



ARCA Newsletter

Alexandria Research Center for Adaptation to Climate Change



Editorial

Volume 1, Issue 2

December 2012

It is essential to understand that climate change is not only an environmental issue but rather a cross-cutting theme affecting all sectors and venues of life and thus must be seen as a developmental issue that needs to be handled at different policy and decision making levels in any country.

Alexandria Research Center for Adaptation to Climate Change (ARCA), an IDRC-sponsored project, attempts to become a sustainable hub in the field of climate change adaptation. ARCA workplan is multi-tasked with capacity building for researchers, in different disciplines, interested in climate change. These capacity building workshops deal with; technical training on various climate change topics and research soft-skills training for researchers.

There is also capacity building and awareness raising workshops targeting various stakeholders at different levels in order to create an enabling environment for

knowledgeable and participatory policy and decision making.

A research framework was developed to integrate different forms of research, including periodically announced competitive calls for proposals for small research grants, research work conducted by ARCA core staff members and review papers conducted to assess the status of climate change research in different disciplines in Egypt, into one framework.

The research themes and topics considered a mix touching on the needs and concerns of different stakeholders as well as those of technical importance, which may enhance the chances of integrating climate change issues into sectoral policy and decision making (See page 3).

ARCA also considers networking with individual researchers, research and academic institutions as well as various stakeholders as a topic of utmost importance. ARCA, in this respect, opted for institutionalized forms of cooperation with different stakeholders in order to ensure its future sustainability (See page 2).

The past six months of the project involved undertaking a wide range of activities, progress being made in terms of the capacity building activities with six training workshops for researchers and one for a stakeholder (See page 2).

In order to ensure effective and efficient working system at ARCA and also to consider its sustainability, a management strategy was developed.

Inside this issue:

| | |
|--|---|
| ARCA team member activities | 1 |
| Capacity building activities | 2 |
| Networking and partnership | 2 |
| Research activities | 3 |
| Small research grants | 3 |
| Forthcoming activities | 3 |
| Research article | 4 |

Special points of interest:

- ARCA small research grants scheme.
- ARCA training activities.
- Strengthening partnership from institutional point of view.
- ARCA core-team research work.

ARCA Core Team Member Activities

Meetings

- 8-11/9/2012

ARCA Core-team members participated in a Workshop on Economic Analysis of Adaptation Options to Climate Change organized by IDRC in Nairobi, Kenya.

- 25-29/11/2012

Prof. Mohamed Abdrabo participated in the AR5 IPCC Group II

Lead author meeting held in Buenos Aires.

- 2/12/2012

Prof. Mohamed Abdrabo participated as a discussant/panelist at a day-long consultative workshop organized in Doha, Qatar in parallel to the COP18/UNFCCC negotiations.

Publications

A research paper was published by a peer reviewed international journal (Environmental Assessment and Monitoring). The paper was entitled: "Vulnerability of the Nile Delta coastal areas to inundation by sea level rise"



Workshop “assessment of socioeconomic impacts of climate change” (CC-IN-02) held on 17-18/10/2012

“The third six months of the project involved undertaking six training workshops for researchers and one workshop for stakeholders”

Capacity building activities

According to ARCA training plan, the 3rd six months training activities involved carrying out ten workshops, of which three six intended for researchers, while the remaining four were intended for stakeholders including policy and decision makers.

A total of six workshops for researchers and one training workshop for stakeholders were organized during the 3rd six months period of the project. These training workshops dealt with a variety of topics ranging between climate change impacts, vulnerability and adaptation and soft research skills.

Out of the seven workshops, three workshops, covering the following topics were undertaken:

- ◆ How to develop a project proposal;
- ◆ Assessment of socioeconomic impact assessment of CC; and
- ◆ GIS for socioeconomic applications

Concerning the first workshop, entitled “How to develop a project proposal” was

organized based on a formal request received from the Medical Research Institute, Alexandria University to organize this workshop for their researchers. Participants were encouraged to apply for the small research grants on health impacts of climate change in Egypt, which is a new research topic.

The second workshop, entitled Assessment socioeconomic impact assessment of CC, was organized to meet the increasing demand for such a topic. Such a demand was mainly perceived from the feedback of participants in previous workshops.

Meanwhile, the third workshop, entitled “GIS for socioeconomic applications”, was organized for the staff of the Egyptian Environmental Affairs Agency (EEAA), which is one of the main governmental stakeholder groups. The same workshop, “GIS for socioeconomic applications” was also held two more times to meet the significant demand for it from

researchers at various research and academic institutions in Egypt.

The seventh workshop, which is related to the soft skills research skills and research tools, entitled “Applied econometrics with STATA”, was held in December 2012, with Xavier Vollenweider, a research fellow with London School of Economics and the University of Geneva, acting as the workshop instructor.

The total number of applicants to the organized seven workshops was 149 researchers, 69 out of those applicants were selected for participation. Participants were affiliated to eight different universities.

Those participants were from research institutes affiliated with the Ministry of Water Resources, Ministry of Agriculture and Ministry of Scientific Research as well as Egyptian Environmental Affairs Agency.

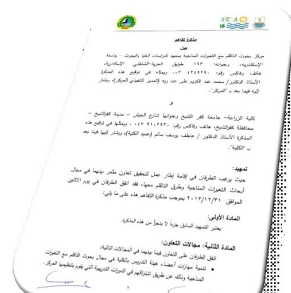
Networking and partnership

ARCA in its attempt to become a hub for climate change adaptation research in Egypt has focused on developing a number of MOUs with different stakeholders. One MOU was developed and signed with Faculty of agriculture, University of Kafr -El-Sheikh, which was signed on 31st of December 2012.

Another one was signed with the Faculty of Agriculture, University of Al-Azhar during January 2013.

Additionally, as recommended by the management strategy developed for ARCA, to immediately strengthen ARCA’s credibility and develop stronger research to policy linkages, EEAA presented as

the most appropriate initial focus in terms of government partnerships, a MOU is being finalized with the EEAA. The MOU developed focuses on different forms of cooperation. The MOU is expected to be jointly signed by ARCA and the Chairman of the EEAA in the coming month.



MOU with faculty of Agriculture, University of Kafr El Sheikh, signed on 31/2/2012

Small Research Grants

1st round call for proposals:

Out of a 16 concept notes were submitted for 1st call for proposals, three were short-listed and asked to develop full proposals. Two of those shortlisted were found up to the eligibility standards for funding. Thereafter, the two eligible applicants were informed about such a deci-

sion, contracts signed and first payment was made to each.

2nd round call for proposals:

The research themes for the 2nd round of proposals for the small research program included:

- ◆ Impacts of sea level rise on groundwater levels.

- ◆ Impacts of salt water intrusion on buildings and infrastructure.

- ◆ The potentials for using the Coastal International Highway to protect the Nile Delta from inundation due sea level rise.

Six concept notes were submitted and the pre-selection process is ongoing.

“Out of 16 concepts notes submitted for 1st round of ARCA Small research Grants program, two were approved for funding”

Research activities

In order to ensure effectiveness of research work conducted A research activities framework was developed to guide research work at ARCA and define the mechanism to be used for different types of research. These mechanisms including first recruiting researchers to conduct reviews of the current status of climate change research in different disciplines; in this context two researchers were recruited to assess climate change

research work in the fields of human health and livestock. Second is the small grants research scheme (details about its progress presented below).

Third is the research to be conducted by ARCA core staff members and their students, with two M.Sc. Students were awarded scholarships to conduct their M.Sc. research work.

As for ARCA core members research work, two pieces of

research work were conducted:

- ◆ Economic valuation of SLR impacts on agriculture in Damietta governorate
- ◆ Projection of built-up areas expansion in Beheira governorate coastal area

Meanwhile, a research paper on physical vulnerability of the Nile Delta coastal area to inundation by SLR was published by the Environmental Assessment and Monitoring Journal.



GIS analysis Model developed for delineating the changes in land use/ land cover pattern

Forthcoming ARCA events

Capacity building activities:

- Climate change & Agricultural sector: impacts, vulnerability and adaptation, February 2013
- Climate change & fisheries: impacts, vulnerability and adaptation, March 2013
- Climate change & human settlements: impacts, vulnerability and adaptation, April 2013
- Climate change: impacts,

vulnerability and adaptation, April 2013

- Economics of Adaptation to CC, May 2013

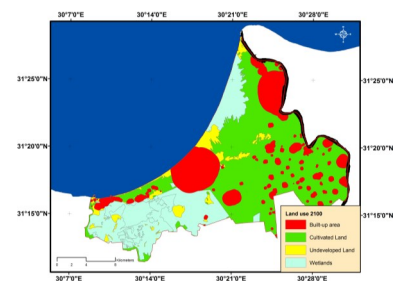
3rd call for research proposals:

It is intended to have more rounds of call for proposals under the Small Research Grants program to be announced every 2-3 months starting February 2013. Each call will involve a

variety of themes related to impacts, vulnerability and adaptation to climate change in different sectors.

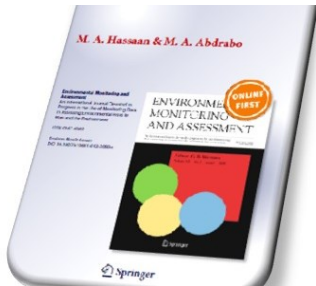
Research activities:

A number of research activities are planned to be undertaken by ARCA core staff during the coming months in line with ARCA's developed research framework.



Predicted land use pattern in the year 2100

Article: Vulnerability of the Nile Delta coastal areas to inundation by sea level rise



A research paper published in the Environmental Assessment and Monitoring Journal
<http://www.link.springer.com/article/10.1007%2Fs10661-012-3050-x>



Alexandria Research Center for Adaptation to
Climate Change (ARCA)

163 Horreyia Avenue,
Chatby
Alexandria
Egypt

Phone: +2 03 42949290
Fax: +2 03 42949290
Email: info@arca-eg.org

www.arca-eg.org



Sea level changes are typically caused by several natural phenomena, including ocean thermal expansion, glacial melt from Greenland and Antarctica. Global average sea level is expected to rise, through the twenty-first century, according to the IPCC projections by between 0.18 and 0.59 cm. Such a rise in sea level will significantly impact coastal area of the Nile Delta, consisting generally of lowland and is densely populated areas and accommodates significant proportion of Egypt's economic activities and built-up areas.

The Nile Delta occupies an area of 23,850.76 km², contains the most fertile land in Egypt. The Nile Delta is very heavily populated, with about 1600 inhabitants/km², and contributes 30-40% and 60% of agriculture and fish catch production, respectively. It also includes important urban centers with concentration of economic activities, with more than half the manufacturing industry located there.

The Nile Delta has been examined in several previous studies, which worked under various hypothetical sea level rise (SLR) scenarios and provided different estimates of areas susceptible to inundation due to SLR.

The paper intends, in this respect, to identify areas, as well as land use/land cover, susceptible to inundation by SLR based upon most recent scenarios of SLR, by the year 2100 using GIS.

To identify areas susceptible to expected SLR, a GIS, containing geo database, was built for the study area consisting of a number of feature classes representing various physical and manmade features in the study area. The approach employed to identify the spatial extent of areas susceptible to inundation, under each scenario, was based on comparing topography of the area and expected relative SLR.

The relative sea level change for the Nile delta was calculated as the combination of : global change in sea level and vertical land movement.

For global seal level rise (SLR), based on previous studies, three scenarios for SLR, that suggested the highest projected SLR up to the year 2100 ; namely 59, 140 and 200 cm. Additionally, a fourth scenario was also considered to account for the impacts of land subsidence in the Nile Delta, even in the absence of any rise in sea level.

The vertical land movement of the Nile Delta has been examined in a number of previous studies, focusing on assessing such movement from a static perspective. It was suggested, in this respect, that the rates of subsidence of the Nile Delta during Holocene varied widely along different parts of the northern sections of the Nile Delta, ranging between 0.5 and 4.5 mm/year. It was also argued that the highest rates during Holocene

were experienced in Manzala Lake and around Damietta and Rosetta Nile branches promontories. Becker and Sultan, in a more recent study, reported similar results.

Projected relative SLR to be experienced in the northern section of the Nile Delta would range, up to the year 2100, between 64 - 104, 145 - 185 and 205 - 245 cm for highest projected SLR estimates.

The results indicate that about 22.49, 42.18, and 49.22 % of the total area of coastal governorates of the Nile Delta would be susceptible to inundation under different scenarios of SLR.

Also, it was found that 15.56 % of the total areas of the Nile Delta that would be vulnerable to inundation due to land subsidence only, even in the absence of any rise in sea level.

Moreover, it was found that a considerable proportion of these areas (ranging between 32.32 and 53.66 %) are currently either wetland or undeveloped areas. Furthermore, natural and/or manmade structures, such as the banks of the International Coastal Highway, were found to provide unintended protection to some of these areas. This suggests that the inundation impact of SLR on the Nile Delta is less than previously reported