coordination and cooperation with the Ministry
3. Ministry of Agriculture and Land Reclamation	The Ministry is responsible for agriculture and land reclamation policy development in coordination with the Ministry of Public Works and Water Resources. It is also responsible for the development of agricultural production, animal, fish and agricultural industrialization policy planning. Determine the settlement policy in the reclaimed lands.	The Ministry provides guidance regarding preferable crop patterns crops to be planted given the available resources and environmental conditions. It also plays an important role in encouraging research on agricultural expansion, and new technologies for crop yields and more sustainable farming practices.	The Ministry is interested to see that the crop area in the Nile Delta area, including the coastal areas not reduced due to SLR impacts. This is also true for possible reduction in crop productivity due to the level and quality of groundwater in these areas.	Again, this Ministry is expected to be highly concerned by climate change and sea level rise and thus considerable efforts should be made to ensure close coordination and cooperation with the Ministry



Table (1 Continued): Stakeholders' Roles, Interests and Potential for supporting and be involved and/or supported by ARCA

Name of Stakeholder	Description of stakeholder	Stakeholder's Interest (s) in the Project	Powers of stakeholder	Potential Strategies for Obtaining Support and Reducing Obstacles
4. Ministry of Environment (MoE), EEAA	The Ministry is responsible for protecting and improving the environment. It works closely with development partners to draft policies and set priorities that focus on a sustainable environment. One of the issues on the Ministry agenda is climate change, sea level rise and their impacts on Egypt.	The Ministry is involved in coastal zone management (CZM) in general and along the Mediterranean coast. It is in the interest of the Ministry that climate change and SLR and subsequent impacts on Egypt are clearly defined and that potential adaptation options are identified and properly assessed.	Compared to the above-mentioned ministries, the MoE has far less powers and influence. Still, its interest in the issues in hand means that they could provide some needed support for ARCA	Despite their limited powers, the Ministry need to be managed closely and kept informed about the work at ARCA and some coordination could be sustained with it.
6. Ministry of Tourism	The Ministry is responsible for managing and planning tourism activities to support the national economy	The Ministry is interested in maintain the cultural heritage sites and coastal resorts that may be vulnerable to climate change.	The power of the ministry, particularly in terms of financial and human resources, is expected to be limited	The ministry should be informed about ARCA activities and consulted about issues related to tourism
5. Ministry of Defense (MoD) - Office of Border Intelligence (OBI)	The Office is mainly responsible for combating smuggling and trafficking in all types of contraband; illegal migration; and illegal penetration or access to the country from the sea.	The Office main interest is associated with any activities to be conducted by ARCA or associated researchers along the coast. Permits would be required for such work	OBI is one of the most powerful bodies and has vested interests in the area in terms of its security and protection	The Office should be kept informed of the ARCA activities associated with field work in order to ensure its support and reduce any obstacles they could face field activities.
6. General Authorities of Fisheries (Ministry of Agriculture)	The Authority is charged with the task of managing and maintaining effective use of northern lakes for fish production. There are four lakes located in the northern part of the Nile Delta; namely Mariout, Edku, Burolus and Manzala and they are used widely in aquaculture and fish production.	The Authority is interested in maintaining effective use of the northern lakes for fish production. This means it is interested in taking into account any potential impacts on these lakes and their fish production.	Despite such significant responsibility, the powers of the authority are quite limited.	The authority should be kept informed about the work of ARCA and possibly be engaged if one of the research themes of ARCA small research program is concerned with SLR impacts on northern lakes

Table (1 Continued): Stakeholders' Roles, Interests and Potential for supporting and be involved and/or supported by ARCA

Name of Stakeholder	Description of stakeholder	Stakeholder's Interest (s) in the Project	Powers of stakeholder	Potential Strategies for Obtaining Support and Reducing Obstacles
7. Egyptian Public Authority for Shore Protection	The authority is responsible for planning shore protection activities and projects as well as preparing technical designs for new protections in cooperation with different authorities and Egyptian and foreign universities.	The authority is interested in exploring the most effective adaptation options to deal with the implications of climate change	The authority has maximum power in terms of human and financial resources.	The Authority has to be integrated closely in all ARCA activities.
8. Coastal Research Institute (CoRI) – Ministry of Water Resources and Irrigation	The main task of the Institute is to monitor the evolution of Egyptian Mediterranean coast and study the dynamics of its shores and to find out efficient and cost-effective shore protection methods	CoRI is interested in evaluating the protection engineering works that are carried out as well as study other potentials means of coastal protection.	The authority has limited power in terms of human and financial resources.	CoRI should be involved closely in ARAC activities either as resource persons or trainees.
9. Governorates	The northern parts of Nile Delta are administratively, at governorate level, are divided into six governorates; namely Alexandria, Behaira, Kafr El Sheikh, Dakahlyia, Damietta, and Port Said. Alexandria and Port Said are designated as urban governorates. The remaining governorates are composed of urban as well as rural areas, with the later usually sub-divided into rural units and villages.	Governorates deal with almost all aspects of life in their territories. However, they could be concerned about any announcements that could highlight potential risk and/or negative impacts on local residents and economic activities. Also, their concern for SLR is limited at present and is usually seen as a potential distant future threat.	Governorates enjoy considerable powers at local level in terms of manpower and to some extent economically. They also have political powers that can provide the project with considerable support if properly mobilized.	Efforts should focus on gaining the support of different governorates. This would require involvement of these governorates into the various activities of the project and to show potential benefits that the project could provide them with.
10 Local Authorities	These towns and villages' local councils are under the administration of the District Council, headed by the respective Governorate. They are responsible for the provision and maintenance of infrastructural services	Local councils coordinate work with the different state ministries and administrations such as health, education, transport, internal trade, interior and others.	These councils are interested in the provision of services and administering areas under their authority. However, they are usually closely managed by their governorates.	SLR can directly affect their operations and the welfare of the local population in the city. Therefore they need to be kept informed about the project and supported through various ARCA activities. This is particularly important for local authorities of areas to be affected by SLR.

Table (1 Continued): Stakeholders' Roles, Interests and Potential for Providing Support and be involved and/or supported by ARCA

Name of Stakeholder	Description of stakeholder	Stakeholder's Interest (s) in the Project	Powers of stakeholder	Potential Strategies for Obtaining Support and Reducing Obstacles
11. Port Authorities	Port Authorities is part of the maritime transport sector of the Ministry of Transportation. They are responsible for the day-to-day operation and administration of their port area. They set requirements and regulations for ports operation and enforce them.	They are interested in ensuring smooth operation of their respective ports and thus could be interested in cooperation with the project to integrate any future impacts of SLR in their plans	Port Authorities usually enjoy vast powers within the territory of their ports. They also of great importance to the Egyptian economy and its foreign trade movements.	ARCA needs to keep port authorities informed on its activities and involve them closely when work is concerned with the ports facilities and activities.
12. Universities	Universities and research institutions are interested in academic and scientific research.	The universities and their various academic institutions conducting a number of research work on climate changes and their implications, and adaptation options. Also, they are concerned with capacity building of their members.	Despite the abundant human resources of these universities, they are suffering from certain points of weakness. One of these weakness is the limited financial resources and mismatch between the produced researches and the national innovation system (El Baradei and Laila, 2004).and (Helal, 2008). This Leads to low quality of research (Rached and Dina, 2000)., which can be attributed largely to poor training of the research personnel (Rached and Dina, 2000) and (Belal and Irina, 2006)	The universities and their research institute should be involved in all ARCA activities
13. Local councils	Local councils' members are elected representatives for local communities. They have some sort of monitoring powers on local administrative bodies.	Local councils' members are expected to be interested in providing services for the local residents and mitigating the adverse impacts of climate change	Local councils' members has limited powers	Despite their minimum power, This group can support the project activities through: Mobilizing various capacities and capabilities, and examining and evaluating various adaptation measures
14. Businessmen Associations.	North Delta Governorates host a number of industrial estates hosting more than 10500 firms in 2008. This number of firms employing about 400,000 workers (Industrial Development Authority, 2008). This group is represented in some organizations such as New Damietta Investors' Association (NDIA)	This Civil society organization is primarily responsible for supporting investors in the city and resolving any issues that hinder their work and obtaining permits or licenses. The Association's members are all the businessmen and investors in the city.	As private businessmen with huge investments, these have a main stake in the project.	The Association is willing to provide its premises and undertake awareness sessions and campaigns to spread knowledge about the project.

Table (1 Continued): Stakeholders' Roles, Interests and Potential for Providing Support and be involved and/or supported by ARCA

Name of Stakeholder	Description of stakeholder	Stakeholder's Interest (s) in the Project	Powers of stakeholder	Potential Strategies for Obtaining Support and Reducing Obstacles
15. Fishermen Associations	This group of stakeholders involves fishermen and fish traders, who are expected to be affected by climate changes and sea level rise and their implications. Most of fishermen are organized in fishermen cooperatives.	Fishermen and their associations are expected to be interested in finding solutions to deal with the problems they suffer from and increasing their profitability	This group has limited power but they can create pressure.	This group should be consulted in some adaptation options So that it can be kept informed about ARCA activities
16. Farmers Associations	Farmers in the northern parts of the Nile Delta are suffering from a number of significant problems. For example, major parts of the agricultural land in the northern parts of a wide range of problems (IDSC, Damietta governorate, 2009).	Farmers and their associations are expected to be interested in Finding solutions to deal with the problems they suffer from, increasing their profitability and acquiring more and better services	This group has limited power.	This group should be consulted in some adaptation options  So that it can be kept informed by ARCA activities
17. NGOs	The North Delta governorates NGOs have about 4032 NGO representing about 19.6% of the total NGOs in Egypt (JPIC, 2006). These NGOs are supposed to play a crucial role in providing various services to different community groups. it was noticed that social issues, water and sanitation provision, education, environment, health and childhood are the main concerns (working areas) of NGOs	This group of stakeholders is interested in decreasing the vulnerability of the community to the impacts of climate changes and their implications	should be noted that despite the limited financial and human resources, the main strength of this group of stakeholders is represented in their supposed established channels of communication with the local residents	Due to their high interest and limited power this group should be kept informed by all ARCA activities.

Generally, it can be noted that the case of the Nile Delta has large number of stakeholders with varying, sometimes conflicting, interests. These stakeholder groups also have different levels of financial, human, technical and political power. To involve all stakeholder groups to be in ARCA activities, there is a need to understand their strengths and/or weaknesses. Also, these different groups with various interests need different messages and tools for them to be involved.

The situation is made more complex by the lack of communication and coordination among most of these different stakeholder groups, which sometimes takes the form of formal correspondences. Such a situation may adversely affect any potential actions for adaptation to climate change.

Moreover, it was noted that various stakeholders have limited knowledge and capacity on climate change impacts, vulnerability and adaptation.

It can be argued that top priorities for ARCA to alter the situation and enable an environment for action on climate change adaptation involve:

1. Awareness raising with different stakeholders, which would not only involve convey knowledge but attempt to cause change in attitude. This would require capacity building activities and also continuous updating and involvement in its activities. This may involve main streaming key results of its research work using different means, such as policy briefs into channels of communication with all stakeholders, particularly government officials.
2. Conveying and sharing of introductory and advanced Knowledge with researchers in different disciplines on climate change impacts, vulnerability and adaptation. This may take the form of training workshops as well as networking and supporting their research activities whenever possible with needed information and data.

## 5. Legal framework

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Coastal areas in Egypt are governed by a number of laws focusing on coastal land use control and management including Law 12 of 1984 and Law 4 of 1994 modified by Law 9 of 2009. According to Law 12 of 1984, it is prohibited to construct any facilities within the range 200 meters inwards from the shoreline along the northern coast of Egypt (on the Mediterranean).

*"It shall be prohibited to build any facilities in Egypt's Northern Coast overlooking the Mediterranean Sea along the coast from the western borders of the Republic till the Eastern borders for two hundred meters away from the coastal water line" (Article 86).*

The Law then stipulates that the range of prohibition is determined by the Egyptian Public Authority for Shore Protection.

*"The Egyptian Public Authority for Shore Protection shall demarcate the final prohibition line based on its survey in this regard. This line after demarcation shall be the final line that should not be trespassed by establishing any facilities. The prohibition stated in article 86 shall be in effect till the final line is marked off by the Authority and all the parties concerned are informed to abide by the prohibition, after that the line stated in article 86 shall be cancelled" (Article 87).*

Yet, the Law allows for exemptions allowing for constructions within the prohibition range (200 meter) in some vague exceptional cases.

*"In case of extreme necessity that would require establishing facilities of a special nature inside the prohibition referred to in article 86, it shall be stipulated to obtain the approval of The Egyptian Public Authority for Shore Protection in advance. The approval should include the necessary protection works determined for the facility"* (Article 88) (General Authority for Official Print Affairs, 2012 a).

According to Law 4 of 1994, modified by Law 9 of 2009:

- It is prohibited to issue building permits for the construction of any establishment on the seashores of the Arab Republic of Egypt at a distance of 200 meter inwards from the shoreline (Article 73) (General Authority for Official Print Affairs, 2012 b).

The Law states that any infringement of such probation is punishable by imprisonment and a fine of no more than L.E. 10000. Additionally, the Law stipulates that any construction work should be demolished by the authority at the infringer's expenses (Tarek, 2012). However, article 88 of the same provides vague and ambiguous exemptions to the probation, with the pre-approval of the General Egyptian Authority for the Protection of Coasts in "cases of severe urgency" (Article 88) (General Authority for Official Print Affairs, 2012 a). Generally, it was argued that punishment and fine established in both laws 12 of 1984 and Law 9 of 2009 do not represent real deterrent (Tarek, 2012).

## 6. Institutional setup

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The above mentioned Laws dealing with coastal areas designate those institutions responsible for Law enforcement, yet not in an explicit and non-conflicting manner. For example, The Irrigation and Drainage Law no. 12 of 1982 (article 87) identified The general Egyptian Authority for Shore Protection as the entity responsible for the identification of final probation line along the coasts of Egypt. The Authority should inform all other bodies of the dimensions and boundaries of this final line (Articles 87 & 88) (General Authority for Official Print Affairs, 2012 a).

The Egyptian Public Authority for Shore Protection, which is affiliated to the Ministry of Water Resources and Irrigation, was established in 1981 by The Presidential Decree no. 261/1981. The Authority is responsible for:

- Preparing the general planning for shore protection activities and projects
- Develop master plans & prepare the technical designs for new development projects on the seashores
- Develop pilot projects which serve the Authority activities in cooperation with the different authorities and Egyptian universities and foreign universities (EMWIS, 2013).

Law no. 4 of 1994 modified by Law 9 of 2009 has meanwhile included the Egyptian Environmental Affairs Agency (EEAA) as one of the bodies that are responsible for managing coastal area and shoreline in Egypt. The Law stipulated that any constructions within the prohibited range should be approved by the Egyptian Authority for the Protection of Beaches in coordination with the EEAA (Article 74) (General Authority for Official Print Affairs, 2012 b).



Egyptian Environmental Affairs Agency (EEAA) was established in 1982 by the Presidential Decree no.631/1982. According to the Law 4/1994 for the Protection of the Environment, the Egyptian Environmental Affairs Agency (EEAA) was restructured with the new mandate to substitute the institution initially established in 1982. At the central level, EEAA represents the executive arm of the Ministry. EEAA has a central department for Climate Change that is responsible for dealing different aspects of climate change vulnerability, mitigation and adaptation (EEAA, 2013).

There is also the General Authority of Fisheries, Ministry of Agriculture, which is charged with maintaining and enhancing productivity of fisheries and wetlands. The Environment and Wetland Police is responsible for implementing the environmental law protecting the environment as well as monitoring wetlands and removing any encroachment on such areas. Governorates have the authority to issue permits, after consultation with EEAA and other bodies in charge of coastal areas, for development in coastal areas.

It could be argued accordingly that the Laws associated with controlling and managing coastal areas, which by nature require considerable coordination among different government and non-government bodies, do not provide a sound base for this to happen. This in turn may adversely affect any efforts to adapt to climate change in coastal areas, especially in the case of sea level rise.

## 7. Policy framework

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Since early 1990s, Egypt joined the global concerted efforts dealing with climate change. During this era Egypt participated in the conferences and negotiations that led to the signing of the Kyoto Protocol in 1998, which stipulated that the signatories shall implement the mechanisms set forth in the Protocol presented in 2005 to mitigate climate change. Egypt was present at The World Conference on Disaster Reduction (WCDR) held in Cope, Hyogo, Japan, from 18-22 January 2005, in accordance with the resolution adopted by the United Nations General Assembly. During the Conference, the Hyogo Framework for Action 2005 - 2015: Building the Resilience of Nations and Communities to Disasters was developed to promote a strategic approach reducing vulnerabilities, risks and hazards (IDSC, 2011).

In 2011 the National Committee for Crisis/ Disaster Management and Disaster Risk Reduction, which is affiliated with the Information and Decision Support Centre (IDSC) – Cabinet of Ministers in Egypt, has developed a National Strategy for Adaptation to Climate Change and Disaster Risk Reduction. The strategy was based on the findings of the first and second communication reports prepared within the framework of the UNFCCC (IDSC, 2011).

Egypt's National Adaptation Strategy adopted a sectorial approach in considering adaptation to climate change focusing on: coastal areas, water resources, agriculture, tourism, health, population, inhabitants, and roads. Meanwhile, the strategy did not consider the energy sector as the strategy focused only on adaptation, and not mitigation, to climate change (IDSC, 2011). It could be argued that the energy sector should be considered not only from a mitigation perspective, but also from adaptation perspective. This is due to the fact that changing climate may have significant impacts on both energy supply and demand and thus has to adapt to changes in those two sides.

The National Strategy has three main goals as follows:

- Increasing the flexibility of the Egyptian community in dealing with impacts of climate change;
- Enhancing the capacity to absorb and contain climate-related risks and disasters; and
- Reduction of climate change – related disasters.

These goals, it could be argued, are too general with no clear focus and were not supported by any specific objectives. Additionally, they do not differentiate between gradual and sudden impacts. Furthermore, the use of terminology was found to be quite different from that typically used in the climate change arena. For instance, the first goal seems to be dealing with community resilience rather than flexibility. The third goal, in its current format, may give the impression that it focuses on mitigation efforts. Rather, it should have focused on reducing impacts/damage of climate related disasters rather than reducing the disasters themselves, which are of more relevance to mitigation.

Moreover, the strategy suggests the following measures to achieve the above-mentioned goals:

- Define the risks and crises associated with climate change, while taking into account a precise scientific handling of the state of uncertainty on the current prospective impacts and their extent in terms of geographic and time ranges.
- Integrate the adaptation plans of different sectors in the five-year plans and national development programs.
- Build a “Safety First” culture and raise community awareness, taking into consideration that climate change constitutes a long-term phenomenon.
- Enhance community participation at all levels (governmental, non-governmental, popular, and civil society).
- Promote regional and international cooperation and entrench current initiatives of adaptation to climate change.
- Monitoring, assessment, and follow-up (IDSC, 2011).

The suggested measures are missing some elements. For example, there is a need, before attempting to integrate the adaptation plans, to translate this strategy into operational overall, sectorial and community level plan(s). For this to be achieved such a work should adopt both the top-down and bottom-up approaches.

## 8. Stakeholder Mapping: A consultative approach

As the number of stakeholder groups, bodies and/or individuals is usually very large they cannot all be considered for inclusion, at the same footing, in a consultation process. Accordingly, the developed list of stakeholders, above, was employed to identify a list of key stakeholders across the entire stakeholder spectrum for participation in a consultative stakeholder mapping<sup>4</sup>.

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<sup>4</sup> Stakeholder mapping is a collaborative process, involving multiple perspectives, to determine a key list of stakeholders across the entire stakeholder spectrum. Functionally, Stakeholder mapping is a systematic approach to prioritize stakeholders and identify the extent of their involvement.

## 8.1 Methodology

Stakeholder mapping was carried out through a participatory approach, in which a number of key stakeholders were consulted. For that purpose, a consultation workshop syllabus and agenda were prepared. Thereafter, representatives of the key stakeholders were invited to participate in a consultation workshop, which was held on 01<sup>st</sup> of August 2013.

The consultation workshop involved representatives of six key stakeholders' groups at both national and local levels (Figure 5 and Table 2). Each stakeholder representative was asked to talk briefly about:

- His/her organization.
- Its past and current experience in the field of climate change.
- Its vision concerning impacts of climate change.
- The main issues and gaps in the field of climate change.
- Any actions or plans to deal with climate change and associated sea level rise.
- Other key stakeholders' groups that should be involved in the future work on climate change.



Figure (5): Stakeholder consultation workshop held on 01<sup>st</sup> of August 2013

Based on these brief talks, all participants were asked to contribute to a consultative stakeholder mapping exercise through identifying and then assessing interests, attitude, power and influence of potential stakeholders. The process of stakeholder mapping was accordingly carried out through three main phases namely: listing relevant stakeholders, assessing stakeholders' value and behavior, and visualizing and identifying stakeholder involvement.

Table (2): List of participants in consultation workshop

Name	Position	Affiliation
Prof. Ibrahim El Shenawy	Director	Coastal Research Institute (CoRI), Ministry of Water Resources and Irrigation
Dr. Mohamed Ismael	Manager	Central Department of climate Change, Egyptian Environmental Affairs Agency (EEAA) Ministry of State for Environmental Affairs
Dr. Mosaad Kotb	Manager	Central Lab. of Agricultural Climate (CLAC) Ministry of Agriculture
Eng. Engy Shehata	Director	Adaptation Department Director Egyptian Environmental Affairs Agency (EEAA)
Mr. Akram El Dakak	Director	Environmental Affair Department Alexandria Governorate
Mr. Wessam Khaled	Administrator	Fisheries Authority - Kafr El Sheik Ministry of Agriculture
Dr. Zaki Sharawy	Assist. Prof.	National Institute of Oceanography and Fisheries (NIOF) Ministry of Scientific Research

- **Listing relevant stakeholders**

Using the list of stakeholder groups developed earlier (See section 4) a more concise list of potential stakeholders in the case of the Nile Delta vulnerability to climate change was prepared. To help participants, a the list of identified stakeholder groups, shown above in Figure 4 above, was provided to participants, who were asked to modify the list as they may desire.

- **Assessing stakeholders' value and behavior**

This step aims to identifying each stakeholder's interest, attitude, power and influence towards the Nile delta vulnerability to climate change. Each item was assessed in quantified approach using weighting score ranging between (0) and (1). The same approach was employed to assess stakeholders' interests, with each stakeholder was given a relative score ranging between totally interested and totally not interested.

Meanwhile, attitude was given a relative score ranging between totally supportive and strongly opposed.

As the interest and attitude of each stakeholder group summarize its behavior in relation to the considered issue, each stakeholder behavior was calculated as the average sum of its interest and attitude scores.

Also, this step includes estimating the level of power and the degree of influence each stakeholder. Each stakeholder was given, in terms of level of power, a relative score ranging between very strong and very weak.

Meanwhile, stakeholder influence was given a relative score ranging between having the power of veto and very limited influence. Both of power and influence provide an insight the value of each stakeholder group. Thus value of each stakeholder was calculated as the average sum of its power and influence scores.

- **Visualizing and identifying stakeholder involvement**

This step aims primarily to present various stakeholders groups in a visual presentation, for better understanding of the whole situation, using their behavior and value scores, assessed in the previous step. Such a visual representation can, easily, assist in deciding the degree of involvement of different stakeholders, as different stakeholders were categorized, according to their behavior and value, into the following four groups:

- Group 1: consists of those stakeholders that have high value and high behavior and thus should be managed closely.
- Group 2: involves those stakeholders which have high value and low to medium behavior and thus should be kept satisfied.
- Group 3: includes those stakeholders that have low value, but high behavior, and thus should be kept informed about the work relevant to the considered issue.
- Group 4: Involves those stakeholders, which have low value and low behavior and those should be monitored.

## 8.2 Stakeholder mapping: the outcome

The results of consultation process were visually represented in a provisional a graph illustrating various stakeholders by group, level, value and behavior (Figure 6). The value of each stakeholder was also, represented in this graph through a relative symbol (circle). Meanwhile, the behavior of each stakeholder was reflected in the location of each stakeholder in related to the axis scale.

Furthermore, the degree of involvement of different stakeholders was identified. For that purpose the behavior and value scores assessed by the participants, were represented in a scatter diagram (Figure 7). The resulted scatter diagram subdivided the stakeholders into the following categories:

- Stakeholders that should be managed closely including:
  - Ministry of Agriculture;
  - Ministry of Water resources and irrigation;
  - Ministry of Housing;
  - Ministry of State for Environment, represented in EEAA;
  - Authority of shore protection; and
  - Governorates of the Nile delta Coastal zone.
- Stakeholders that should be kept satisfied including:
  - Ministry of Defense; and
  - Ports' Authorities.
- Stakeholders that should be kept informed including:
  - Fisheries Authority;
  - Ministry of housing;
  - Academic and research institutes;
  - Fishermen and farmers associations;
  - Ministry of Foreign Affairs;
  - NGOs;
  - Ministry of Health; and
  - Local residents of the Nile delta coastal zone.

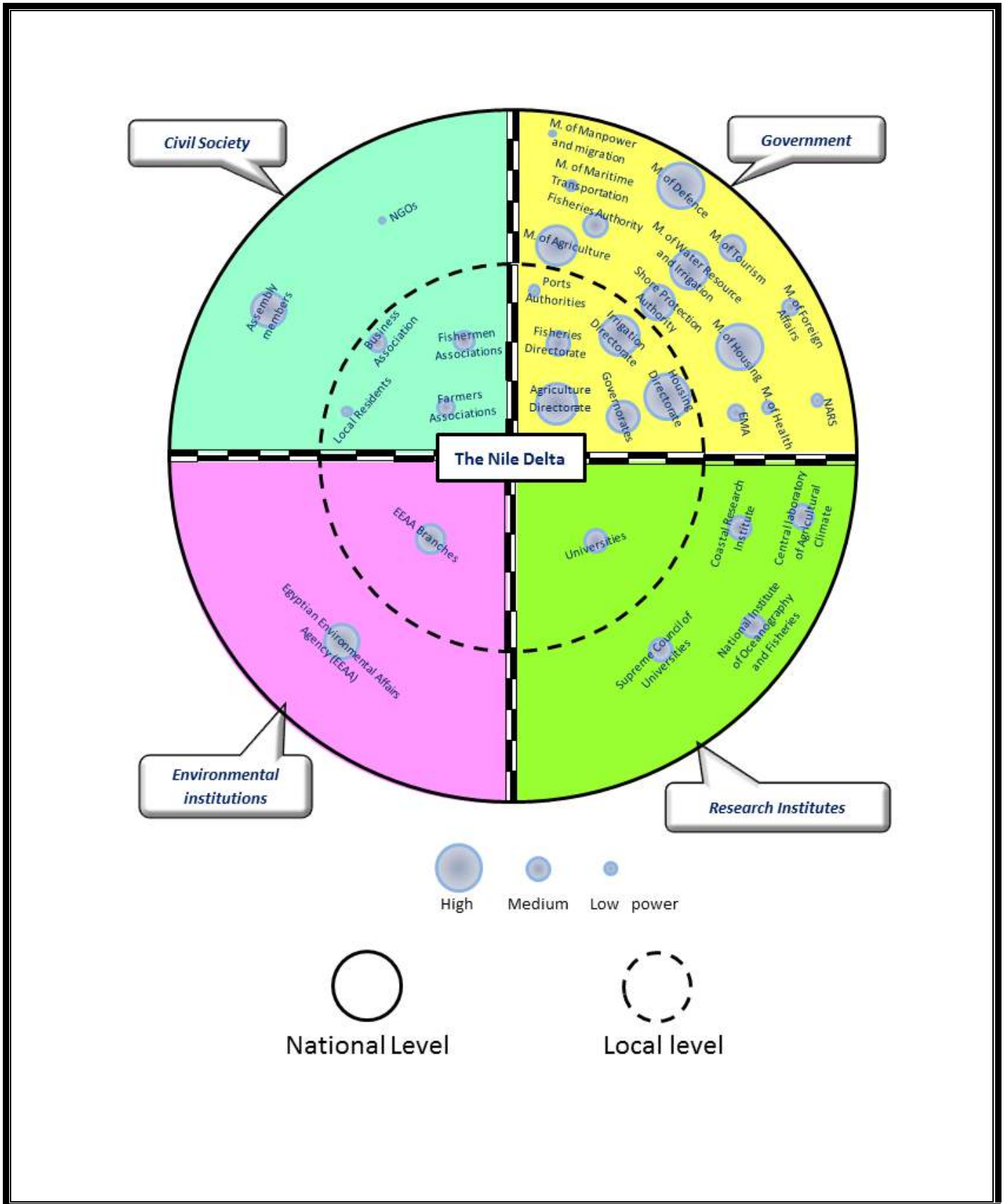


Figure (6): Different stakeholders groups in case of the Nile Delta vulnerability to climate change by group, level, value and behavior



- Stakeholders that should be regularly monitored including:
  - Local authorities;
  - Egyptian Meteorological Authority;
  - National Authority of remote sensing;
  - Business association; and
  - Ministry of Manpower and migration.

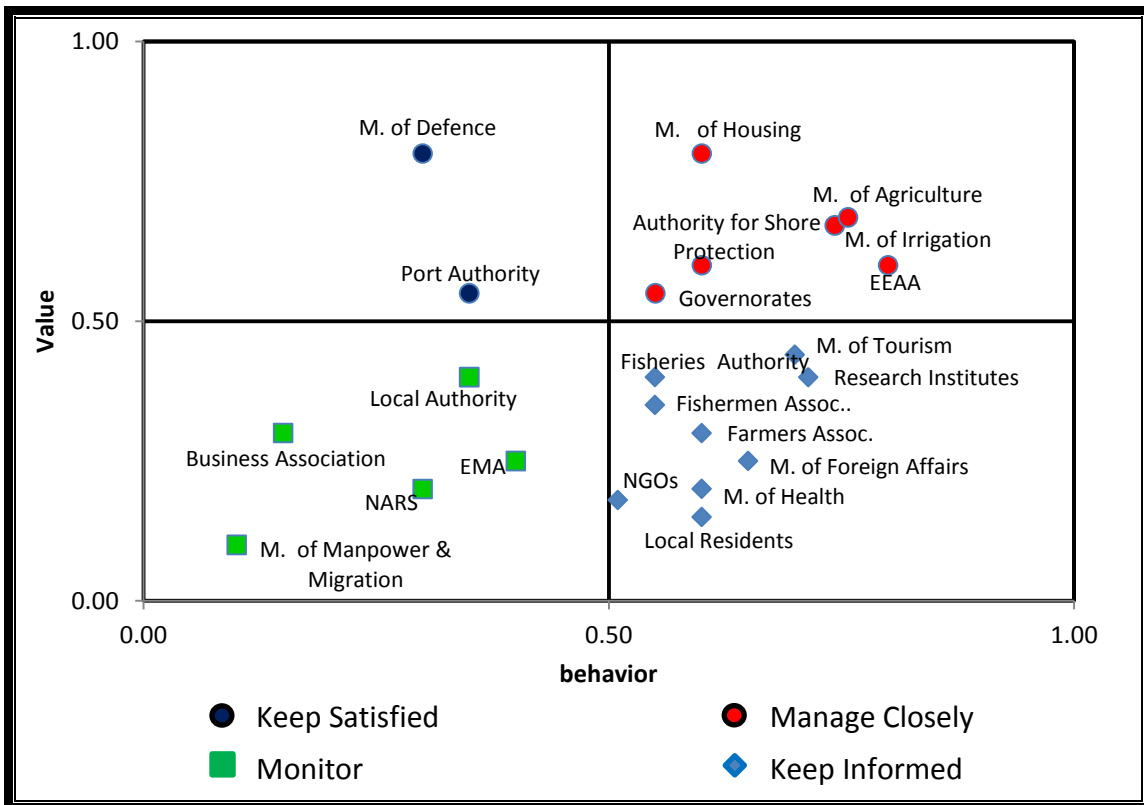


Figure (7): levels of involvement of different stakeholders groups in case of The Nile Delta vulnerability to climate change

## 9. Conclusion

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The main issues of concern that could be raised based upon the conducted stakeholder analysis may suggest that there is:

- Existence of large number of stakeholders with different interests, which are in sometimes conflicting.
- Lack of cooperation and coordination on climate change among different stakeholders, even within the same sector.
- Centralization in governmental bodies sometimes limits the changes of local units to deal with climate change impacts and vulnerabilities.
- Lack of integrated coastal area management that would coordinate efforts in coastal development may adversely affect any potential actions for adaptation to climate change in such areas.
- A tendency for more powerful entities to enforce their views and development ideas, especially with the absence of any concrete policy and/or strategies for coastal area management.
- Limited knowledge and capacity among various stakeholders on climate change impacts, vulnerability and adaptation.
- Lack of updated and accurate data needed for assessing the climate change and associated SLR impacts on the Nile Delta
- Lack and sometimes absence of climate change impacts, vulnerability and adaptation work, which make the Nile Delta very vulnerable to potential changes in climate change and associated sea level rise.
- A need to review and modify existing adaptation strategy for Egypt, as it is very general and need to be tailored to the specific conditions of Egypt in general and its coastal areas in particular.

It can be argued that top priorities for ARCA to alter the situation and enable an environment for action on climate change adaptation involve:

1. Awareness raising with different stakeholders, which would not only involve convey knowledge but attempt to cause change in attitude. This would require capacity building activities and also continuous updating and involvement in its activities. This may involve main streaming key results of its research work using different means, such as policy briefs into channels of communication with all stakeholders, particularly government officials.
2. Conveying and sharing of introductory and advanced Knowledge with researchers in different disciplines on climate change impacts, vulnerability and adaptation. This may take the form of training workshops as well as networking and supporting their research activities whenever possible with needed information and data.

## 10. References

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