

**Short study of legal and institutional challenges, opinions
and perceptions
on water use in Integrated Fish Farming:
an inventory and some suggestions for ways forward.**

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List of abbreviations and acronyms used in this short study

AEC	Agricultural Export Council
APP	Advisory Panel Project on Water Management
BOCI	Policy Support Programme
CDI	Center for Development Innovation of WUR
EAGA	Egyptian Agribusiness Association
GAFRD	General Authority of Fish Resources Development
GAP	Good Agricultural Practices
IFF	Integrated Fish Farming
IIIMP	Integrated Irrigation Improvement and Management Project
MALR	Ministry of Agriculture and Land Reclamation
MoE	Ministry of Environment
MoH	Ministry of Health
MWRI	Ministry of Water Resources and Irrigation
WUR	Wageningen University and Research

Summary

A short study of legal and institutional obstacles and challenges concerning the development of Integrated Fish Farming in Egypt and some underlying opinions and perceptions held by various stakeholders, resulted in a short list of seven challenges to be addressed in the forthcoming years.

Major legal challenges concern Laws and restrictions on fresh water use, agricultural land use and land lease for the purpose of fish production, which date from the 1980's and are prepared and enforced (after adoption in Parliament) by different Ministries.

Main institutional challenges concern the development of insights and knowledge by different stakeholders that enables the creation of common policy and new legislation as well as coordinated and transparent enforcement, which are appropriate to efficient water management and water use in integrated farming systems and multi-stakeholder production chains for sustainable fish production which is increasingly contributing to National Food Security.

From the inventory of underlying opinions and perceptions held by major stakeholders and decision makers, it emerges that appropriate information and reliable data is required for further decision making for new development policy for (integrated) fish farming and subsequent renewal of regulations.

These challenges are recognized by the Ministries concerned as well as the fish producers involved, who show an increasing interest and willingness to dialogue (common seminars and workshops) and find common ground for effective collaboration (mixed working groups and field trials) in order to produce hard data and shared experiences that can inform decision making on new policies and legislation for integrated fish farming.

The study concludes that there is sufficient motivation amongst the various stakeholders to join efforts in different on-farm pilot trials in both fresh and brackish water production systems and recommends to set up a joint working group responsible for planning, monitoring and feed-back of results.

1.0 Introduction

This short study is a part of the BOCI 10-011-102 (2010) project of the Netherlands Embassy, Cairo, implemented by the WUR, Wageningen, which aims: “to contribute to policy changes that enhance more efficient use of available fresh water resources in terms of increased food production per m³”. (The slogan being: “more crop per drop”)

The goal of this short study is: “to make an inventory of legal and institutional obstacles preventing a wider application of integrated fish farming (IFF), and of the underlying perceptions and opinions among key persons in relevant Ministries, departments and other bodies and NGO’s and stakeholder groups.”

The purpose of this inventory is: “to contribute to a strategy to remove obstacles for a wider application of integrated aquaculture in Egyptian agriculture”.

The following (groups of) stakeholders involved in, or influencing, legal and institutional decision-making, have contributed to this short study (re. annexes 1 and 2):

- Irrigation Department of the Ministry of Water Resources and Irrigation (MWRI)
- Advisory Panel Project on Water management (APP) with the MWRI
- Integrated Irrigation Improvement and Management Project (IIIMP) in the MWRI
- General Authority for Fish Resource Development (GAFRD) of the Ministry of Agriculture and Land Reclamation (MALR)
- Individual fish producers
- Fish Council of the Egyptian Agri-Business Association

The study was carried out initially from February 11 till March 3, 2010, through:

- Interviews, meetings and (telephone) conversations (re. annex 2)
- Participation in the APP workshop of 11.02.2010
- Documentary study (re. Annex 3)

In July 2010 additional information was collected concerning some specific questions that emerged in the study process on the use of fresh underground water in (integrated) fish farming.

BOCI projects are a development tool of the Netherlands Ministry of Agriculture in support of policy and strategy development; in order to give this short study a strategic and action-oriented context, I have put it in a perspective of policy development of integrated fish production being a component of sustainable farming systems and GAP policy, which are characterized by efficient use and reuse of the basic production resources: land, water, nutrients, plants and animals. (Re. the ‘triple P’ approach)

From this action-oriented perspective, it is preferable to call the obstacles and constraints ‘challenges’. Hence, the identified opinions, beliefs and perspectives are additions and influences to the challenges of (new) policy making and subsequent legal decision-making and action.

2.0 Main legal and institutional challenges for IFF development.

This short study has identified seven legal and institutional challenges (sometimes called ‘obstacles or issues’) which had and still have an impact on past, current and future practices and developments in fish production in general and in Integrated Fish Farming (IFF) in particular. Most, if not all, of these issues are well known by the various groups of stakeholders and are subject of recurrent debate and study, for many years now (see e.g.: “Action plan to alleviate constraints hampering the future development of fisheries sector in Egypt”, mission report, May 2005, by Marc Verdegem and Kees Taal; ”Towards a Common Strategy for Fish Farming in Egypt”, Mission report, February 2010, by Hans van Zon).

Furthermore, it is interesting to note that all identified issues and challenges are linked to Regulations dating from the period 1983 - 1994, which is well before on-farm fish production started to expand rapidly to present levels. Apparently, the reported ‘obstacles’ did influence, but not stop the rapid increase of both fish consumption and fish production that started in the 1990’s (80,000 T in 1997 to 694,000 T in 2008) and which is still continuing today (estimated > 1 Million Tons for 2010). This increase was also enhanced by GAFRD through its many development activities such as: (a) promoting intensification of fish production systems, (b) licensing new hatcheries and (c) supporting aquaculture cooperatives.

However, in order to develop a coherent policy and a manageable development strategy for fish farming in general and IFF in particular, the following legal and institutional obstacles are to be addressed and removed where possible. For the sake of a strategic and action-oriented development outlook, these obstacles can be better called challenges. Furthermore, it is to be noticed that for some of the identified legal challenges (land lease conditions and Nile water use), modifications are currently being elaborated and prepared for debate in Parliament.

Legal challenges:

- Law 124/1983 of the MWRI concerning water and land use for fish farming, which prohibits the (first) use of Nile water (“fresh water” or “irrigation water”) for the production of fresh water fish and also regulated land use for this purpose
- This Law also stipulates that “only drainage water” can be used for fish production which, amongst other implications, blocks the possibility of export of fresh water fish
- Resolution 70/1986 by GAFRD concerning quality of land that can be used for fish production
- Both Law 124/1983 and Resolution 70/1986 concerning the access and lease of land for fish farming

Institutional challenges:

- The licensing system and procedures for fish farms (new or renewal), as regulated in Presidential Decree 190/1983 which created GAFRD
- The segmented application and enforcement system of Law and Regulation on the ground, by MWRI, MALR/GAFRD and other Ministries concerned such as MoE

- The segmented and unclear decision-making systems and processes for legislation and regulation.

Legal challenges

1) Law 124 of 1983 concerning Nile water use and land use for fish production is issued and enforced by the Ministry of Water Resources and Irrigation, (MWRI). This Law does not distinguish different production systems for fresh water fish and stipulates that “only fallow land” can be used for that purpose (see also challenge 3). This law explicitly prohibits the use of fresh irrigation water for the purpose of fresh fish farming, mainly Tilapia and catfish, and makes an exception for hatcheries. It thus formally prohibits the use of fresh water in the various existing systems of integrated production such as fish-crop rotation in the ponds as well as the use of irrigation water for fish production before using the pond water for crop irrigation. However, it is not prohibited to use this water in the opposite order, i.e. first for crop irrigation and then drainage water for fish production. This Law does not directly apply to production systems based on underground water (see also challenge 4) and implicitly allows fish farming with brackish water unsuitable for crop irrigation.

Currently, a revision of this Law has been triggered off by

- (a) National policy on water security and water management,
- (b) the need for more efficient water use
- (c) the subsequent restrictions on water allocation for agriculture

Changes are currently discussed at the MWRI and are to address at least the following issues:

- Reconfirmation that the (first) use of fresh Nile water for fish farming is forbidden
- A reviewed fine system (higher fines, to be paid on the spot) for stricter Law enforcement
- other issues, still to be specified

The Ministry of Environment (MoE) issued Law 48/1982 on the protection of the Nile. The fresh water fish production system in the Nile (the so-called cage systems) has been prohibited by Decree (#?) from the Prime minister’s Office, in 2006. However, according to GAFRD statistics, some 69,000 T of fish was produced in floating cages, in 2008. Interestingly, this Decree was elaborated by an inter-ministerial committee of four Ministries (MWRI, MALR, Ministries of Environment, MoE, and Health, MoH) that was installed after a public outcry on water pollution reportedly caused by this production system.

2) In the above Law 124 it is further stipulated that “only drainage water” can be used for fish production, a precision that aims to save fresh water for irrigation of crops but which in the same time prohibits the possibility of exportation of fresh water fish, due to food safety standards and regulations in potential importing countries in Europe, some of which are highly potential export destinations for fresh rather than frozen Tilapia. In principle, this regulation does not stop the development of IFF, since reuse of water is an integrated element in this system. However, it stresses the need for establishing clear (legal) norms for water quality, which is an intrinsic part of GAP and certainly of a required system for fish quality and food safety of fish production in any agro-ecological system, for both national and international markets.

The 'drainage water only' clause in Law 124 is mentioned by all concerned (except MWRI) as a major 'bottleneck' for :

- Export of fresh water fish to any country in the world
- Development of water quality criteria for a general water policy in fish production (any kind of fish, any kind of integrated production system)
- Development of transparent quality criteria of fish for national consumption and health policy (integrated fish chain development)

The general wish is that a future law will not specify the water source for fish farming but rather the water quality; in this respect it is widely suggested to use the term "*safe water*". This small change in law will make it possible to address the three challenges mentioned above.

3) Resolution 70/1986 by GAFRD concerns quality of land that can be used for fish production. Further to Law 124, above, this Regulation stipulates that "only sterile land" and land not suitable for crop production" can be used for fish farming, thus legally inhibiting the development of integrated production systems based on fish-crop rotation on so-called 'old land' i.e. mainly Delta, Nile Valley and old Fayoum valley, as opposed to 'new land' i.e. reclaimed desert land outside these areas.

Although this regulation is still applied and can lead to fines imposed on farmers (see also point 6), it is to be noted that at GAFRD level the assumptions on which this Regulation is based, are shifting towards less rigid and more realistic insights on possibilities and positive effects that fish farming has on both land fertility and water fertility used ('fertigation') in a more integrated way.

4) Linked to both Law 124/1983 and Resolution 70/1986 is the lease of land for (fish) farming The lease period of land for fish farming is considered not only too short (max 5 years, and often shorter) for serious investments but also effectively discourages investments, because of the rule that the added value to the land will increase the price for the next lease period. Moreover, there are reportedly some 27,000 Fed of fish ponds with a so called "temporary pond" status, in North Sinai. The reason for this status is that these ponds are supposed to become agricultural land after a number of fish production cycles/seasons. Temporary fish farming thus is considered by MALR as a land reclamation technique.

However, according to GAFDR development strategies and programmes, as well as to recent studies (op.cit), further development of fish production systems will be based on intensification strategy of resource use leading to higher productivity per m³ of water and per Feddan of land, rather than on extension of surfaces and increased water use.

This strategy requires a better land tenure security (and water use security) leading to 'investment security' and currently a new Regulation is in the making by the MALR/GAFRD concerning:

- the extension of the lease period of land (expected to be at least 25 years),
- lease price and index of yearly increase
- other conditions to be laid down in an investment plan to be presented by the incumbent producer.

Next to the Nile, the most important water source for agriculture is water from deep underground sources and water tables, called aquifers. For many years, the use of the latter is a common practice in desert areas (newly reclaimed land) without Nile fed irrigation canal infrastructure. In the absence of formal laws dealing with the use of aquifers for agriculture, its water use is regulated through the land acquisition and lease system. This means that underground water use by wells and pumps is directly linked to the desert land use where the aquifer is situated and regimented by a permit system controlled by the MWRI.

Land lease contracts are based on a farm investment and production plan, whereby the use of fresh water for fish production is considered case by case. The MWRI authorizes the use of fresh underground water for desert land only, and the permission for aquaculture may be granted or may be refused in certain cases. Motivations for this are not always clear, but one reason for refusal may be “shortage of water in the aquifer concerned”.

Yet, in various desert and northern delta areas, Integrated Fish Farming systems have been developed with both Nile and well freshwater sources. These semi-intensive and intensive production systems are based on double and triple reuse of water and thus intensification of food production per m³, a practice that goes beyond currently implemented strategies aiming at the extension of more efficient irrigation practices.

Obviously, this situation is different for brackish and saline underground water, abundantly present in the Egyptian deserts. With the exception of possible irrigation with low salt underground water (< 5 ppt) on salt-tolerant crops, salt water is not suitable for crop production, yet very interesting for sea fish production. IFF systems with low salt water are currently experimented, in which both fish and crops are tolerant to the water quality from that particular aquifer.

The use of groundwater does not constitute a legal bottleneck ‘per se’, but it remains an important issue concerning environmental and economic sustainability of water use for agriculture in general.

Institutional challenges

5) Linked to these Regulations on water use and land lease, are the licensing system and procedures for both new farms and the renewal for existing farms as laid down in the **Presidential Decree 190/1983 which created GAFRD**. Although the GAFRD is the sole licensing authority for fish farming through its Central and Regional Offices, licensing involves many more Ministries¹ than the above mentioned, and is to be done at both Governorate and Central Administration levels. Licensing (new and renewal) is a very cumbersome procedure in any sector of Egyptian society and economy, and there is a huge “gray area” of semi-legality under which any entrepreneur, producer or farmer operates.

¹ Depending the geographical and agro-ecological location of the fish farm, the following Ministries or Authorities may be involved: Ministries of: Water Resources and Irrigation; Environment; Defense; Tourism; Interior; Governorate; Shore protection Authority

Yet, the GAFD has a Board composed of representatives of at least 20 ministerial and institutional entities; this multi-institutional design could represent an opportunity to create a so-called *one-stop-shop* for licensing of fish farms.

In recent years, efforts by other Ministries, concerned with Trade, Industries, Investment, Export and others, have been deployed to create so-called 'one-stop-shops' for starting entrepreneurs in various industrial sectors; in the fish farming sector this example reportedly remains to be explored.

6) The application and enforcement system of the water and land use Regulations in the field, mainly at Governorate and Local level by agents of the above mentioned Ministries, sometimes gives rise to contradictory decisions and fines causing confusion and tensions amongst producers and law enforcement agents alike. Transparent and objective information on appropriate application of existing Regulations is not always easy to obtain. It is at this level that reality is confronted with formal regulations which are based on insights and goals that are dated and may no longer be effective in the evolving society and production systems. It is also at this level of enforcement that the segmented and single-sector nature of Regulations clashes with the integrated and multi-sector reality of agriculture and food production.

7) Linked to point 6 is the segmented, single-sector and Ministry-based decision-making systems and processes for legislation and regulation, as put in place centuries years ago, which has difficulties to cope with increased complexity on the ground. This not only concerns the monitoring of existing legislation but also the initiatives for amendments of existing Regulation and creation of new Laws and Decrees. Although each Ministry obviously has its specialty, political mandate, core business, and duty to pursue sustainable policies, for Legal Regulations to be effective, one has to consider the social, ecological and economic realities in which these regulations will apply. In other words, for an agricultural development policy towards integrated production systems, the various institutions concerned need to collaborate intensively in order to design and enforce regulations that support these developments.

This is a call for a more participatory approach in legislation making and enforcement, which is well understood by the MWRI and MALR; these Ministries have embarked upon a dialogue and collaboration process involving the private sector, facilitated by a series of common workshops that help to develop the insights and collaboration required for more effective Regulations on integrated resource use for food production, including IFF. This process will be enhanced by a shared assessment and validation of the results from a series of on-farm pilot studies that are planned for this season 2010.

Multi-actor cooperation amongst institutions is possible and can be effective, as has shown the case of prohibiting floating cages for fish production in certain Nile branches. This multi-stakeholder action was initiated by public media reports and was swiftly enforced by environmental **Law 48/1982** which prohibits discharge into the Nile, lakes, irrigation canals and groundwater.

3.0 Some opinions and beliefs on fish farming, as held by different stakeholders

“The truth is in the eye of the beholder”. The various stakeholders differ in their understanding, opinion and perception of fish production. Although this differentiation is a natural phenomenon in the human condition, it is a key factor in processes of decision-making on Laws and Regulations. There are at least three groups of stakeholders whose perceptions, opinions and beliefs emerge in the discussions on legal and institutional obstacles for IFF; it should be stressed that perceptions and opinions may also differ strongly between members of the same stakeholder group:

- Consumers and the ‘general public’.
- Ministries mentioned above (MWRI, MALR, MoE)
- Private sector: individual and groups of fish producers and entrepreneurs, producers’ associations

1) **The Egyptian consumer** has literally shown to possess an increasing appetite (and buying power) for produced and caught fish (per capita consumption rose from 6.5 kg in 1990 to approx 16 kg in 2009). As reported (Ann. verbal communication) during the APP workshop of 11.02.2010, at current retail prices, fresh water fish, especially Tilapia, has become the cheapest animal protein food as compared to chicken and meat: Tilapia LE 10/kg; chicken LE 25/kg; meat LE 60kg/kg.

However, media stories and news on incidents and cases emerge of unspecified “bad practices” in fish farming and bad fish quality, thus damaging the image and reputation of the sector. The case of cage production in the Nile is another example, in which the media played an important role as ‘opinionater’, enhancing inter-ministerial action. Although the general public is not involved in the decision making process on the design of Regulations, some of these public opinions and sometimes negative images are resonated by officials in the various Ministries which, in turn, does influence decision making. The same counts for Parliamentarians, who may use public opinions when discussing law initiatives.

2) **At Ministerial levels**, considering the existing, though older, legislation of 1983, the underlying opinion or perspective is that “fish production is wasteful for fresh water and agricultural land”. Also the opinion is resonated that “this kind of fish (farm produced fish as opposed to caught, wild fish) is bad for your health” (re. public opinion). The significant contribution of fish to food security and healthy diet is beyond the radar screen of many an official, while this is a strong argument advanced by the fish producers and MALR.

In the absence of a reliable (public) food control system which can produce objective information about the quality of fish, these opinions will continue to live their own life.

At the MWRI, the paramount view is that: “Nile water = fresh water = irrigation water for crops = water for human consumption”. It is adamant on its goal to reduce use and waste of fresh water and consequently entertains the opinion that fresh water cannot be used for fish farming, first.

As far as the MWRI is concerned, fish production is fine, as long as it doesn't use fresh irrigation water, or even better, as long as it uses water that is not suitable for human consumption or agricultural crop irrigation at all, such as brackish water.

In the minutes of a recent meeting in the MWRI, on "Reviewing the situation of fish farming in Egypt" (31.08.2009), it was discussed to "establish a committee of experts from both MWRI and MALR including experts from research centers and specialized institutes" with a number of tasks assigned which includes: "to highlight the negative impacts of Fish Farming on limited water budget, environment and health".

However, some of these opinions and perceptions are gradually evolving (re. IFF workshop, by MALR of 13th December 2009 and the Fish Farming policy workshop, by MWRI/APP of 11 February 2010). At the Ministries involved, there is presently not only (a) a recognized need for "hard information", scientific data, or just reliable information from the field, but also (b) an active willingness for institutional and inter-ministerial collaboration to address water management and water use challenges. The above mentioned initiative to set up a 'mixed scientific committee' is such an indication of the felt need for reliable information. The above mentioned workshops on fish farming are another example of growing collaboration; there is a positive mood that the initiatives for on-farm pilot trials are opportunities for effective collaboration "in the field and in the meeting room". So, why not: "in the Board room"?

At MALR/GAFRD, fish farming has been promoted for many years, indeed since its own creation by Presidential Decree 190 in 1983. The Ministry still runs hatcheries that were created by Decree in the same year. Here, the slogan "fish is just another crop" (op. cit. Hans van Zon, 2010) is much easier embraced than elsewhere, but not unconditionally. Yet, the contradiction is recognized between the virtues of efficient and integrated resource use (land, water, nutrients), on the one hand, and the 1986 Decree on sterile land use for fish production, (as mentioned above), on the other hand. GAFRD now wholeheartedly endorses the IFF on-farm pilot project, on new land(!) that is expected to produce important 'facts and figures' especially on water quantities and qualities, informing future development policy and Regulations. The 'promise' of "more crop per drop" is a strong motivator to participate in the on-farm IFF trials and intensification of production systems is encouraged and clearly a development policy issue.

3) **Individual fish producers and producer groups** have since long been involved in research and development, in collaboration with GAFRD or on own initiative, thus showing their keen interest in enhancing fish production. Producers have discovered that fish production is a profitable business and are interested and willing to invest in intensification, professionalization and integration of their production systems, both fresh and brackish water based. However, in the light of certain challenges identified above, many are reluctant to do so, unless guarantees on land and water security can be provided through the application of clear rules and regulations by all parties concerned.

Members of Producers' Associations, such as EAGA, are willing to collaborate with the respective Ministries in order to create these clear rules and regulations, by accommodating and participating in pilot studies in IFF at their farms.

Also producers recognize the need for a better coordination and organization of seasonal pond drainage, in order to avoid damage to drains, canals and other infrastructure, a criticism that has been forwarded at several occasions, by all parties involved.

Interestingly, producers also stress the local social and economical effects and impacts of fish farming sector, which is creating work and income for thousands of farm workers and their families. This perspective finds resonance and endorsement in the MALR and the private sector uses this impact for promotional purposes (positive image of fish farming) and also as a motivator to continue its collaboration with the GAFDR.

4.0 Conclusions

1) On the ground, nor the legal and institutional ‘obstacles and issues’, neither the opinions and perceptions on fish farming and IFF, as identified in this short study, have stopped the fish production sector from growing very fast over the last ten years. This growth has been based on expansion of pond surface as well as intensification of production systems. In the process of increasing production and profits, various IFF systems have been experimented by some individual producers, some with support from development projects. (World Fish Centre reportedly pioneered even an engineered wetland model, clearing water for fish farming)

2) However, in the light of the need for increased land and water security required for further intensification and investments in the various fish production systems, as well as the need for increased efficiency in water management and resource use (water, land, nutrients), there is a felt necessity to face and effectively address existing, recognized legal and institutional challenges and to renew, elaborate and/or clarify Laws and Regulations that are in support of (a) a transparent water management policy and enforcement system, as well as (b) a more comprehensive development policy for fish production. In this respect, the insight is gradually gaining ground that fish production is an integral part of farming and food production and increasingly contributing to food security in Egypt.

3) This insight is enforcing the need for food safety standards of fish and fish products. Several respondents in this short study have expressed the need for both water quality control mechanisms at production level and fish quality control at post-harvest and consumers’ level. Comparisons were made with the fruits and vegetables export sector, where international certification systems are in place.

4) Although these felt necessities are motivated and justified with different reasons by the main stakeholders, there is an emerging willingness for mutual consultation, dialogue and collaboration amongst the various parties concerned, in order to face these and new challenges that will emerge in the process. This willingness to collaborate is further encouraged by common projects such as workshops, pilot trials, joint committees and working groups. It is through institutional collaboration that identified legal challenges can be tackled in a sustainable way. Out of the seven challenges identified in this short study, the priority for action is on common, participatory, less segmented design and enforcement of Regulations enhancing integrated, and thus more efficient, resource use for fish production.

5) There is clearly a need for “hard data”, especially in the field of water quality and water quantities in fish farming, which will support decision making by policy makers, legislators and producers alike, in order to:

- to change, adapt, or confirm some of their insights, beliefs and opinions concerning fish farming and its potential roles in integrated production systems, food security and efficient use of water, land and nutrients

- to enforce their consultation and collaboration structures allowing for decision making on more comprehensive, say “integrated” Laws and Regulations in support of improved water management, integrated farm and food production systems based on GAP models
- to create and promote sustainable integrated fish farming systems

6) This short study reconfirms that the fundamental question of sustainable water use (including water security, water rights, cost price of water), from different sources, (Nile, lakes, groundwater, drainage, recycled waste water) for different purposes (including GAP for Integrated Fish Farming) , although intrinsically linked to identified challenges in the Legal and Institutional frameworks and systems, is foremost a very sensitive political challenge.

5.0 Suggestions for ways forward with this BOCI 10-011-102 project

The planned on-farm trials on selected fish farms should produce data and information for informed decision making by policy makers and legislators on fish farming development policy and supportive Laws and Regulations for IFF, especially of the qualities and quantities of used water and the fish and crop productivity per m³

Suggestions for the pilot design of two IFF models

- 1) fish – winter crop rotation in the pond
- 2) use of fish pond water for irrigation of crops

Some important variables and parameters monitoring the trials:

- water quality (chemical and organic matter content) before and after use
- water quantity: water input and water use (evaporation, percolation)
- using different water sources : underground; drainage;
- using different irrigation systems; organic matter filters for drip irrigation/ fertigation
- effects of pond water on different crops: production and productivity (kg/m³; kg/Fed)
- costs and profitability of the tested models

Suggestions for sustaining the momentum for inter-ministerial collaboration:²

- 1) To create a joint working group (including research centers and fish producers) responsible for the pilot trials
- 2) To co-design pilot trials for two different agro-ecological production systems:
 - fish production system with brackish water / high pH land (as suggested by APP)
 - IFF systems (as suggested above, in this BOCI)
- 3) To attach the joint working group of both trials to the IIIMP in the MWRI, which would be willing and able to accommodate the coordination of the joint (or participatory) planning, monitoring and feed-back of trial outcomes, to the various partners involved?
 - joint trial design and monitoring of pilots (including research centers and producers)
 - joint field days for private sector
- 4) to follow-up trial outcomes with ‘integrated’ i.e. participatory decision making on regulation that enhances and enforces GAP in IFF
- 5) to continue political and inter-ministerial dialogue on national water use from a sustainable integrated users’ systems point of view, in order to avoid future “single-issue” Laws and Regulations

² This joint working group is a modest, non-institutionalized form of collaboration .

It may be noted here that inter-ministerial cooperation and the creation of task forces was a core element in the “Action Plan to alleviate constraints hampering the future development of the fisheries sector in Egypt, May 2005, a mission report for the Royal Netherlands Embassy, by Marc Verdegem and Kees Taal.

Suggestions for strategic development

As for the legal issue of “drainage water only”, it is suggested to rethink that Regulation in terms of guaranteeing the quality rather than the source of water: e.g. “safe water only” or “clean water only”, a formulation in line with Good Agricultural Practices, GAP (core business of MALR) and with Good Water Management Policies & Practices (core business of MWRI).

As for the legal issue of “waste land only” it is suggested to rethink this Regulation in terms of linking the use of agricultural land to an integrated use: “agricultural land use for integrated production only”.

This focus on GAP and quality implies the need for quality standards and quality control system not only on water for fish production and crop irrigation, but also for quality of the fish itself, and thus food safety for national consumption and possibly for export.

In order to inform new policy making, new pilot trials are to be designed with the same strategic perspective as envisioned for policy development (some buzz words):

- Good Agricultural Practice (GAP) in IFF
- Sustainable production systems (triple P bottom line)
- Efficient resource use and water and land security
- Food security and Food safety (quality control, standards & certification for fish)
- Development of integrated food production and value chains of fish production

Annex 1 List of Laws and Decrees, mentioned in this short study

Laws in use:

Law 48/1982 of MoE, regulating mainly the protection of inland waters by prohibiting discharge into the river Nile, lakes, irrigation canals and ground waters.

Law 124/1983 of MWRI regulating, amongst many other aspects, the use of fresh water and land for fish farming

Presidential Decree 90/1983, establishing GAFRD, and amongst other aspects, regulating the licensing system for fish farming

Resolution 70/1986 of GAFRD, concerning the use of land for fish farming and regulating the lease system; Law 48/1982 on the protection of the Nile.

Decree ?/2006 by Prime Minister's Office on regulating floating cage fish production in the main Nile Branches

Laws under preparation:

Resolution X/2010 of GAFRD, modifying Resolution 70/1986 concerning the land lease system for fish farming

Law X /2010? of MWRI, it is expected to modify some aspects of Law 124/1983 reconfirming prohibition of all first use of fresh water for fish farming and establishing a stricter fine system

Note: as per July 2010 it is not yet known when in the next Parliamentarian season, the first reading of this new law will take place; moreover, Parliamentarian elections are scheduled and it is not even sure when the new Parliament will agenda this new law.

In conclusion: for the time being, the existing laws will apply.

Annex 2

List of resources persons consulted for this short study

Dr Mohamed Abd El Moniem, , GD of Research and Studies, Irrigation Department, MWRI

Dr Samia M. El Guindy, Director APP, MWRI

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Dr Madani Ali Madani, GD of International Agreements

Eng Sherif H Rashed, Executive Dir. Agric Export Council; Chairman EAGA/Fish Council

Mrs Dina Hamdi, General Manager EAGA

Dr Abdel Rahman El Gamal, producer, former Director CLAR and WFC

Dr Ismail A. Radwan, producer, Egyptian Aquaculture Center

Dr Wouter Wolters, Alterra/WUR and APP Supporting Office

Dr. Hans van Zon, Natural Resource Management Consultant for APP.MWRI

Mr. Peter G.M. van der Heijden, Fisheries management and aquaculture; CDI/WUR

Dr. Hans van der Beek, Agricultural Counselor, Netherlands Embassy Cairo

Annex 3 List of resource documents used for this study

- Mission Report, Project BO-10-006-2009 “Integrated Aquaculture in Egypt”, May 2009, by Peter van der Heijden en Marc Verdegem
- Report of the Workshop on Integrated Fish farming in agriculture – present situation, future possibilities in Egypt, February 2010, Peter van der Heijden, CDI/WUR
- BOCI 2010 project proposal, August 2009, by Netherlands Embassy/ Hans van der Beek
- Possibilities for Integrated Fish Farming; a presentation at a workshop of 13 December 2009, Peter van der Heijden, CDI/WUR
- Draft Mission Report “Towards a common strategy for fish farming in Egypt, February 2010, by Hans van Zon, Consultant for APP/MWRI
- Minutes of the meeting “Reviewing the situation of Fish Farming in Egypt”, by MWRI, 31.08.2009
- Marine Aquaculture in Egypt; legal aspects of Aquaculture development, in: Mega Pesca, November 2001, p18-20
- FAO, “National Aquaculture Legislation Overview Egypt”; www.fao.org/fishery/legalframework/nalo_egypt/en
- Water Productivity, in “Water for Food, Water for Life”, a comprehensive assessment of water management in agriculture, edited by David Molden (200?)
- Water withdrawal for brackish and inland aquaculture, and options to produce more fish in ponds with present water use, M. C. J. Verdegem and R. H. Bosma, in Water Policy 11 Supplement 1 (2009) p52–68
- Action Plan to alleviate constraints hampering the future development of the fisheries sector in Egypt; a draft mission report for the Royal Netherlands Embassy, May 2005, by Marc Verdegem and Kees Taal.

Annex 4

Terms of Reference for Synergie (Mr Diederik van Groen)

As part of the BO project “National strategy on efficient use of fresh water by application of integrated aquaculture” (described in Annex 1) Synergie will

- make an inventory of legal and institutional obstacles preventing a wider application of integrated fish farming;
- make an inventory of the opinions and the underlying perceptions among key persons in relevant government ministries, departments and other Egyptian bodies that deal with water and land use, and among NGO's and stakeholder groups with regard to water and land use for (integrated) fish farming in Egypt.

METHODS

The inventory will be made by means of studying relevant publications and face-to-face interviews with key persons of relevant Ministries, departments and organisations. At this stage the following organisations have been identified as relevant for this project:

Netherlands Embassy : Mr. Tarek Mourad, member of Dutch – Egypt Advisory panel project on water management APP

Government of Egypt:

Ministry of Water Resources and Irrigation:

- committee on fish farming
- advisor to the minister (dr Hussein Elwan)
- Advisory Panel Project on Water Management APP
- Water Research Center

Ministry of Agriculture & Land reclamation

- Dr Fathy Osman, General Authority for Fish Resources Dev't
- Water & Soil Research Institute
- Desert Research Center
- Others within Min of Agriculture

Ministry of Environment, Department dealing with water pollution)

Government bodies outside Cairo:

- Governorates where fish farming is taking place (especially staff responsible for water use policy):
 - other governorate when time & money allows.)
- Water authorities in Governorate where fish cages were common before 2007 (Damietta?)
- Water boards in one or two areas where fish farming takes place
- Central Laboratory Aquaculture Research (CLAR, Abassa) Dr Gamal el Naggar
- World Fish Centre, Abbassa (besides CLAR), Mr Ahmed Mohamed Nasr Alla, researcher
- Research Institute on Desert Agriculture

NGOs:

- Farmers organization within EAGA
- Egyptian Fish Council (= organization under EAGA representing fish farmers)
- Other farmer's organizations (outside EAGA)

In the period the interviews are held the consultant will communicate the first impressions and results with the Contractor orally or by e-mail. Purpose is to see whether adjustments are needed in the methodology or in the list of departments and bodies involved in this inventory.

EXPECTED RESULTS AND OUTPUTS

The result of this inventory will be

- an overview of the laws, decrees and regulations that affect practical application of (integrated) fish farming in Egypt,
- the government bodies officially charged with enforcement of these regulations;
- insight in the application and enforcement of the regulations in practice;
- the opinions and underlying perceptions of key persons in relevant departments and organisations etc with regard to land and water use of fish farming plus the environmental effects of this activity.
- Suggestions from the interviewed persons with regard to improvement of the present situation (if change is needed according to the interviewee)

The results of the inventory will be described in a report (in English language) that is of good quality and standard. The report should include a summary of major findings and recommendations of max 5 pages.

Proposed TIME PLANNING

February 15: finalising list of departments and persons to be interviewed,
list of subjects and issues to be taken up in the interview

February 16– March 01: Interviews, analysis,

March 15: submission of draft report

The final report will be submitted by the consultant within 4 weeks after the comments and feed back on the draft report have been sent to the consultant.

Communication

For the inventory Synergie will communicate with Mr P.G.M. van der Heijden who has been assigned by the Centre for Development Innovation as manager of this project.