



CORPUS PUBLISHERS

# Archives of Agriculture Research and Technology (AART)

Volume 1 Issue 3, 2020

## Article Information

Received date: May 18, 2020

Published date: June 29, 2020

## \*Corresponding author

Kaltham Al-Ghanim, Qatar University,  
Doha, Qatar

Distributed under Creative Commons  
CC-BY 4.0

**Keywords** Natural resources;  
Organisms; Ecosystems; Productivity;  
Industrialization; Organic materials

Review Article

# Why do we need to integrate the Indigenous culture to achieve Holistic Sustainability?

Kaltham Al-Ghanim\*

*Qatar University, Doha, Qatar*

## Abstract

This paper proposes a vision of the re-discovery of Arabian Gulf communities' culture and a revival of local knowledge in a bid to support, promote, and move towards a more sustainable future for the region. Information and skills about the local desert environment, formed over many years, traditional ways of doing things and methods for coping with the harsh environment, may provide invaluable insights into how the region in general, and Qatar in particular, can develop in harmony with its environment rather than against it. By championing local methods and cultural norms, natural resources can be conserved, biodiversity protected and natural environments restored. This paper explores local knowledge by referring to older local experts on some of the techniques they used to deal with environmental conditions. The study revealed that most of the old ways of dealing with natural resources take into account two basic elements: protection and support the environment to renew. These two concepts must be integrated within the goals of development projects in the region that are essentially suffering from scarcity of natural resources.

## Introduction

A man-environment relationship existed through the ages. The environment is a decisive element that influences the nature of human activities and their way of thinking, behavior and appears mainly in traditional societies; thus, culture is a product of man's interaction with environmental circumstances. In advanced industrial societies, the man was able to control environmental elements with technology - a reformer and sometimes a destroyer of the environment. Since the beginning of the nineties environmental change and resource conservation have become national and international goals. Attention is increasingly focused on the development of solutions to address the chaotic situation of environmental degradation and the systematic destruction of habitats that have wiped out significant aspects of the biodiversity of our planet [1]. Unfortunately, these solutions do not typically take into consideration the role of local communities' culture in the conservation of the environment and the vital role that culture plays in shaping responses to environmental concerns [2] especially traditional culture methods, which have a decisive role in conserving natural resources [3].

When nations seek to achieve economic growth in many cases it depletes natural resources and affects the opportunities of future generations to enjoy that resource. Here is the heart of the problem; the contradiction between opportunities for growth and the desire to equably maintain the natural environment for generations to come. Furthermore, how can we sustain development opportunities, and ensure the renewal of resources drained by the process of development, especially in a world that is heading towards the unification of manufacturing methods, standardized investment, and a rapidly spreading global consumer culture? It is a conundrum that has led many to propose sustainable development approach, which enables both development and conservation to be achieved without each destroying other [4].

Historically, traditional local Knowledge has not been given the same weight as scientific Knowledge, despite its importance and usefulness in many situations and locations to protecting the environment. However, since 1980. Efforts to document and assess Traditional Environmental Knowledge (TEK) have grown exponentially in recent decades, stimulated by the concomitant rise in its perceived value. This reappraisal is a direct consequence of global environmental and social change as well as numerous threats to the survival and integrity of indigenous peoples and their cultural heritages around the world [5]. Now many studies tried to understand the link between social and cultural context and natural sciences to improve ecological management and sustain the ecosystem [6].

This is surprising given that typically traditional local Knowledge and skills have been tried and tested over a long period. The recruitment of local Knowledge may provide invaluable support to governmental programs and individual local efforts to conserve, improve, and renew natural resources. Since 1980 there where are two trends in the study of the role of culture in the conservation of natural resources and sustainability. There are two trends for the approached, which focuses on the role of culture in the conservation of natural resources and sustainability, both links between culture and the human behavior impact the environment. This suggest the importance of the environmental awareness in confronting these behaviors [7].

First trend, links between culture and human behaviors, which is harmful to the environment and the role of environmental awareness in the face of such behaviors. Second trend, focus on the importance of rediscovery and the revival of environmental Knowledge, a traditional community that has a decisive role in conserving natural resources [8]. These approaches focus on the importance of rediscovery and the revival of indigenous Knowledge [9] and argues that the achievement of sustainable development is needed to put in the consideration the local culture and social norms in the formulation of sustainable solutions to the problem's communities face. The study of local culture, and the use of a traditional environment knowledge approach, provides an excellent potential for environmental sustainability [10]. It goes beyond the narrow concept associated with the environmental context to include social and cultural diversity of the population; by giving more considerable attention to traditional local Knowledge sustainable development can become real. People's cultural background can play a dual role in the impact on the environment. Some of the preferences and social norms associated with a particular topic or a specific object lead to an increased demand for and consumption of this natural resource. On the other hand, man causes harm to the environmental component or some of its elements because of the use of wrong methods of cultivation or overgrazing or consumer and commercial fishing of some rare organisms.

Local Knowledge not thud the same appreciation which given to scientific Knowledge, despite the importance and usefulness. The importance of recruitment of local Knowledge as information and methods have been tried and its success in natural resource conservation and regeneration, such as multiplication and diversification and improving the productivity of the population and their ability to manage natural resources on which they depend sustainably contributed to the improvement of natural resources such as diversification. This approach considers local communities as the primary source of environmental change. That culture can play a crucial role in maintaining natural resources but can also contribute significantly to its destruction. Rediscovery of environmental knowledge heritage and the revival of past communities that have become extinct may have a decisive role to play in preserving natural resources [11].

The study of local culture and employing social context approach provides an excellent potential for environmental sustainability. By going beyond a narrow conception of the environmental context to include the social context, economic system and cultural dynamics of the population, there is a higher likelihood that solutions can be developed to problems of sustainability that are more appropriate to the historical relationships with the environment (often inherently sustainable) that have been engendered in the local culture. By giving more considerable attention to local culture and the process of integrating the values, traditions and history of the population within this framework, sustainable development can become real [12].

From this point of view, every culture has assimilated certain underlying conditions for the regeneration of its ecosystems. The application of its productive techniques thus induces social processes of conservation and transformation of the environment that guarantees a sustained use of its resources [13]. The importance of utilizing the local Knowledge as information and methods have been tried by local people, depending on its success in natural resource conservation and regeneration, such as multiplication and diversification and improving the productivity of the population and their ability to manage natural resources on which they depend in a sustainably way contributed to the improvement of natural resources such as diversification.

Some cases show that the scientific local ecological management could benefit from local Knowledge and build more explicit collaboration with community-based systems of resource management for the implementation of policies as experiments [14]. It has been some societies made progress in the integration of population in sustainable development programs and enable a culture of environmental sustainability to adjust the environmental behavior, through laws and projects that achieve the sustainability and renewal of natural resources. However, many communities are still far from the subject and this is not limited to developing countries which accuses often exercising behaviors harmful to the environment, but there are many of the major industrialized countries, in fact primarily responsible for the phenomena of negative environmental actions.

Studies have shown lack of success of any development plans in the desert without the local people, because they are better able to understand the problems of their communities and thus contribute to the resolution, has identified the of the many non-governmental organizations that work in scope. Examples of this are many, among them the project which is being implemented in a reserve Brigadier Matroh Egypt, which aims to desalination of sea water to convert it to drinking water, which is implemented by the International Centre for dry land (ICARDA) in cooperation with the Belgian Government, under the auspices of the United Nations and UNESCO, and states that the project is implemented in four Arab countries: Egypt, Tunisia, Syria and Jordan in order to provide reasonable alternatives of living for residents of the territories. The beauty of this project, "said Dr. Bushra Salem Advisory project and a professor of ecology at the University of Alexandria "the participation of nomads supplying the project with local information and support the success of the project in the reign". Finally, perhaps the previous example and other, we can see the role of governments and civil society organizations in the development of the Arab deserts. If not, their best integrates and with the participation of the local population can never succeed any efforts for sustainable development of deserts [15].

Nunavut Research Institute's research protocol (NRI, 1997) indicates that traditional ecological Knowledge is assuming a new status: essentially, it is perceived as including virtually any aspect of research involving Inuit. The document states that traditional Knowledge can be defined very broadly to include Knowledge on all issues associated with life and the environment. Indeed, most research priorities outlined in this Agenda incorporate traditional Knowledge [16]. This understanding of the abilities of the local Knowledge to deal with the ecosystem challenges, conserve and reproduce the neutral resources give the indigenous knowledge chances to be rediscovered and interact with the international global science about the environment and to establish more successful conservation strategies [17]. Therefore, the reserve institutions should rediscover and reintroduced the local Knowledge and experiences to develop a new understanding of the people heritage to deal with the environment problems.

## Modernization and Industrialization in the Arabian Peninsula and the Future of the Natural Resources

In the past people of Gulf lived in harmony with their environment in Arabian Gulf. They developed ways and means that gave them maximum benefits from the scarce environment. The strong relationship among the communities of the pre-oil era in the region and environmental system, it was formed historically by the population they observed the weather and season changes and linked it to their activities. They built environmental Knowledge reflected their relationship with the ecosystem. Conserve natural resources was vital for them to manage the biodiversity, even more than that devised of methods and techniques which helped to renew these resources and that it was confined to the region in which they live and the resources they use [18] (Figure 1). They used palm leaves in the industries such as building small boats, baskets, fans, mats and floor coverings also fishing nets.



Figure 1: Building small boats, Baskets, Fans, Mats and Floor coverings.

### Hadra

Making a fishing method such as, Hadra from dry palm fronds. It consists of pillars of fronds, surrounded by nets. In the olden days they were used strings, but nowadays using the metal net. fish getting into Hadra at the time that the tide comes in and fish can be out from the Hadra when the eternal tide goes out. Hadra it does not lead to the death of marine organisms. The fisherman collects large fish and leaves the small marine creatures. The field study showed that this traditional style is still used in the region especially in the west coast of Arabian Gulf and find no difference of the Hadra which contemporary fishers use than before but also they find the nets slot is very small (1cm) which prevent the small fish from getting out when tide increased [19]. The study indicated that (Hadra) it will help to reserve conserving fish, on the condition that fishing nets slot should be wider (at least 4 cm) to allow fish which did not reach sexual maturity and others kind of small fish which not use as a food to get out and this would ensure complete life cycle of these organisms. Since then, original methods and ways disappeared and the way of life changed with modern technologies presiding (Figure 2).



Figure 2: Hadra- fishing Technique.

**Alkerkor**

Fishing nets were made from organic materials, which are easily biodegradable. Today nets are made from metal, which remains anchored to the sea bed causing harm to living organisms. For example, sometimes the fishermen leave the Kerkor for days and the big fish such as, the local favorite Al-Hamur fish enter abandoned alkerkor to eat small fish and cannot exit leading to their death (Figure 3).

**Almsakr**

A rock barrier built near the beach to reserve fish from the seawater on the tide. They build Almsakr in appropriate locations depending on the anticipated height of the tides. When the water rises above the barrier, the fish can swim freely. This technique reserves small amounts of fish. It does not eliminate all organisms, as the fishing nets currently used. The local population caught quantities of fish in this way regardless of the seasons because they had knowledge about the sea and tide levels from season to season (Figure 4). Since the communities in the Arabian Peninsula entered the stage of modernization, most of the old methods were abandoned and replaced with new technology and sciences knowledge while old Knowledge may be more able to cope with the local ecosystem and challenges such as the lack of the resources, effect of climate changes and pollution (Figure 5).



Figure 3: Alkerkor made from palm tree leaves



Figure 4: Almsakr.

A new kind of relationship between man and the environment has been emerged and change the environmental scene the environment is heading towards losing its previous nature and negatively affect the natural resources and led to the extinction of many organisms (Figure 6).

The GSDP's latest report indicates the impact of over fishing through the last two decades; total landings and the number of fishermen has increased steady over the last 20 years, with landings quadrupling since 1995 from 4,271 tons to 17,690 tones 2008. The increase in landings has generally been for all specie [20]. The environment system in Qatar and other Gulf states face several environment problems such as:



Figure 5: Oil exploration campaigns in Qatar in 1938.



Figure 6: The urban landscape has changed rapidly.

- a) rapid population growth
- b) extensive plans for urban development,
- c) increased social activities
- d) oil spills
- e) shortage of portable water
- f) climate changes
- g) consumer culture

All these factors have resulted in high pressure on ecosystems across the GCC region. For example:

- a) Over-fishing of shrimp and Al-Hamur fish has led to the extinction of these species in Qatari waters.
- b) Using harmful and destructive fishing methods puts more pressure on the marine environment and has led to the extinction or near extinction of many marine species.
- c) The Steller's sea cow, the local name is "Bakart Albahr" is one of these rare Marine creatures in the Gulf, is now under threat and rarely sighted.
- d) Organisms such as mollusca and marine snails that lived near the coast and some fish species have disappeared following the destruction of the natural coastline.
- e) This natural phenomenon was an ideal environment and a refuge for different species to lay their eggs, such as turtles and some species of birds, also under threat from loss



of habitat. Moreover, the Pearl Reservoirs (called “Heart” in the local language) have been destroyed by the activities of the oil and gas industry.

- f) Among the environmental challenges facing Qatar is the existence of environmentally unfriendly behaviors practiced by the population.
- g) Both the terrestrial and marine environments are adversely influenced by economic activities and social and cultural habits. For example, fishing methods using destructive metal fishing nets, reckless driving on coastal areas, insensitive camping that can damage organisms living within these areas.

## Conclusion

The most important element of concern here is the local traditional information about the ecosystem in the region. It is important to strengthen local knowledge systems and indigenous practices as these may be the most appropriate to maintaining the quality of the local ecological environment and biodiversity, to manage resources more sensitively and in productivity ways. That knowledge, formed over hundreds of years of practical experience, was inherited until recently. However, with the community entering a phase of modernization and the import of methods and tools, technology and knowledge from abroad, less attention has been paid to local knowledge, leading to the gradual erosion of this valuable knowledge source, which has the potential to enable local communities to cope with the environmental challenges.

This kind of Indigenous knowledge is under threat across the region and there is an urgent need to collect before it is lost with old experts passed away.

In fact, there are some efforts to gather the traditional Knowledge, these efforts still not organized or classified. In particular, there are no studies exploring the relation between the local culture and environment. Sometimes, people believe have a negative impact on the environment, for example, locals in the region believe that turtle eggs are good for healing from specific types of diseases, this kind of belief affects turtles' annual migration to lay the eggs along the coast. While these attitudes and beliefs do have an adverse effect on the turtles, it is not on the scale of the impact wrought by the destruction of the coastline through urban development; this impact is further and faster than the effects of local culture.

Indigenous Knowledge Approach may be more able to cope with local ecosystem and preserve natural resources. This paper suggests a vision of the re-discovery of local Arabian Gulf communities' culture and a revival of local Knowledge in a bid to support, promote, and move towards a more sustainable future for the region. Information and skills about the local desert environment, formed over many years, traditional ways of doing things and methods for coping with the harsh environment, may provide invaluable insights into how the region in general, and Qatar in particular, can develop in harmony with its environment rather than against it. By championing local methods and cultural norms, natural resources can be conserved, biodiversity protected, and natural environments restored.

The idea of utilizing local culture, heritage, and traditional methods in the region to promote stewardship of the environment became apparent when it was noticed that traditional ways of hunting and fishing did less harm to the environment compared to the new or modern methods. Moreover, some of these traditional methods may renew natural resources and conserve the biodiversity in the Gulf region. What we need is to provide a vision on the rediscovery of useful local culture and environmental Knowledge and any community can seek to methods of conservation of natural resources in order to revive Knowledge of the environment and provide training programs for the population.

It is very important to catalog some of the traditional local techniques and methods which formed over several generations from practical experience, and inherited from father to son and mother to daughter. We need to integrate the TK in the environmental strategic plans and encourage policy makers to study and adopt useful local methods such as some local fishing techniques which protect and renew the marine resources as a practical solution to facing a problem of extinction of many marine species, to rebuild and develop conservation strategies, in order to revive knowledge of the environment, protect, conserve, and renew natural resources in the region.

The exploration and of traditional method of fishing and hunting, particularly in the Gulf states which have similar environment conditions, demonstrated aspects of the benefits of these traditional methods in dealing with natural resources that society used to follow in the past and exploring their positive roles in protecting natural resources, which need us to search for, document and study their benefits in preserving the environmental balance. We can also point out here the importance of using local

knowledge in the redevelopment of natural resources. We propose to employ the existing natural reserves as centers for bio ecology based on positive applications that preserve the environment derived from the local heritage and culture and transfer it to the local population, which is an application of the principle of community participation in the protection of natural resources.

## Recommendation

The exploration of the traditional Knowledge methods of fishing in the Qatari environment, showed aspects of the benefits of these methods, and showed the positive roles in protecting the natural resources. This kind of Knowledge needs to be documented and explore its benefits to the environment. We can also point out here the importance of using local knowledge to revive the natural resources which discovered by studying these methods. In this context, marine natural reserves can be used to establish a research center for bio ecology research, relying on positive applications that preserve the environment derived from the local heritage and culture and transfer it to the local population, which is an application of the principle of community participation in the protection of natural resources.

## References

1. Richard GC, David L, Orme SF, Jackson GH, Thomas RG, et al. (2006) Global distribution and conservation of rare and threatened vertebrates. *Nature* 444: 93-96.
2. Heather M (2007) Combining Community Development and Indigenous Culture to Promote a Conservation Economy. Fall issue of *Environment: Yale magazine*.
3. Jeffrey A, McNeely David P (1987) Culture and Conservation: The Human Dimension in Environmental Planning. *American Anthropologist* 89(2): 464-465.
4. Stanford Z (2008) Global Indicators of the Status and Trends of Linguistic Diversity and Traditional Knowledge. Anthropology Center Venezuelan Institute for Scientific Research (IVIC), Caracas, Antonia L, Konrad H (2001) Concepts and Issues of Sustainability in Countries in Transition - An Institutional Concept of Sustainability as a Basis for the Network. Central and Eastern European Sustainable Agriculture Network, first workshop, Gödöllő Hungary.
5. Stanford Z, et al. op. cit.
6. Fikret B, Johan C, Carl F (2000) Rediscovery of Traditional Ecological Knowledge as Adaptive Management. *Ecological Applications* 10(5): 1251-1262.
7. Gellerman JP, Brennan MA, Devesh N, Karla L (2017) Understanding Sustainability: The Importance of Sustainable Development and Comprehensive Planning.
8. Jeffrey A. McNeely, David Pitt, Ibid, pages 464-465.
9. Benjamin R, Smith (2009) Indigenous and Scientific Knowledge in Central York Peninsula. In: Paul Sillitoe *Local Science vs Global Science*. New York, Berghahn Book pp. 76-77.
10. Jeffrey A, McNeely David Pitt: op.cit.
11. Jules P, Bill A, Fikret B, Simone F, Nigel D, Eugene H, et al. (2008) How Do Biodiversity and Culture Intersect, paper for Conference “Sustaining Cultural and Biological Diversity In a Rapidly Changing World: Lessons for Global Policy” Organized by American Museum of Natural History's Center for Biodiversity.
12. Gellerman JP, Brennan MA, Devesh N, Karla L (2017) Understanding Sustainability: The Importance of Sustainable Development and Comprehensive Planning.
13. Enrique L (1987) Ethnobotany and Anthropology as Tools for a cultural conservation Strategy. In: Jeffrey A. McNeely, David Pitt: *Culture and Conservation: The Human Dimension in Environmental Planning*. Croom Helm, USA 259-267.
14. Per Olsson, Carl F (2001) Local Ecological Knowledge and Institutional Dynamics for Ecosystem Management: A Study of Lake Racken Watershed, Sweden, *Ecosystems*, 4(2): 85-104.
15. Khalid G (2009) Install sand and rangeland protection and management of water resources, *Knowledge*.
16. George W, Wenzel (1999) Traditional Ecological Knowledge and Inuit: Reflections on TEK Research and Ethics, *ARCTIC*, 52(2): 113-124.



17. Benjamin R, Smith (2009) Indigenous and Scientific Knowledge in Central York Peninsula. In: Paul Sillitoe Local Science vs Global Science. New York, Berghahn Book pp. 76-77.
18. Madhav G, Fikret B, Carl Folke (1993) Indigenous Knowledge for Biodiversity Conservation, *Ambio, Biodiversity: Ecology, Economics, Policy* (May.), 22(2-3): 151-156.
19. Adel Amer (2003) Evaluate traditional fishing "Hadra traps" in fishing and its impact on the productivity of the fish Saudi territorial waters in the Arabian Gulf.
20. Qatar second National Human Development Report. (2009) General Secretariat for Development Planning p. 76.