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Producing Clarias Fingerlings for the growing Kenyan aquaculture sector. Mwea Fish Farm June 2010

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Throwing Stones. Making Ripples or Waves? The future for African aquaculture?

Summary of discussions from the SARNISSA email forum: Eight days in June 2010.

Introduction

We hope you find this informal discussion which took place on the SARNISSA African Aquaculture Email Forum in June 2010 of interest. As with many good discussions it started without being prompted or introduced in a workshop, meeting, conference or more formal format. Please note it reflects the varied views and opinions of those SARNISSA members who wrote in, and at the time of writing each individual message was sent to over 900 of SARNISSA's registered English speaking members who all work or have an interest in sub Saharan African (SSA) aquaculture development. SARNISSA also runs an equivalent French language forum which as of Sept 2010 contains over 600 registered members. Messages are often translated by SARNISSA and interchanged between the fora to increase information sharing and contacts between different countries and languages.
If you are reading this as a non member everyone is welcome to join SARNIISSA, it is free, you just need to Register on the main www.sarnissa.org site. After being validated you will be able to benefit from receiving regular emails from the SARNISSA email forum as well as being able to download hundreds of publications related to African aquaculture from the main www.sarnissa.org site as well as from the online Aquaculture Compendium http://www.cabi.org/ac/

The discussions started here with an old proverb……..

1. *Mon Jun 14 10:00:30 BST 2010*

Hi Members,
This is just to share with you one of the inspiring philosophy in fisheries and aquaculture development. In the past I used to hear a famous Chinese saying that " give man fish and you have given him food for the day and teach man how to fish you will have given him food for the rest of his life". Today at the closing ceremony of a two months intensive training on aquaculture for developing Countries, one of the African Scholars bravely reversed that philosophy and said: "Give man fish and you have given him food for the day and teach man how to fish you will have TAUGHT HIM HOW TO OVER FISH NATURE and teach man how to grow fish, YOU WILL HAVE GIVEN HIM FOOD FOR THE REST OF HIS LIFE". I find this inspiring and worth thinking about.

Ondhoro Constantine Chobet
National Fisheries Resources Research Institute
Aquaculture Research and Development Centre Kajjansi
P.O.Box 530, Kampala (Uganda)

Mon Jun 14 10:40:48 BST 2010

Hi members
May I give a slogan which I always give whenever I deliver invited lectures in Universities and Institutes home and abroad.;

See a fish - you feel fresh
Eat fish- live longer
Grow fish- grow stronger
If you dont grow fish- you are fish out of water.

Natarajan L Pavanasam
Ambo University Ethiopia

Mon Jun 14 17:08:13 BST 2010

Thanks for nice slogans may I give a slogan which i like is

FISH FOR HEALTH ; FISH FOR WEALTH

regards
Saranjeet S. Syal
UNITECH
Delhi (INDIA)

Wed Jun 16 20:36:35 BST 2010

In Kenya:
We are also popularizing Fish for heath; fish for wealth; fish for jobs.

Regards,
Charles Ngugi Kenyatta University Kenya

Mon Jun 14 12:06:39 BST 2010

Dear all,

I think replacing the phrase 'HOW TO FISH' by 'HOW TO FARM FISH' might be appropriate now and easier to understand, if we want to make a change.

I also think it's a good idea to compile all the proverbs and sayings going around the world. Here are few from my part:

1. Give man fish and you have given him food for the day and teach man how to fish you will have given him food for the rest of his life

2. A fish a day keeps doctors away

3. One daughter, one son, and one fish pond (for an ideal family)

4. Keep fish in your heart, you will have no heart disease

5. Fish for All

6. See the sea and farm the fish

Best regards,

Ram C. Bhujel, PhD
Aquaculture and Aquatic Resources Management (AARM)
SERD, Asian Institute of Technology (AIT)
Pathumthani 12120, THAILAND

2. Mon Jun 14 10:30:53 BST 2010

Dear All,

Further comments on the well-known saying:

“In the early, naive days, the idea of development was encapsulated by a widely repeated proverb: ‘Give a man a fish, and you feed him for a day. Teach him to fish and you feed him for life’. But knowing how to fish often turned out to be the least of his – or her – problems...the knowledge transfer needed was not how to fish, but the skill to organize, bargain collectively, expose misappropriation and get corrupt officials off their heads...It became clear that interventions to support livelihoods not only had to fit economic and social realities, but also to contend with power structures. If they did not, vested interests might destroy them or co-opt every benefit to themselves” (Black, 2002).

Black, M. 2002. *The no-nonsense guide to international development*. Oxford, UK. New Internationalist Publications Ltd.

On-farm resource bases for small-scale farmers are typically poor and they have limited access to communal, government or public water sources. In addition to the poor on-farm resource base required to support the integration of aquaculture into crop-dominated small-scale farms, or access to water bodies, farmers also have to deal with power structures and vested interests.

Regards, Peter Edwards AIT Thailand

Thailand: Chicken processing waste (1st above) & slaughterhouse waste (2nd above) fed to *Clarias sp* peri-urban aquaculture Bangkok, Thailand. Is Thailand more resource rich in being able to develop aquaculture than Sub Saharan Africa (SSA)….. or just more innovative?

3. Mon Jun 14 11:37:24 BST 2010

Dear All,

Another version of the well-known saying I learnt from a former
colleague from IDRC (Howard Powles, perhaps some of you have met):

give man fish and you have given him food for the day
teach man how to fish you will have given him food for the rest of his life
teach man how to do aquaculture and he will need subsidies for ever

Regards,
Jérôme Lazard
Cirad France

4. Mon Jun 14 13:56:48 BST 2010

Hi Lazard,

You have made me stand up and ask if you are in the right forum. The definition of aquaculture includes among others man invention on the growing of fish in controlled environment with inputs which I think you call here subsidies.

The world populations stands at 6.8 billion growing at over 90millions persons per year. Africa population will pass the 2 billion by 2020 and must increase her food production by over 300% to meet minimally her food needs.

May I ask

1. How many fish do you think, we have in our lakes that we must teach people to fish and feed these population?

2. Proverbs are meant to serve a purpose and especially so for our SSA region! Give a generalised direction of our technology and hence the need to emphasise culture and not capture!

Cheers - let stop subsidies we are in business commercial aquaculture

Dan Oenga
Aquaculture Research
KMFRI-Kisumu
Kenya

5. Mon Jun 14 16:45:55 BST 2010

Hi Daniel,

Please read Jerome's statement again. He is not pro over-fishing nor is he against aquaculture. He is against badly planned aquaculture that needs to be subsidized to survive. In that matter, I agree with Jerome.
There is too much aquaculture that cannot survive unless it is subsidized in one way or another and much aquaculture in Africa that depends on influential people using government machines and influence for personal benefit. Both Jerome and I have worked long enough in Africa to know what the truth is. Having said that, I agree with you completely that aquaculture in Africa should grow. The potential and the people for that to happen are there. The only thing required is a better investment environment and fewer charlatans among the consultants. Every time a project is started that fails, it spoils the chances of other well designed projects from starting.

Best regards.
Imad Saoud

6. Wed Jun 16 07:44:55 BST 2010

I thought the proverb was
"Give a man a fish and he'll eat for a day. Give him a fishing rod, and
he'll sit in a boat and drink beer all day."

Simon Levine

Mon Jun 14 11:39:54 BST 2010

This points out the difference between fishing as part of life and fishing as one's job. In Newfoundland and the Maritime provinces of Canada fishing was often part of a pluralistic lifestyle which provided food and some income, along with farming (the same) and forestry (housing and some income). Industrialisation of the fishery led to many problems, especially in Newfoundland, where incomes rose and quality of life declined. Much has been documented by the Norwegian economic anthropologist Ottar Brox and his colleagues.

Although Canada is not exactly part of sub-Saharan Africa, I think that there are important parallels. Development often means a major change in why people fish and the part that fishing plays in their lives. I have heard numerous horror stories of communities which were well fed from local fisheries but went downhill when changes in fishing strategy to sell to remote markets were implemented.

Fishing has to be seen as part of how people live and cannot be developed in isolation. In many parts of the developing world aquaculture is part of an integrated lifestyle involving farming and other activities. Even in well capitalised highly developed countries there is a move to **IMTA (Integrated Multi-Trophic Aquaculture)** which involves finding new markets and sources and thus more involvement with other kinds of business activities.

Bill Silvert

Multi-Trophic Aquaculture South Africa : Abalone being grown together with seaweeds. Export market for abalone in S Asia. But is this typical example of aquaculture in SSA?

7. Mon Jun 14 14:06:36 BST 2010

Yes, I had a version like that for our MSc in Stirling, but I resolved not to be so cynical! (in spite of evidence to the contrary at times....)

James Muir
Stirling UK

8. Tue Jun 15 05:09:18 BST 2010

Jerome, your statement is generalising and inaccurate. I have plenty of clients spread around throughout SADC making good money from aquaculture without dependence on subsidies. One characteristic they all share though is a positive attitude!

Regards,
Leslie

Leslie Ter Morshuizen
Aquaculture Innovations
RSA

9. Tue Jun 15 10:36:33 BST 2010

Dear Leslie,
I want to congratulate you for your response. It would beat logic for what SARNISSA stand for to go by the subsidy version. Even initial technical support that some aquaculture projects have received in the past isn't necessarily subsidy in my view. We would be living in denial to still not think that ONLY AQUACULTURE would bridge the fish supply demand gap in the world. The management of capture fisheries has not been able to keep up with the increasing demand. Do some of us remember that it's basically HUNTING and GATHERING fish in the wild. God has just been kind to us that such old version of getting food is still sustainable for the case of fishing.

At this crucial time of developing aquaculture, we kindly plead with our brothers and sisters who do not have kind words for aquaculture to hold their hoses.

Regards to every one who reads this.

Enos

Enos Were, Aquaculture Manager, Dominion Farms Limited Siaya Kenya

Harvesting tilapia Dominion Farms Kenya April 2010. Sustainable aquaculture in Africa should not be based on subsidies?, rather fish farms, no matter the scale (one or twenty ponds) must harvest enough fish to cover their costs and then make a profit.

10. Tue Jun 15 11:20:50 BST 2010

I think that the truth lies between these two polar views. There is certainly much aquaculture that has been going on for centuries and is clearly sustainable without subsidies. However the field is expanding and developing projects do not always turn out to be profitable. In particular:

Farming new species often turns out to be harder and more expensive than expected. This has been the case with cod for example.

Global change can affect the situation adversely. I know a farm in northern Germany that has been doing well for many years, but as the North Sea warms up they can no longer maintain their most profitable stocks and are in a bad situation.

Market issues can dramatically affect profitability. Eel farming used to be big in Portugal, but a relatively small drop in price (and some regulatory issues) led to a total collapse in eel farming within just a year or two.

Some forms of aquaculture are quite safe and secure, but others are risky and may not work out. Still, if we are to feed more and more people we have to try new things.

Bill Silvert
Portugal

Tue Jun 15 12:16:44 BST 2010

My statement is a kind of joke ..... but as all the jokes of this category, it might have a piece of truth
This sentence came out from an aquaculture meeting held in the late eighties at a time when the world was overflooded with development projects funded by various funding agencies/NGOs aiming at developing aquaculture, on all the continents. Subsidies, whatever they may be, were the main component of the amount of these projects, including in Europe where facilities were subsidized up to 80%. In Sub-Saharan Africa, where I have been working for a long time (within subsidized projects ..... nobody's perfect!) most of aquaculture projects stopped a few months/years after subsidies ran out. Looking at this today, I think we can take some lesson from the past and assume that in the present time (where money is scarce) subsidies should systematically be considered in the way how and when the beneficiaries will be able to manage without. In other words, I think that subsidies should not be any more considered individually project by project but globally in the framework of public policies. That is why the newly established forth pillar of sustainable development, governance, is so important and
absolutely linked to the three others: economic, social, environment.

But, of course, a new activity needs for its implementation to be supported, in a way or another, through public fundings.

Regards, Jérôme

Tue Jun 15 15:28:20 BST 2010

I was about to leap to Jerome's defence as I'm sure this was what he meant. Having likewise seen far too many unrealistic projects, sometimes having to watch them fail after well considered advice had been ignored (unfortunately often blighting the hopes of those who could least afford failure), it serves as a warning. However it's also a reminder that we now have a growing collection of positive experiences to build from, and that is where attention is deserved.

Best wishes James

Wed Jun 16 21:32:01 BST 2010

Hello All,

You know Leslie's comments remind me of a joke from Pierre after visiting a small scale farmer in Yaoundé, Cameroon in 2009. We, Pierre, Olivier, Gareth, Will, Randy, Ram, Victor, Emmanuel, Jeremiah and myself took a break from our SARNISSA annual meeting to visit some ponds stocked with tilapia. The farmer was extremely excited by the visit; this was a team of aquaculture specialists from all over the World. On the contrary, we were not too happy with what we saw (tiny ponds with lots of tadpoles and few fingerlings - no large fish) and started discussing in low tones as to what went wrong. Was it extension service that was not delivering?, development partners offering subsidy but later withdrew? or the farmer not adopting technology as presented by the experts?

Pierre leaned over to me and said.. "You know Charles if anybody was to go to Jail for such mistakes, it is this team standing right here now"! He continued "If Aquaculture is what you and I have been doing all these years why would things continue to go wrong the way they do in sub- Saharan Africa" .

Why subsidy? Why us and not others? What are we doing to ascertain that when development partners leave or project funds are over we have continuity and that we have good exit strategy to increase production in aquaculture?

The capture fisheries --- what have we learned? The Canadian experience with Cod fisheries is a great lesson (as a Newfoundland, MUN Alumni)- I know it too well. Lake Victoria is not too far; Kenya recorded a drop from a high of 200,000MT in 2004 to a low of 100,000MT in 2008 from Lake Victoria catches. Are you still willing to teach people how to fish Lake Victoria waters?

We should all be in Jail !

Best regards,

Charles C. Ngugi
Department of Agricultural Resource Management Kenyatta University Nairobi, Kenya

Wheres the fish? A familiar picture to many of us standing on the banks of small scale rural fish ponds on harvest day. The net is pulled up and this is the result of 8- 12 months. There are many causes (fingerlings? feed? Other?) but how should and can this scene be changed ?

Tilapia Farming and Harvest also in Africa – Sept 2009 Egypt. This farm not from a project but from commercial enterprise. What and how can sub Saharan Africa learn from Egypt?

Thu Jun 17 07:32:54 BST 2010

When you have a situation that a Project is developed with adequate funding to do things properly and provide not only the initial design and construction, but also sufficient and appropriate training followed up by mentorship over an extended period, then aquaculture has a good chance of succeeding. This is typically what happens with larger commercial developments, because the initial investigation is unemotional and thorough, and the roll out follows the same pattern.

Unfortunately, when referring to state or NGO funded Projects, you all too often see that the myopic funders provide only sufficient for fancy first world designed systems, which are in any case poorly suited to Africa and Africans, with a token of training. This cannot succeed, yet the model has been repeated in virtually every African country I have visited. What we rather need is African appropriate systems and technology, combined with appropriate and thorough training, and followed up with mentorship over an extended period (ca. 2 years).

I visited a state hatchery at the end of last year which was an excellent example of this: huge money had been spent on erecting a fancy set of buildings, tunnels ponds and recirculating systems using first world technology, but no fish were being produced because there was a complete lack of understanding on both the technical and biological levels. To turn this around is not complex, a mentor needs to move on site and work alongside the staff for an initial period, transferring knowledge and developing skills. This should then be followed up with mentorship - via visits and email. If the initial infrastructure design had been less lavish the total budget could have included these costs.

There will still be failures let's not kid ourselves, but African appropriate system design followed with training and mentorship will go a long way towards increasing the number of successes.

Regards,
Leslie

Thu Jun 17 14:59:55 BST 2010

Dear all, Sometimes I read good articles and then keep them on my desk to re-read and re-read.
One that I can recommend is by **Brummet, Lazard and Moehl: African Aquaculture: Realizing the potential. Food Policy 33 (2008) 371-385**

Although I take exception to what I think was an over-estimate of costs without project subsidies in Rwanda, the article overall is very well written and provides insight from a combined experience base that approaches 100 years. Is there any way that this article can be spread around to the readers?
Karen

Karen L. Veverica
Department of Fisheries and Allied Aquacultures
International Center for Aquaculture and Aquatic Environments
Auburn University, Alabama, USA

Thu Jun 17 09:17:18 BST 2010

Colleagues,
My observation has been that many projects suffer from the absence of a user's perspective. With minimal local government commitment to much of anything here in Africa, **donors have enjoyed a field day testing their development theories**. It's true that fishing or rural farming are parts of a lifestyle that goes far beyond the fish business, but that lifestyle is relevant to another era. In the 21st century, people are no longer satisfied with just getting by and dying at the ripe old age of 50 in the bed where they were born (as my great uncle did). They want a longer, healthier life. They want their kids to get a good education. They want to be part of what they hear on the radio and see on TV. The tendency to over-exploit natural resources is thus an unavoidable consequence of the general human desire to improve one's lot in life. My grandfather, a Blackfoot Indian from Colorado, used to scoff at the idealized "noble savage" imagined by well-off city folks pining for simpler times. The "natural" lifestyle of the rural poor in Africa, only looks sustainable from afar. They may have a small carbon footprint, but children are dying. The status quo, no matter how much social capital is being accumulated, has no constituency in Africa, except among corrupt government bureaucrats.

Experimenting with poor people, as Charles and Pierre point out, is a crime. These folks don't have resources to fool around with fish ponds that might make $20 per year. No one in the West would consider a money-losing aquaculture venture as anything other than a hobby. If we want aquaculture to take off in Africa, it needs to be seen, as it is elsewhere, as a modern business not a development project. As Leslie and Jerome point out, high quality technical assistance supporting entrepreneurs over a reasonable period of time (most small businesses take 3-5 years after their first production cycle to start earning money) to adopt and adapt good, solid technology to create jobs and produce food would go a long way to realizing our dreams, and those of the many poor farmers who are desperate to get out of the quagmire of poverty.

Would be happy to hear what people think of this.

Randy Brummett
WorldFish Center Cameroon

Thu Jun 17 10:40:51 BST 2010

Going to Jail!! Sub Saharan Africa SSA the 1960s – up to now : Has it been a playground for "western " researchers, donors and development organisations to experiment with their development theories and also provide projects and some employment for Africans - of whom none are actually growing fish ? Strong words we know …. However in the end how many lower income Africans have actually benefitted and how many successful SSA fish farmers are there ?

Good morning,

Sorry to everybody if I might look a little bit cynical, I hope I will offend nobody (it's not intended to).

We all know that all actions and stakeholders have objectives that are clearly expressed (e.g. aquaculture development) but also many other unspoken ones (at several level: individual -careers etc.-, institutional, political sphere of influence, diplomatic etc.). Assessment of past and current actions should be done on all kinds of objectives, before considering that the projects did or did not fulfill their "real" objectives.

I am not so sure that things changed dramatically today. Of course, the world is much more supportive of a free market economy than it was in the 80s. This opens new opportunities and the currently dominant paradigm about SME and aquaculture development should lead to many beautiful successes, for the reasons expressed by Leslie but also because in the case of business at SME level, the expressed and non-expressed objectives tend to be less contradictory than they might be in other environments. But shifting from 100% subsidized development to 100% economic liberalism could also lead to undesirable and unnecessary drifts.

In fact this raises the question of contribution and credibility of public action in the development. Although it seems to be changing slowly (see WorldBank), there is still a lack of credibility of public actions, and associated lack of impact, for many obvious reasons (see recent listing by list members). Does it mean public action should give full way to private initiative and only act (at best) as a support to private sector ? Working for a government-owned agency (but with a private working contract), and having worked with governments in southern countries, I strongly believe that public action still has a very important role to play, of course to support private action that is a key to increase in African fish production, but also to define, regulate and promote a sustainable development. How long

will it take before we change the way we work and regain our lost credibility ? Maybe people who are making jokes about past failures, at a time public action was still credible, should contribute to draw balanced conclusions about it.

Cheers Lionel CIRAD Montpelier France

Thu Jun 17 09:53:56 BST 2010

I am puzzled by this posting, as it seems to promote an industrial approach to aquaculture that I am not sure is the only path for Africa. I know virtually nothing about the situation in Africa, but I know that in SE Asia there are basically two approaches to aquaculture -- in addition to the large commercial operations designed to make money, there are many small household projects intended to provide food for the family and neighbours as part of the household economy. Although these fall in the $20/year category, they play an important role in Vietnam and other countries in the region.

So is aquaculture in Africa simply a modern business which should be developed strictly for its commercial success? Or is there a place for small-scale local development to meet the nutritional needs of families and communities and which feeds people without putting much money in their pockets?

Bill Silvert

Thu Jun 17 10:22:29 BST 2010

Briefly in response: I don't think it's a matter of industrialized aquaculture on the scale of the big corporate shrimp farms, although these are clearly getting a foothold, welcomed by almost all local stakeholders in Africa. To get the major benefit, small businesses are the key. I would challenge the assertion that $20 dollar profit margins are of use to anyone, anywhere. There is, in Africa, little or no long-term role for systems that do not generate significant income. I work with hundreds of small-scale farmers right now, and have worked with thousands over my 30 years in Africa, and can say with a certain authority that all of these farmers are primarily interested in aquaculture as a money-making venture. In the case of "projects" they also like to get involved for the entertainment and social value that the project activities bring, but this is independent of the actual aquaculture.

Randy

Thu Jun 17 10:36:05 BST 2010

Hello Bill

The point is not to exclude smaller scale operations, but to say that commercial operations tend to do their homework carefully and approach the business of aquaculture with a bottom line focus that usually results in success. In contrast, the small scale operator often has limited business knowledge and relies on donor funding to support his venture into aquaculture. This donor funding is typically based on a central hatchery supplying fish to the dispersed growers each having one or more small ponds. For this model to be sustainable and the growers to move meaningful amounts of fish through their ponds, achieve fair growth rates and actually make some money at the end of the day, requires ongoing support in the various ways described before. Without these support mechanisms the growers are unlikely to succeed as we generally lack the culture of aquaculture in Africa that is so widespread throughout SE Asia.

Regards,
Leslie

Thu Jun 17 11:04:08 BST 2010

I think that Leslie is right, and perhaps the crucial point is the comment that "we generally lack the culture of aquaculture in Africa that is so widespread throughout SE Asia". Small scale fish farming for food rather than money works only if it is a popular food, as is certainly the case in Vietnam. In less fish-oriented countries I guess it will not work.

For example, some years ago I was part of a group from Europe, mainly Portugal, that went to East Timor and met with the Minister of Fisheries and others to discuss ways in which we might help them develop their fisheries. I guess that we were thinking in large part about infrastructure, such as the handling and transportation of fish, but the more I saw of the local culture I realised that even though Timor is an island, this is not a fishing culture, and that cultural issues were more important problem than infrastructure ones.

I would however like to observe that during some work I did with FAO where I met scientists working in aquaculture development I was totally amazed at what some of these people had been doing, their expertise, persistence and familiarisation with local cultures. These were mostly people working in Asia, but I do feel that the scientific community includes many people who could accomplish great things if given the chance.

Bill Silvert

Thu Jun 17 13:37:32 BST 2010

First, let me congratulate the participants of this discussion in one of the best I have seen on this list server. And, to think I almost deleted these without opening. I thank you for your passion for aquaculture development.

Both private and public development is important and each has a special role to play in aquaculture development. I have worked both in subsistence and commercial-level aquaculture development. My work with Peace Corps in Zaire (DRC) focused on tilapia production with compost and supplemental feed. It provided income and food-both beneficial to the farmer and his extended family, but overall production increased very little.

Commercial aquaculture (**aquaculture as a business, not industrial aquaculture)** has the potential to provide greater income, production and, of course, risk to the farmer and the country. This requires quality feed, seed and other inputs. It requires development of an industry sector. An industry has a greater chance of sustainability if it private-sector led. Public or donor funds can help to offset the initial risk associated with a new industry. Governments need to facilitate development by creating a private sector friendly environment that protects the public interests-particularly environment. Government investment should also include development of the support system, such as extension, which can also be supported and sustained by the private sector and universities. Many integrated companies have their own technical advisors that work with the farmers to answer all questions and provide support services, such as disease diagnostics. Feed companies can also have salespersons trained in feeding and feed management as well as aquaculture in general. Government through universities and the private sector can support research. So, there are roles for each sector to play.

When looking at the development of an industry, sustainability is reached when there is development of a critical mass that will support the input sector. For example, a feed mill will not want to put in an extruder and the required equipment without enough demand for that product (and return on their investment). Having a few large farms that can create that critical mass (feed demand) will allow the feed sector to develop. This likewise will provide the input that the smaller size farm needs. Donor funds can assist in offsetting the risk (supporting partial cost of equipment) to the feed mill in buying the equipment before there is enough demand to justify the investment.

Development projects, particularly those funded by donors, tend to be a little like venture capitalists. They want high impact and quick return on investment. This is where we get into the numbers game-how many people 'trained', how many new farms started, income generated, etc.

What is needed is the long-term investment by donors and government that allows the extensive training mentioned by others. **Knowledge is power and the greatest investment that can be made**. If you look at some of the countries in Asia where aquaculture has developed, government has 'invested' in its development and set goals for its development. It has provided support and 'subsidies' to make it happen. Have there been failures? Yes, but also successes.

Again, thanks for your passion and this discussion.

Bill

Bill Daniels
Department of Fisheries & Allied Aquacultures
Auburn University, US

Thu Jun 17 16:27:29 BST 2010

I agree with you Bill and the rest. Substainability – critical mass for any industry to develop, need for subsidy may not be ruledout, but attitude must be addressed . In my mind I had already declared subsidy a word not needed in aquaculture when Jérôme rightly said that subsidies should not be individual but rather encampasing and giving general direction, changed my thinking. I then made some search for the definition of subsidy and got something like:

What is a subsidy?
Definitions of subsidy vary depending on context. In one basic definition, subsidies are… "government actions that encourage certain specified activities or improve the profitability of specific sectors in an economy. Such a definition can be interpreted broadly or narrowly. In the broadest sense, almost all government programs might be considered subsidies"

(By Alberto Goetzl Seneca Creek Associates)

In the 1500s "subsidy" referred to taxation, for example the tax introduced in England by Thomas Wolsey in 1513 based on the ability to pay.

Subsidies are given for a range of reasons among them biosecurity e.g Bovine Spongiform Encephalopathy (BSE), commonly known as "mad cow disease", is a fatal, neurodegenerative disease of cattle and also infects people. You note that sometimes profitable companies to be 'bullying' governments for subsidies and rescue packages, especially where there are main streets and or one way streets…

A further definition of subsidy would be an agricultural subsidy is a governmental subsidy paid to farmers and agribusinesses to manage the agricultural industry. This has been used at some stage to encourage urban –rural migration in Kenya. How about rural poverty and poverty relief? Actually in Kenya subsidising farming may encourage people to remain on the land and obtain some income.

In Europe the farmer population is approximately five percent of the total population in the E.U. and 1.7% in the U.S. The total value of agricultural production in the E.U. amounted to 128 billion euros (1998). About forty-nine percent of this amount was accounted for by political measures: 37 billion euros due to direct payments and 43 billion euros from consumers due to the artificially high price. Eighty percent of European farmers receive a direct payment of 5,000 euros or less, while 2.2% receive a direct payment above 50,000 euros, totalling forty percent of all direct subsidies. The average U.S. farmer receives $16,000 in annual subsidies. Two-thirds of farmers receive no direct payments. (http://www.ewg.org/farm/findings.php)

Thanks Randy for your kind words to small scale fish farmers
and Pete Britz for stating that aquaculture is inevitable in Africa.

Having put this down allow and forgive me to ask some questions that keep recurring in my mind:
1. What is the relationship between Aquaculture and Fisheries? Consider that buffalos and cows are closely related and yet one is wildlife, while the other is livestock.
2. Can we define aquaculture as agriculture in water?
3. Who is to go to jail if aquaculture has failed? I guess professionals and not farmers!
4. Who has to campaign for subsidy reduction in aquaculture? Should it be aquaculturists?
5. Do we have any success stories of aquaculture in Africa, which should be used instead of so many literature about failures?
6. How many aquaculture scientists in Africa have run successfully an aquaculture enterprise? Should those who have not run one be allowed to advise farmers?

To me one of the main constraints is the **completing of the supply-production chain circuit in a coordinated market.** In our recently concluded aquaculture strategy for East Africa under Lake Victoria Fisheries Organization (LVFO) funded FAO TCP project support aquaculture sub-sector to countries around Lake Victoria and coordinated by John Moehl, we identified eleven action areas most of them have been mentioned in this discussion. I think we are about to get out of the woods especially if we can take responsibility of any failures in aquaculture.

Cheers Daniel Oenga

Thu Jun 17 10:49:52 BST 2010

Hi Bill and colleagues,

Randy's perspective on promoting commercialisation of aquaculture may seem counter-intuitive, but decades of donor and government driven investment in subsistence aquaculture have yielded small returns, AND this conscious bias has severely compromised the emergence of commercial aquaculture in post-colonial Africa. More worrying is that Africa is heading into a massive fish supply deficit that small holder aquaculture can never bridge. The policy of governments and donors has been to directly assist the "poorest of the poor" with subsistence level aquaculture technology, and it was expected that commercial aquaculture should take off spontaneously through commercial investment.

What was achieved from decades of small holder aquaculture promotion? Seen optimistically, it has yielded some success in terms of uptake by small holder farmers, and it is estimated that there are some 200,000 non-commercial fish farmers in the sub-Saharan region (Hecht, 2006 FAO national aquaculture surveys). The FAO national aquaculture sector overviews and other studies suggest that the nutritional status of fish farming families is better than that of non-fish farming families in rural areas, and the sale of between 20 and 60% of production at the farm gate or in village markets indicates that small-holder producers also benefit financially. Fish ponds are also be used for water storage and irrigation and therefore reduces risk of crop failure. Andrew et al. (2003) illustrate the importance of fish ponds as "banks", where "interest" is withdrawn for improved nutrition and cash as and when needed.

However, the total production of small-holder aquaculture is very low – the average reported production level by non-commercial farmers is still very low, with a mean of 1.03mt/ha/yr (Range 0.28mt to 3.2mt/ha/yr), which equates to around 20kg per year for the average 210m2 pond (Hecht, 2006). For example, the total production of Malawi's 4000 odd non-commercial fish farmers is estimated to be between 48 and 240 tons with 80% of farmers producing less than 18kg of fish per annum (Shipton and Hecht, 2005). It has been shown that that production can be increased to > 2.5mt/ha/yr through participative on-farm research and extension (Brummett et al. 2005), but even under the most optimistic scenario small scale aquaculture production will not satisfy Malawi's projected fish production deficit of 17,000t by 2025. The donors all feel that promotion of small scale aquaculture has not yielded the desired socio-economic dividends and have largely abandoned aquaculture development projects.

So what to do? Commercial aquaculture has huge scope to increase fish production in Africa and is now taking off in many countries driven by higher prices (and declining fisheries such as the Nile Perch in Lake Victoria). I know this expensive protein from aquaculture does not provide fish to those in poverty, but it does help to create jobs and bring people into the cash economy where, as Randy points out, they can pay for school fees and begin to escape

from the trap of a rural subsistence existence. It is encouraging that many African governments are now developing policies more conducive to promoting investment into commercial aquaculture.

For me, Africa's growing fish supply deficit is extremely worrying, and it seems inevitable that per capita fish consumption will continue to fall with consequences for human health. This will only be partially offset by increased imports of cheap fish, aquaculture and improved fishery management.

Regards Pete Britz South Africa

Small scale fish ponds Ethiopia: Thousands of such across SSA. How can we best help such fish farmers who have spent their own sweat and labour building such ponds. This farmer has never been able to obtain hatchery reared tilapia fingerlings in 3 years since he started. Instead he collects tilapia fingerlings from the wild. Despite his considerable investment he says the results (harvests) have been disappointing.

Thu Jun 17 13:29:05 BST 2010

For me, Africa's growing fish supply deficit is extremely worrying, and it seems inevitable that per capita fish consumption will continue to fall with consequences for human health.

That is one of the key questions! The consequences have a cost.
a) How can this cost been calculated at all scale: local, regional, global and worldwide?
b) How can it been transform in subsides to efficiently and effectively help small pounds aquaculture and keep it alive?
c) Which type of organisation, plan, institution and infrastructures could be of a help if this conversion is stated as a priority?
d) How to evaluate the trade off and communicate at all scales about it with all the stakeholders?

Athanase BOPDA

Thu Jun 17 14:16:07 BST 2010

Dear all,

Very interesting discussion!

I believe aquaculture offers a range of technologies and opportunities for a range of people living around the world. Indeed it has been an outstanding success story and has become the fastest growing food production sector. This development occurred in the last 3 decades. If we see in Vietnam alone, there are areas where almost every rural household has a pond as an integral part of a family garden which supports a whole family. For them, saving of US$20 for not needing to buy fish from the market is a lot.

At the same time, there are Pangasias catfish farms (deep ponds) which produce up to 850 ton/ha/crop (?). One of the farms I visited showed net income of up to US$10,000 per month. In between these two extremes there are many many many developmental stages of aquaculture.

We should not forget that aquaculture is not only the SCIENCE but also an ART (may be more an art). Selection of people and the places are important in order for a technology to be successful. In other words, we have to fit the right technology in right place (round peg in round hole). Therefore, we need to know whether the hole is square or round. I am sure most of the projects failed in the past were designed without knowing the real field situation. One system does not work everywhere. I guess everyone agrees that we can't generalize the whole Africa as one and the same everywhere. I think and have seen (we actually had a lady who was involved in workshop at Lilongwe in Malawi and also Cameroon), there are places where farmers grow crops and vegetables, and raise chickens, pigs and cattle together like in Asia. For them, addition of a pond (if there is adequate water), could be an added advantage. I believe, this is an important strategy for small-scale aquaculture promotion. We also should keep in mind that small-scale aquaculture has not been promoted as the main occupation. In such a farming system, one component helps another. Sometime one component may not give net profit but it can still continue to exist. Because farmers, see the whole system, if they are getting benefits in terms of other uses e.g. green water for vegetable gardening, rice/maize bran for pigs etc. Farmers grow rice/maize even though there is no net profit if we calculate the cost of everything including labour. They may see the return on labour as profit because they would have no other options (zero opportunity cost) in those rural areas. I have been launching small-scale project (AwF at the moment – www.aquaculturewithoutfrontiers.org) in a place where $20 can help construct a 100-200 m2 pond for each family. Well, here issues may be raised about the subsidy. I believe there are critical points at which people are desperate to cross the border line to achieve something but due to a small hurdle they get stuck. Helping them to help themselves is the best strategy. Telling them it is just for once. Subsidizing for recurring cost items are the problems e.g. feed, fingerlings. Digging a family pond is one time investment. I do not see any big problem helping $20-30 to a family. May be problem is within us who may want to grab the opportunity instead of helping 1,000 farm families while designing a project!

While promoting aquaculture, we often forget what options they already have and how we can fit it there rather than presenting it as an alternative to the existing one. We compare between rice and fish farming. Rice gives 4 ton or even less and fish also gives 4 ton per ha but fish has 10 times higher price and more than that fish farming does not need labour so much as rice farming needs. More importantly, they even do not need to stop growing rice. They can grow together and take the benefit of both. Farmers understand clearly and though they want to try in a small area first rather than taking a risk before doing in many possible plots. I was amazed to know the enthusiasm of the people who constructed 40 ponds in a month after we visited the site and talked with them. Some of the families we helped with US$20-30 to dig a pond of 200m2 have now expanded their ponds up to 2 ha in size and have become commercial farmers. This gives a lesson that farmers will not stay at the same level, they try to move on, if they see it really works. Promoting small-scale aquaculture does not mean stopping of commercial aquaculture. It should be the gateway for commercial aquaculture. I believe that where there is chance we can straight start from commercial venture but where resources are limited steps should be gradual starting from small.

It is right that small-scale aquaculture or any traditional system of agriculture can't fulfill the aspiration of youngsters and those who want immediate and huge profit and overnight lifestyle change. Sons and daughters of the farmers themselves normally do not want to be farmers because they see the hardship and people always see another side of the river more green. Aquaculture may not be the right choice for them and aquaculture does not have to fulfill

everyone's aspiration. Other sectors are there for them. If they still think and see aquaculture can be an option for them, then we have to be able to give them a plan for profitable commercial venture with sufficient technological and other supports. Rather than forcing them to get involved in aquaculture just to show our progress, we need to be honest to show the potential risk of failure.

I would also think people would not feel convenience to hear that public funds are used to promote commercial ventures directly. They may question whether we are helping the needy ones or the ones who are already capable. We can argue that it creates jobs for the poor. It is partly true. However, questions can be asked - who gets those jobs? Do the farmers go and look for those jobs? Of course not. Farmers in rural areas can't leave their farms. Then targeting these farmers who are in millions in every country with small-scale aquaculture as a tool is the right option. Even though, we try to help them with commercial aquaculture, they may not be able to grasp the idea and again there is danger of failure.

In conclusion, successes and failures depend on us. We are the ones to choose an appropriate technology for a particular place to achieve the set objectives considering not only geo-physical factors but also socio-cultural and economical factors. I also believe doing nothing fearing of failure is more crime than attempting something for good but failing.

More later. Best wishes,

Ram C. Bhujel, PhD
Aquaculture and Aquatic Resources Management (AARM)
SERD, Asian Institute of Technology (AIT)
Pathumthani THAILAND

Thu Jun 17 18:28:02 BST 2010

Colleagues,

Permit me jump into this conversation by way of self-introduction. I am relatively new to the SARNISSA forum— 3 months new, but I have been keen on following the various postings that have come through the forum since my account was activated. To say the experience has been educational for me (and my African aquaculture students) is an understatement; I have also come to realize that there are far more experts working in Africa who are genuinely passionate about aquaculture development in Africa, even if they made mistakes in the past or continue to do so amidst some successes. Thanks for the visionary SARNISSA founders and funders. I was invited to join SARNISSA by Charles Ngugi, with whom I collaborate on a network of USAID AquaFish CRSP funded projects in Africa. My relevant expertise and interests are in Fish Biology and Conservation, International Aquaculture, Environmental and Aquatic Biological Resources Management, Natural Resources Policy, and Biological and Environmental Statistics. My previous training has never taught me some of the great ideas I have gathered from the forum over just several months. My profession has been university teaching and research. I have ventured into development-related research in Africa only in the past 3 years and I know am in it for life. I would like to assure you all that you are making an impact, one person at time; I take notes when I read your thoughtful contributions!

On to what my thoughts are on your proceedings on "philosophy changed", I don't see many contradictions in opinions that have been expressed. Many are pieces of a bigger puzzle. But I see a healthy debate that is identifying problems and opportunities, subtle and glaring, facing aquaculture development in Africa. These problems and opportunities are being reported by people actually on the ground working hard, trying it many ways, aiming for success; it is not a list generated by distant theorists. Now Charles and others, you don't deserve to be in jail when something fails! You take the lessons learned and avoid repeating the same mistakes. I hope some of us are taking notes on all the conversation, or you may borrow my notes later. In my experience, three of many enemies of aquaculture development in Africa, some of which have been identified in this discussion bear repeating: 1) hard science that is context-relevant is not given as much priority as needed in Africa; 2) little to no aquaculture extension services exist in most countries; and 3) personal security and private goals of the players involved sometimes gets in the way of common sense.

Some in the development community feel that the urgency of Africa's problems cannot wait for scientific research in Africa. We have to find other ways to turn problems around in the shortest possible time— certainly, donors are under pressure to operate this way because they compete with other donors for success stories, but this notion needs to change; accumulated failures from rushed projects are equally embarrassing to donor efforts. Sometimes you wonder what the research in R & D really means. Quality scientific research takes time. Sometimes, it takes a lot of time. But science has incrementally driven the progress of developed countries. Trivializing hard science as an engine for Aquaculture development in Africa has given impetus to the one-size-fits-all notion. One-size-fits all appears to be an entrenched fallacy for development of anything in Africa. Knowledge and success from elsewhere can be borrowed, transferred and tried, but as the socio-economic, political, and the biophysical/environmental context of the success varies from one place to another, even for places within Africa, so should we strive (through rigorous research) to understand what aspects of technologies and policies that have worked elsewhere should be modified to implement successfully in Africa and in specific countries of the continent.

Recently, I visited a number of small-scale farms in Ghana with an number of local scientists. Many of them had only 2-10 small ponds. They called themselves commercial, not subsistent farmers. Everybody I talked to seemed to be in it for profit and not to only feed their families with fish. Surprises were everywhere. Many farmers were growing tilapia (primarily O. niloticus) and Clarias but also many non-traditional species for which they obtained seed from the wild. No one could reliably comment on the sustainability of using wild-caught fingerlings to support aquaculture intended to be commercial, not to talk about the potential environmental impacts of how and how many of these fingerlings are harvested to grow in ponds. This is just fishing them young, and cutting into recruitment with unpredictable consequences. Local scientists agreed they did not know how these species bred in the wild, let alone developing them to breed in captivity. What do these fish eat? Many farmers fed them anything they could move into their pond, or at best they fed them what they knew other fish eat. Quite a haphazard way to develop species for aquaculture. Frustrating literature search on most of the species later yielded scanty information. As an addendum to our ongoing project, we developed a proposal to study the reproductive biology and nutrition of some of the most common non-traditional species. Because such studies are loaded with experiments, I also saw an opportunity to offer short training in experimental design and statistical analysis to fisheries officers (the closest you get to aquaculture extension officers in Ghana) and student-trainees working on the project. To my dismay, some development experts who reviewed this proposal described it as an 'academic' exercise that would have no real impact on aquaculture development in Ghana or Africa. Forget the fact that farmers know tilapia and Clarias and they were reaching for something different. And forget also that basic biological knowledge is needed to develop a species and that foreign-funded research should go with local capacity-building to ensure sustained R & D when donor support ends. The cost of poor-quality research could be higher than the cost of no research. I think Ram hit the nail right on the head when he talked about fitting development projects into the options farmers already have rather than presenting an alternative. If they don't like tilapia or Clarias that much, efforts to extend tilapia and Clarias culture technology in this situation could be a net loss.

I have also read here over and over about the problem of no meaningful aquaculture extension in Africa and I have seen it myself in Ghana. It is all the more surprising because there are vibrant agricultural extension services in Africa, meaning that there is a working model that could be applied in the same countries for aquaculture. When I went through my bachelors program majoring in fisheries in Ghana, I had only one formal course in extension and, you probably guessed right, it was agricultural extension. The expectation that research scientists should also do extension is subtle but real in some development project plans. But the reality is that scientists cannot also do extension at the farmer level. They will be inefficient at both. There just aren't enough scientists and efficient mass communication channels to spread scientists so thin doing extension. Scientists can best train the trainers who should be aquaculture extension officers. Farm-scale extension in Africa, where many of the target farmers cannot read much, cannot be modelled after developed countries where mailing brochures with critical information to farmers will keep them informed and lead to adoption of improved practices. It is the fitting role of governments in Africa, if they truly see aquaculture development as a priority, to team up with universities offering fisheries and aquaculture programs to offer robust training in aquaculture extension, and make it a distinct job description in the ministries that people need diplomas to do. This is doable because it is already widespread in terrestrial agriculture in most countries.

Finally, I hope not to seem to be pontificating here but to admit that we all hold on to some self-interests that often gets in the way of common sense approaches to efficient utilization of donor and government resources. To be blunt; turf wars, internalities, and private goals plague African aquaculture in ways that are not written about, not even spoken of comfortably in a forum like this, but significant. Lionel alluded to this in an undertone in an earlier

mail. I have seen a situation where scientists from the US, using external donor support, attempted to team up with personnel of an international organization in an African country to offer training to fish farmers. A discussion of who works with what piece of the pie ended on a sour note and the said collaboration did not happen, the power of pulling resources for development was not harnessed, and you can be sure the poor farmers who are the would be beneficiaries lost the most. If only we could all act a little less selfish sometimes!

Thanks to William and others again for opening up a great forum.

Cheers,
Emmanuel

Emmanuel A. Frimpong, PhD
Department of Fish and Wildlife Conservation
College of Natural Resources and Environment
Virginia Polytechnic Institute and State University, USA

" Knowledge is Power"?? Mid scale Integrated fish farm Ashanti Region Ghana Sept 2009 – constructed and developed by retired Ghanaian Fisheries Dept official.

Fri Jun 18 10:28:18 BST 2010

Folks,

To contribute to the discussion on the subject Change of sophism , a few minor aspects of development have never been touched and need to be considered.
One of contention that lies behind the discussion is **that the farmers are too stupid to know what is best for them and fish farming is such a wonderful business. There is thus need to leap to the rescue of the SSA farmer.**

Remember this:

The first maize and bean seeds reached the shores of the Gulf of Guinea and Angola at the end of the XVIth century and were probably adapted to a hot and humid climate and low land areas as they originated from the New World. The culture of maize and beans reached Burundi and Rwanda during the XVIIIth, maybe even the end of XVIIth century, where, since then, beans has been the staple food.The large scale adoption and cultivation of beans by all Barundifarmers under high altitude conditions is an agronomic miracle. To this effect, the seed needed to be physically transported from the Atlantic coast to the farmers of Burundi and Rwanda living in a isolated and secluded kingdom. It included the selection of varieties adapted to high altitude, in a cold climate, the extensionof the culture practices, the integration within the highly sophisticated farming system of polyculture. To achieve this in such a short time is at least astonishing.

What can be concluded from this: the farmer is always right. If he does not adopt the practices you - developers, extension workers, business people, aquaculture innovation business pushers, researchers, academics - try to convince him with, it is because he does not want to. Full stop. He has farming knowledge to practice farming as an art not as a science. He knows how to adapt technology to his practices. The farmer is the very ingenious for those who have not yet approached them! He is not impervious to innovation.

Lets go back in time and to Burundi again:

The agriculture systems developed since the early stages of development relied on on cow dung for the fertilisation of their farms; after the fifty years of environmental disasters that struck the region during the 1889 -1944 period, where the cattle herds were devastated by rinderpest epidemics and animal fertilisers were not anymore available, the farm was re-centred around the fertility generated by the banana plot, the banana shamba. This proves that the farmers had integrated the essential concept of need for nutrients for agriculture.

Though farming within water is not the same as land farming, but the ingenuity of the acadjias in Benin proves that the farmers understand the basic principles of fish farming.

Two other aspects need to be evoked: Fish farming must be considered within agriculture development and the sorry state of agriculture development explains partly the problems faced with fish farming development. Agriculture has been looked down by most of the rest of the population; no much resources of public national funding have been devoted by its development. The farmer population is ageing; there is no much attraction and incentive for youngsters to consider a career as a farmer. It is a last resort profession.There is no institutional security for local farmer to engage in farming business (land tenure problems and the cynics behind it) and for a farmer to dig a pond that has a return on investment over many years is no-goer. If there is no vision of what farming will be in ten, twenty years time, how do you expect him to invest?

Development of fish farming needs to be integrated in the planning of agriculture development. Planning needs to be seen as an endogenous dynamic process with an active involvement of the stakeholders, so that a vision is developed, resources are set aside and the adjustment to the changing economic environment are made in the course of the time. Large scale development of fish farming can be developed by foreign investors with the African farmer looking on, but it is what you want?

A last point, for those you want to send the technical assistants to jail for devoting their life time in harsh conditions in SSA :
"Hongera!
Tafadahli fahamu muda uku tumie kujifunza maarifa yangu" :-)

Cheers,

G. Delincé,
Brussels

Sun Jun 20 07:42:36 BST 2010

Final Sunday thoughts,

Overarching my previous contributions to this discussion, I believe Guy is absolutely correct: the farmer is right! I thank Guy very much for bringing the discussion back to the real crux and the real champion: the farmer.

People often ask me what has changed in aquaculture in Africa over the pastdecades and I think one of the major, albeit modest, changes is that aquaculture, as fish farming, is no longer an innovation to much of the farming population: people now know about aquaculture, even though thisknowledge may be imperfect or incomplete.

Farmers across have been "assisted" by a wide variety of efforts to introduce, implant and promote aquaculture in a variety of forms and ways. We then suffered a hiatus in the 90s and most donor-dependent national aquaculture extension programmes fell into the doldrums. To a large extent,what remains today is what farmers have picked and chosen from thesewholesale efforts of the 70s and 80s: what fits for them. Those ponds that are still raising somehow or another some fish represent some value addition for the farmer through the use of what once were new technologies; otherwise all instead of many ponds would be abandoned.

Cheers, John Moehl
FAO Accra Ghana

Fri Jun 18 08:57:41 BST 2010

Colleagues,

I agree in general with many of the comments made today and have greatly enjoyed the discussion. I particularly agree with the idea that well-targeted, quality technical assistance is probably the most critical need. It's great that people are thinking seriously about these issues. There is, however, "an elephant in the room" (i.e., a big, over-dominant reality that people seem to be ignoring or forgetting). Let me try to put my earlier comments into context:

By and large, aquaculture development projects in Africa have been driven by the international development community (i.e., the donors). For most donors, the point of these projects is not to develop fish farming per se, but to encourage rural development and promote food security. With the elaboration of Poverty Alleviation Strategies in 2002-2005, most African governments have outlined how they see donor intervention contributing to the Millennium Development Goals. Through this process, the donors are making an effort to replace their traditional "top-down" approach with one that more closely matches the objectives of local government. My reading of the aquaculture strategies in many African countries clearly emphasizes the desire to see aquaculture contribute to job creation, reduced foreign dependence on fish imports (and thus the export of valuable hard currency) and national food security. Basically, according to the Ministry of Animal and Fisheries in Cameroon, they want to see fish in the markets at a reasonable price.

Probably the quickest way to achieve this goal is to encourage foreign direct investment in large, industrial fish farming (say 3000 TPA for purposes of comparison) and that is what we are seeing happen. These farms produce lots of fish with negligible support from government. Most economic models, however, indicate that more, smaller-scale commercial investments (100 TPA) would in fact generate more jobs and more broad-based development than do a few very large farms.

Despite the fact that most of us doing aquaculture research and/or development in Africa have one or two local cases that we can point to as successes, the vast majority of development assistance to fish farms that produce less than 10 TPA (and mostly less than 1.0) has been largely wasted in terms of the national objectives for the sector. Although i myself have argued forcefully for support to this sub-sector, farms of this scale simply do not generate enough fish, revenues or jobs to be either economically viable without continual subsidy (and even with subsidies in many cases), never achieve sustainability (we, myself included, have been flogging this poor dead horse for nearly 30 years now) and have managed to get practically no one out of poverty (other than a bunch of development professionals and NGOs; Mea Culpa). This is for a lot of reasons that we have been debating for years. It may be because i am getting older, but i no longer believe in magic bullets.

Given that the poverty line is about $**2.00 per person per day**, meeting the MDG of getting half of the world's poor out of poverty by 2015, means that a family of 6 (on the low side in many African countries) **needs a net income of $4380 per year.** This not an unreasonable amount of money to expect to earn from a small-scale, commercially viable aquaculture business, but is a huge leap from the **$20 per year level** mentioned earlier in this discussion. In

my experience, the poor folks who will undertake projects that return such low yields are those who are truly desperate. These people need real help, not a fish pond which might keep them going for another 5 days. From the point of view of the desperately poor, every day is important, but national governments and the international development community are ignoring their responsibilities if they think a small-scale aquaculture project is going do them any real and lasting good.

I don't know exactly how much poverty aquaculture can alleviate. The large-scale African farms I have studied, produce on average about **0.3 above minimum wage jobs per ton of fish produced and marketed**. In Cameroon, small-scale commercial farms employ about 1.0 person per ton, plus a variable number among traders of inputs and outputs (i.e., the value chain). What I do know is that **a farm that produces 100 kg of fish per year doesn't employ anybody** and serves only to fuel a big annual fish-fry in the village. Lots of fun, but not one of the MDGs…

OK; I've had my say. Tear me apart!

Randy

World Fish Center Cameroon

Fri Jun 18 10:04:21 BST 2010

Randy
Your arguments make sense. However, perhaps the benefits of small scale fish farming should not only be looked at only in terms of how many jobs it creates or cash profits! In countries such as Malawi, these fish ponds provide a reasonable cushion against shocks such as drought. This is particularly important as we see effects of climate change making complete shifts in weather patterns. It is on record in Malawi that when drought struck in 2005, and maize crop (main staple) failed, the areas that were least affected were those that had integrated small scale fish pond culture into farming for obvious reasons- water for irrigation. Thus, small scale fish farming can greatly enhance food as well as nutritional security!!

Having said that, the question arises as to how we can link these small scale farmers to the whole value chain just as the small scale commercial operators you have alluded to! This to me, is the issue! I do think that we have spent our energies on production side and to less extent on marketing or enhancing the full value chain/ innovation system for these small scale farmers.

Emmanuel Kaunda
University of Malawi
Bunda College
Lilongwe
Malawi:

Sat Jun 19 09:53:15 BST 2010

Dear all in the SARNISSA family ,

Thanks and congratulations on this exchange and debate - its going out widely to 1400 people - many of whom who though not contributing I know are enjoying. I propose, with Lionel's agreement? , that similar to the previous forum debates on feeds and Claris farming we collate all of these discussions into one SARNISSA publication which will then be available to all to read and benefit from in the future on our website and Facebook site - Please let me know any contributors who don't wish their words to be included - no problems we will remove them. I will wait until the end of the debate before collating together into one publication - I would just add Lionel would be good to see what happens if we get similar subject up on French forum ?

Sometimes its good to throw a stone into the calm pond water and watch the ripples / waves? radiate out to the edges

Keep talking Will

Sun Jun 20 15:43:02 BST 2010

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just remember the glass houses.....

John

Sun Jun 20 19:20:04 BST 2010

Dear Colleagues,

I agree with James' comments on the need for us to understand "political economy" as well as the urgency for providing guidance to "donors and governments on areas for investment".

Sloans Chimatiro
NEPAD

Sat Jun 19 13:42:19 BST 2010

Good idea, Will. It's especially fun to "skip" stones across the surface
and see what good ideas come of all the interactions!

James

Sat Jun 19 09:59:37 BST 2010

Emmanuel,

Just to add one more bit before I get to the plane, you make a valid argument for the farm ponds to which I was referring in my earlier mail. However, I take exception to the use of the descriptor "small scale" -- how small is small? I realise that we all use this adjective in many ways and it is unavoidable. Nevertheless, in the current context, I think the dichotomy is farm pond versus fishpond [or farmer with pond versus fish farmer] as opposed to small- versus large-scale. One is a viable business [commercial] and the other [non-commercial], regardless of how large or small, is an activity that complements the whole farming system, reduces risk, enhances resource use,and adds other values but does not show a financial profit.
One of the real factors that separates what we might call the commercial from the non-commercial is the use of time. Harvests must be done on an economic calendar if operations are to be profitable. Many, if not most non-

commercial farmers harvest on a social calendar. Labour inputs must be continuous/constant if the farmer is to achieve consistent profit. But agricultural systems based on seasonal cash crops [coffee, cotton, maize, etc.] require uneven labour budgeting with the farm pond often getting no labour during peak season for the principal crop[s]. It is when fish becomes one of the cash crops that the time is allocated accordingly.

This is in no way intended to minimise the value of these non-commercial systems which, as you point out, are important. Among others, their role in climate resilience is valuable and they should not be marginalised in terms of national programmes. But, should they benefit from the investment of significant amounts of scarce public funds/services as I asked in my earlier mail? The balance of these two segments of all national programmes is one aim of the on-going processes targeting national strategies and plans.

These subsidence farmers will be, hopefully, parts of value chains as they evolve. They should benefit from better input and market availability as these arise -- but these will only arise when they arise as a response to the development of a sufficiently large commercial segment -- even if this is comprised of smallholder farmers.

Cheers,

John

Wed Jun 23 23:26:51 BST 2010

John,
This is an excellent explanation of the commonly used, but confusing terminologies. The descriptor now helps to correctly classify many stakeholders in fish farming.
Thanks,

Eyiwunmi Falaye

Sun Jun 20 23:21:35 BST 2010

This is good news,

However, my hope is that such a think tank session should focus on the context, potentials and determinants of success in Development strategies for Africa. My wish, though expressed late, is that 'Primary stakeholders' be part and parcel of the Think Tank, and not just in stakeholder or consultative fora where quite often the 'The Think Tank' resolutions are cunningly imposed by way of 'persuasive consultation'. What I have seen quite often is development that is exogenous conceived which is therefore received by the farmers who become beneficiaries rather than development partners. I am getting almost persuaded that; It is the Approach; It is the Implementers; It is the scale of investment, all of which tend to go tangential to the real cause and effect of aquaculture and fisheries development-which, in my opinion is embedded in the core of the need to transform the mindset from subsistence(short term) to entrepreneurship (Both short and long term)bearing in mind that Poverty is a major underlying cause to which we can never turn a blind eye.

I wish this was reflected on by the Think Tank.
Best moments Dr Sloans and the rest of the Tik-Tak.

Joshua Valeta University of Malawi, Bunda College of Agriculture,

Mon Jun 21 05:37:36 BST 2010

Hello All

This is my first post here but have been lurking for sometime in this fantastic forum. If I may give some very quick points from an Australian perspective. I understand Joshuas point about persuasive consultation. In 2004 I was part of a group that carried out a scoping study on Indigenous Aquaculture Development in my home state of

Queensland and the islands reaching into Papua New Guinea. Our core, and I mean core goal was to scopewhat the communities wanted nothing more, nothing less. The 280 page reportwas a hefty doorstop to say the least, but it did outline the wishes of the community. Six years on and not a lot has happened as it moved into the nextphase of implementation. We have a couple of small farms happening, but nothing major. I feel that they have been let down *after* they voiced to us what their aspirations were. Essentially, there was money for the initial consultation and not much for anything after.

On another note about farming in general.

I have been aquaculture for over 20 years now with a large chunk of that commercial (the rest in training and consulting) and all I could say **is farming is bloody hard work!!!!** We have a monodon farm in our state that I work with sometimes, a good farm, no,,, a great farm, they have just harvested 870 tonnes of product from 50 hectares. A phenomenal result in anyone's book. They have a great R&D domestication program with government (and in house), great training, good management etc etc etc. If you were told about this year's success of the farm you would want to go and get some money to start aquaculture. The thing is, that the farm (which has always been family owned) is in it's 24th year of operation. That is 24 years,,,,**they have been broke at least twice** and have given 110% every step of the way.
The owner is a happy man, but his staff still can't get him to wear shoes.

Cheers Mark Oliver
Australian Aquaculture Support Services Pty Ltd

Mon Jun 21 08:33:06 BST 2010

Hi Mark,

Thanks for this practical example. Indeed that is what aquaculture is: Now this is where us in Africa need to start from.

I need to appreciate that this is one of the practical examples I have seen in this network.

Mirera.

Mirera H. O. David
Research Officer
Kenya Marine and Fisheries Research Institute (KMFRI)
P. O. Box 81651-80100
Mombasa-Kenya

Tue Jun 22 09:53:37 BST 2010

Micro-scale indeed will help Africa if and only if Africans are determined to help themselves

Abiodun Adeyemo
Nigeria

Sun Jun 20 21:58:51 BST 2010

James that where we should have started throwing our stones IN THE FIRST PLACE MARKET ACCESS. There is a monkey up in the mango tree with ripe mangoes and you need the mangoes. The best option to get the mangoes since you can't climb, is to start stone throwing fight and since the monkey has no stones up there it will respond by fighting back with Mangoes. When you get enough mangoes on the ground stop the fight and pick your mangoes

I am saying without the market (organized) no matter how much we put in there will be no fish. Africa and African culture is very social and we will be expecting too much from the fish farmers when we ask them to sell their

produce to neighbours. Of -course the neighbours won't pay for the fish because they are related to the fish farmer in one way or another. Somebody should help me to put this in a better social cultural language. Secondly fish has always been fished and given for free. This two have held aquaculture back in my view.

Mitigation; Help add the small fish into grams, kilograms and may be tons and let someone help harvest, pay for the same, sort out and market just like other agricultural produce. I suggest money should be put in organizing aquaculture produce into a cooperative kind of market. This will not only mitigate the negative social aspects, but most importantly share the expenses among a group. In the think tank I would wish special attention is put here too

PLEASE WHEN YOU THROW THE STONES UP WATCH THE ANGLE, LEST THEY COME BACK ON YOUR HEAD

CHEERS Daniel

Farmed tilapia widely available in Egyptian supermarkets at affordable prices

Sat Jun 19 10:39:35 BST 2010

Sorry if wandering to far away from the ongoing discussion. Not specifically related to aquaculture but an interesting talk about poverty traps from the recent Worldbank ABCDE conference:

By Partha Dasgupta, Cambridge University, UK. Chair: Alan Gelb, Center for Global Development (CGD)

http://www.regeringen.se/sb/d/3194/a/146889

Max Troell The Beijer Institute Sweden

Thu Jun 24 08:02:05 BST 2010

Hello to we all!

I guest Farm pound and fish pound are very importants and relevant catégories but, small scale, medium scale and great scale are also relevant and can't be avoid.

So I propose a combinaison of the two approaches this gives 3x2 types or classes:
- small scale (of farm or fish pound)
- medium scale (of farm or fish pound) and,
- great scale (of farm or fish pound).

The threshold between the scale can be determine statistiscaly according to the dimension considered: populations considered being the farmers, the pounds or the surfaces of pounds or the quantity of fish etc.

There is a need of both approaches and even more!

Athanase Bopda

Fri Jun 18 13:23:56 BST 2010

Dear Randy and others,

I just wanted to comment on the Poverty Alleviation Goal, the first MDG of the UN.

First of all, **$2 a day as a poverty bench mark is controversial.** Many people have questioned saying unrealistic because just few years back it was $1, now its double(?). Probably, the aim of increasing this is to make development agencies/people like us work harder to achieve at least earlier one. After we have worked and are close to achieve by 2015 and I guess, UN will change it to $3 (or 4?). So goal post moves further. So I would not worry so much about it. World Bank poverty bench mark ($1.25) sounds to be more realistic though if we need to refer a figure.

Secondly, in my understanding most development agencies have come up with the conclusion that aquaculture (and also most other sectors of farming system) alone cannot alleviate poverty (with some exceptions though). They have changed the phrase to “Poverty Reduction” which means attempting to alleviate, if I understand correctly.

Now lets look at the ground reality. Most farm families have many components such as crops, vegetables, fruits, pigs, chickens, and so on. If a farmer starts a fish pond, it will be a small part of the whole system and a source of complementary income. Some research has showed that small-scale aquaculture may cover only 15-20% of the total household income. Depending upon the allocation of resources it may contribute more. Our claim is that it has a good potential to do so with less resources to be used (most efficient use of energy as has been said) and also less efforts. In addition, farmer him/herself may also have other sources of income to add such as off-farm labour (mostly seasonal). With the total incomes from all the components, if all the members of each family get access to adequate food, can send children to school, can afford basic health care/medicines and participates in social and cultural activities, I think that’s the level we want to achieve - rather than bothering to convert the income into dollar term.

I think everyone agrees that if aquaculture is applied as commercial venture and as a sole business/occupation, it has to be profitable. Larger scale has the advantage of economy of scale. Industrial farming, of course, helps increase production and also the income, but for the few lucky people.

Have a great weekend!

Ram C. Bhujel

Fri Jun 18 15:42:05 BST 2010

Dear Ram, Randy and others,

The quickest way to achieve a goal is not necessarily the most durable or sustainable. Growth is not development and employment is not the most resilient component of poverty alleviation. I agree that we must comply with the requirements of donors, but we must do this without forgetting the complexity of rural areas, and the questions raised by Ram are among the most important ones. DFID did extensive work on what is poverty, and no single indicator is satisfactory alone. The approach must be holistic.

Before development can take place on a large scale, there is a series of local prerequisite (supply chain, market, networks, transport etc.) and if those larger investments permit to acquire those prerequisite in places aquaculture would not be possible today, that's all fine and definitely worth to do it. But how can we guarantee that this will be the case, or even worse, that they won't have a negative impact on the already existing communities ? We have to anticipate all consequences.

We are not working in the desert, or with offshore aquaculture, building everything in the middle of nowhere and dealing just with the natural environment. Although small, aquaculture and fisheries are a reality almost everywhere in Africa. What we are doing is considering how innovations will affect in a positive or negative way livelihoods and local economy of people who, over ages, have developed very complex social, productive and economic networks . And as Guy wrote, "if a farmer does not adopt the practices you try to convince him with, it is because he does not want to". And he generally has very good reason for this, so that building a larger farm accross his own will not necessarily make him change, except if this is beneficial.

Indeed, such big projects are likely to create big "disturbances" (I'm looking for a more neutral term but did not find) to local people, some positive, some detrimental. As the people from CSO Paris use to explain it, whenever there is such a disturbance, there are winners and looser in the local networks. Our ultimate goal is to make project strengthen the communities targeted and I think, it's not contradictory with donor's simple objectives. At least, that's how I perceive my role.

Another point I would like to stress is that we should be careful in thinking globally as we do now, and then acting locally because at the end, development is always a local challenge. What could be applicable in one place in Asia is not necessarily good for other places, or other continents.

Cheers Lionel

Fri Jun 18 17:40:40 BST 2010

Lionel and others
Except for academics, definition of poverty is not very important. We have seen different development related jargons come and go without changing the status quo. Market drives few success stories that occur in Africa and elsewhere in developing countries. However, I agree with Lionel on one thing: inland aquaculture and fisheries development are possible almost everywhere in Africa. The Continent has million of acres of inland water bodies and impoundments. If managed properly, this existing resource can competitively produce a lot of fish and create employment locally. Why not focus on utilizing readily available resources before embarking on new and complex ventures? Instead of teaching Kigoma farmers how to produce fish in those small ponds, why not focus on restocking the Great Lakes and their tributaries to ease pressure on, and increase catch in Lake Victoria? You have market infrastructures developing around Lake Victoria. Any project that will increase catch without depleting the stock will be sustainable. Maybe Dr. Ngugi can comment on that. What is being done to restock Lake Victoria?

Aloyce

Fri Jun 18 13:26:43 BST 2010

Dear All,

I am afraid that considering fish culture as a major tool for *_direct_* poverty alleviation led many organizations and funding agencies to implement projects focused _*directly*_ on the "poor(est) farmers". Two examples among hundreds of others: 1) African FAO projects in the eighties/nineties claimed: "fish culture is every one's business"; 2) "Gift" project aimed at improving the profitability of "poor fish farmers' farms" through genetic selective breeding of Nile tilapia. In both cases the main remaining beneficiaries were/are everything but "poor fish farmers". The reasons of that are now quite clear (easier to explain after than to forecast before, of course!).
Karen was kind enough to quote a paper I participated in, on my turn I will mention a paper I refer to very often: "Aquaculture and Poverty in the Coastal Areas of the Philippines" by Irz et al, 2005 (in: Datasheet for Cabi Aquaculture Compendium/Case Studies). It states that "..... in the context of communities where the primary cause of poverty is the lack of employment opportunities, the jobs directly or indirectly related to fish farming represent an essential source of livelihood for the poor. This also means that policy makers concerned with developing the sector, should pay attention to the employment effects of new policies and technologies".

The question of grey literature versus peer review articles has been mentioned previously in this discussion. This raises, among others, the question of academic versus technical research. Without going into details and assuming that grey litterature may have its locally restricted utility and dissemination, I think we should (must?) encourage as much as possible our colleagues to publish in peer reviewed journals as this is evidently one of the best ways to share widely scientific and technical methods, data, concepts, etc. and the peer review process helps significantly improving at all levels the quality of research carried out ..... all over the world.

Regards, Jérôme Lazard

Sat Jun 19 09:00:29 BST 2010

Aquaculture supporters all,

Not to suffer all the Brummett-Moehl tag-team, but on yet another occasion I would like to whole-heatedly support Randy's well-put statements: spot-on.

I too am enheartened and enlightened by the discussions and believe theyclearly show a new thinking on aquaculture in Africa. This is more than a philosophy, it is a new paradigm and must lead to new action.

For those who have not seen it, we have tried to describe some of these changes in the Guiding Principles document [CIFA OP 28,2006, ISSN 1014-2452].

This focus on viable aqua-businesses as the motors for fish supply, job creation and economic growth is at the core of the FAO-AU/NEPAD Special Programme for Aquaculture Development in Africa [SPADA] and has been reflected in the national aquaculture strategies and plans with which many have recently been involved.

This is not to automatically jettison the "non-commercial"/subsistence farmers with farm ponds -- those who have been at the centre of many national programmes for the past decades. Farm ponds [or other fish holding mechanisms] can and do make important contributions to the family and farm economies. Nonetheless, the question we need to ask is, "what are the returns in continuing to invest in these individuals?". How many from this group will transform, evolve or emerge into viable aqua-businesspersons? I think the answer we have seen from our own history is"very few" -- recent work indicating probably less than 10%.

As Randy rightly points out, it's all about volume [t/yr].

So we need to move from the philosophy to the practice. We need to accept that the public sector MUST change its roles and responsibilities. The private sector must be truly engaged and accept its new responsibilities. And this transformation, just like a subsistence farmer becoming an aqua-businessperson, is at times gut-wrenching; people can perhaps sometimes more readily accept the new philosophy in principle than they can embrace the related new

action required in practice. Are we really ready to see what we may perceive as a change in the balance of power? Are we ready to let the private sector assume its role? Are we ready to get rid of redundant, inefficient and outmoded government infrastructure and services; letting the business people get on with business? Are we ready to change the way we deliver services? Are we able to invest so that others can invest more?
Irrespective of perceived personal or institutional benefits [territorialities in tilapia terms], are we truly ready, willing and able to really collaborate on national and supra-national levels to achieve
synergistic action? These are difficult but necessary questions.

Tremendous progress has been made recently across the Region and this can and will continue. Yet, we need to accelerate the processes. We need to grow more fish.

Cheers,

John

Success story: The growth of Clarias culture in Nigeria over the last 10 years. What were the key drivers? Markets? 160 million Nigerians wanting to eat fish ? Other drivers?

Sat Jun 19 09:54:21 BST 2010

John
This is great analysis, but I guess what I am asking is a "balance" in the approach and that surely, the small scale operators have their place in the whole chain. For surely if a system can prevent someone from dying (put it crudely) as it happened in Malawi in 2002, then the benefit is more than what the tons can offer!! 1 kg of fish to a malnourished child is to me priceless. All we are saying is that in our approach, let's not focus on one side! Yes its time for paradigm shift but let's not be blind on our poverty stricken people!! As I wrote earlier, the question should continue on how we can also get these small scale from below! Surely, they also have an economic drive!! Once we manage to do that, we will have done our job!!

Let's keep debating!

Emmanuel

Sat Jun 19 11:51:35 BST 2010

I think the issue is very clear now. Fundamental question is 'who should get the main priority for scarce public funds (tax payer's money) - small-holder farmers or the large commercial ventures? May be Will or someone can set up an online opinion poll to have anonymous voting to know what majority
SARNISSA stakeholders think. Best regards,

Ram

Sat Jun 19 12:20:45 BST 2010

Colleagues,

Thanks to Ram for identifying a key issue. I think, however, the choice is not so stark. To my mind, there are at least three choices for how governments and donors could be invest limited resouces:

1. We have the small-scale/non-commercial/rural food security group of activities. Development interventions with this group can bear quick results in terms of community-level fish supply, but we have to be realistic and understand that the transition to sustainability is slow and donor funds must be available over the long term for these impacts to have lasting impacts, and not just become a poverty trap.

2. The big guys. Many of these farms have evolved from smaller enterprises over a long period of time, have been major innovators and drivers of the sector and are socially and environmentally responsible. Tropo Farm in Ghana is a good example of starting small, mastering the technology and markets, and growing into a larger-scale venture with strong grass-roots. There are others among this group that might be described as "fly-by-night" short-sighted investments just designed to make a bunch of money quickly with little concern for local people or environments. Either way, the only needed government involvement should be with keeping regulations reasonable and providing high-quality research support.

3. The middle ground. These are the roots from which the socially responsible members of group 2 (above) grew. Some of these are very small (30-40 TPA) and others larger (up to 300-400 TPA), but they share in common a strong connection to local communities. Respect for environmental regulations is sometimes a problem with smaller-scale investors struggling to keep cash flow in the black. Government and donors can help by minimizing bureaucracy and providing high quality extension services.

This is how I would structure the vote.

Randy

Sat Jun 19 14:04:27 BST 2010

Ram,

We are not talking about the polar ends of the spectrum here. Mostly, we are talking about fish farming as a business (preferably profitable) versus subsistence fish farming or fish farming as a component of the overall farm operations. While large operations can bring benefit as critical mass to get the inputs needed for the rest of the farmers, I believe most of us see greater benefit in small to medium size businesses to promote economic growth. There is a wide variety along this spectrum.

When looking at how tax payers' money is allocated or more often how donor money is spent, the question is 'what is the targeted outcome?' If you are looking at economic growth, job creation, increased GDP, then you have to look at commercial farming or farming as a business. You have to look at creation of industries, including the aquaculture sector, if that is appropriate for the country. Moving people out of poverty is quite different and requires different approaches. For removing poverty, you have to address the root causes. Aquaculture will not remove poverty. It can be a tool as Emmanuel and John mentioned and has many benefits regarding watershed management and water conservation and use.

Aquaculture, even if only composting, often requires a cultural change-changes in attitude. It requires farmers to move from simply digging a hole and throwing in fish or blocking off water to capture fish and later harvesting to managing a system. It is like changing from chickens roaming the village to being housed and fed. This, in and of itself, helps to transform people to develop management skills, which can aid them in moving out of poverty by better managing their personal resources.

If the goal of government is to provide a higher protein food for people, then building fish ponds and giving fish will provide some protein, but it is not sustainable given population growth, reduction in land and water access, etc. The knowledge to do this is already existing, the problem is its distribution. Too often knowledge is held tightly by a few and people have to pay for access to it. That is a shame! Governments need to provide access to this knowledge while creating a private sector friendly environment for investment, including aquaculture.

For the most part, the limited government resources don't have to be given to the private sector for investment, but government needs to facilitate its development and reduce initial risk for new industries. These investments need to be targeted with strategies for the private sector to take over full responsibility as the industry grows.

Cheers, Bill

Bill Daniels

Dear Bill,

I just tried to make the issue clearer to everyone and simplify the matter by pointing two poles. I have mentioned in earlier email that there are many models in between two extremes. I think Randy's view is to add a middle ground in between, which I agree.

These are my understandings if I am wrong please correct me:

In terms of Aquaculture development, Africa is lagging far behind despite its huge potential. Promotion of aquaculture in Africa by development agencies started almost the same time with Asia. The continent received at least one-third of the development funds as compared to Asia, production has reached hardly one-tenth of Asia. In sub-Saharan Africa (SSA), the per capita fish supply did not increase for the last three decades (FAO, 2008). - Africa is importing fishery products from other countries as demand forfish is increasing. Despite having great potential of growing fish in thecontinent, Africa is spending about US$3 billion a year only for its import from other countries. Various development organizations and individuals are making attempts to understand the underlying reasons of aquaculture lagging behind. Until now, most of the development funds were spent on small holders

to support rural fish ponds managed extensively or semi-intensively e.g.Madagascar, Malawi, South Africa, Zambia and others. But it did not produce desired outcomes. So policy needs to be reviewed and possibly changed towards promoting commercial aquaculture. This means development funds and efforts need to be diverted. We can see clear two sides in terms focus.

Let us also simplify our objectives. We have two level clear objectives to achieve; micro level (family nutrition, supplemental income etc.) and macro-level (increase total production of the country, jobs, export earnings etc.). If the past projects were designed and the funds were spent to achieve those micro level objectives, we should not judge based on the indicators of macro level objectives/outcomes. Lets take Malawi as an example. If I am right, there are at least **5,000 small holder fish farmers.**I also believe many of them were supported by development agencies. If these families are not producing enough fish for their families and the local market then, we can say failure. If many of them have stopped or are going to stop fish farming, then its failure. But if these farmers are still growing fish, can we further help to be organized in groups/cooperatives expanding the group, assist in marketing, processing/value adding so that they can produce more fish and also get higher prices? Can we achieve macro level objective that way? Or should we recommend the government/development agencies to establish commercial venture aquaculture instead?

Regarding the macro level objective, if the Malawian Government say, small farmers are enough (there is no interest from others or no scope for expansion) and feels the need to shift the policy towards commercial venture to increase total production, increase jobs, and export earnings, then we can't say anything. But if the M. government still wants to focus on family level production, nutrition and then we should not influence or recommend them to change the policy to channelize its resources towards developing commercial venture aquaculture with a view to helping Africa produce morefish. As I mentioned in earlier email, we also should not generalized whole Africa as one. Each country is different. One policy may work for one while may not work for another.

Regarding the commercial ventures, my understanding is that Private sector will come in and start once they see the demand and opportunity. Governments only need to facilitate them. Lets keep in mind that commercial aquaculture will have difficulty in developing independently. It has to get help from other sectors or develops faster and easily where other sector industries are well-developed (e.g. chicken) because they share most of the things e.g. inputs, equipment, transport facilities, cold storage, market, etc. I think aquaculture industry is following the chicken industry in most of the countries of Asia.

We also have to be careful that commercial venture means high capital and high risk. The **Europe's largest tilapia farm / factory in Belgium (15million Euro project) employs merely 30 people** and is having problems of disease, price and also with-drawl from original investors. If we say, commercial aquaculture generates job but I think its too few compared to the number of farm families which could be assisted in rural areas, if planned properly, with one-tenth of that level of funding. I am not quite sure either what's happening with MALDECO and Lake Harvest? May be some of the SARNISSA members can comment. I was leading the team which designed 200 ha tilapia farm, but the company was afraid of the level of risk of failure and finally decided to start from small. **Finding good technical fish farm managers isalways a problem**. Most aquaculture graduates have technical knowledge but lack managerial skill.

For your information, majority of Pangasias farmers in Vietnam are still categorized as small-scale, though total production has reached to 1.2 million tons per year with the value of about US$1 billion. Majority shrimp farmers are still small-scale but the industry brings in about US$2 billion foreign currency to Thailand.

IMPORTANT NOTE: This discussion is very helpful for the SARNISSA people who are drafting policy reviews. They want views from various corners/countries. It would be good if people from each of the countries of SSA contribute in this discussion.

Thank you.

Ram C. Bhujel, PhD

Sun Jun 20 06:44:37 BST 2010

Good day to all,

Clearly the high usage of SARNISSA time for these exchanges is during the off-time for the World Cup.....they are indeed very useful and insightful....

Just a few more bits to add to the mix:

There are some key issues coming out that are at the root of much of the subject. There may also be some different interpretation of terms as well that may cloud some of the issues.

There probably are no right or wrong answers, however, but there may well be better or worse approaches.

It does seem clear that the conclusion is that we've not done very well so far and must do better, this requiring new approaches and methodologies.

Any one who has been working at least a decade in the sub-sector should beable to go back and see what the aims were ten years ago and how many of these have been sustainably achieved.

Ram has talked about management by objective -- critical. Once we realise that the sub-sector is comprised of fundamentally different groups, we alsorealise that the objectives for each group are different. Years ago we promoted across the Region subsistence/rural/integrated/etc. fish farming with the expectations that these endeavours would have a positive [evensignificantly positive] impact at both micro and macro levels. This was our fault. Over- and unrealistic expectations have been our bane for a long time.We need to design and manage our interventions/support in full recognition there are these different groups and that they themselves have different motivations and will,thus, generate different outcomes.

Randy's three groups in fact reflect much of the on-going effort. Going back to 2003 when we worked on the first strategy in Cameroon, it was agreed the sub-sector was grossly comprised of two groups: commercial and non-commercial. The latter group [commercial] was in turn made up of two major sub-components: industrial [the big guys] and SME aqua-businesses [the little guys].

In the broadest sense, the term "commercial" in this context does not carry any denotation of size whilst the "industrial" is large [in volume of production] and the SMEs are, as the name implies, smaller. At that time we were not all that happy with this nomenclature and I think would welcome and benefit from an alternative taxonomy, but so far we've not seemed to be able to get better terms.

These three groups are of course interlinked. As has been underscored by many, the non-commercial group provides many micro benefits to the family, farm and community. They are also very much part of the macro political equation. This group will benefit from the trickle-down from a business-based national programme where they will, if they choose, have better access to better inputs and markets as well as information. But the question remains, politics aside, how much should the State [or donors assisting the State] invest in this segment of the fish raising population? What are the incremental returns in additional fish produced from this group for each additional dollar spent on their "support"? Experience seems to indicate that these returns soon become negative. These systems typically are labour limited although water and land limitations are becoming increasingly common; they quite simply often have little room for any marginal increase to come out of additional support. This is not to say they should be cut free from the national progammes and thrown into the abyss. They do need some level of support and our job is frequently to identify what form this support should take to get the best cost-benefit results.

The big guys are more-or-less self-explanatory. In terms of support, they bring with them or buy what they need so it is not really a question of the State providing technical assistance but much more about regulation, evaluation and monitoring.

The SME category is the area often seen today as being the segment that produces the highest returns for investment and also makes sustainable contributions to macro objectives. Strategically, many current efforts involve trying to cluster SME operators to establish meaningful economies of scale. This concentration should also reduce support costs so that the returns to the State are higher whilst staff inputs are lower.

As always, there seems to be general consensus on the analysis of our past weaknesses and even agreement on at least part of the way forward. But, also as always, the devil is in the detail and we do need to be able to transform all this multitude of words into action.

Wishing all good harvests, John

Mid scale cage culture of tilapia SON Fish Farm Uganda. Potential for cage culture all over sub Saharan Africa.

Sat Jun 19 15:29:34 BST 2010

Dear John,

For those who have not seen it, we have tried to describe some of these changes in the Guiding Principles document [CIFA OP 28,2006, ISSN 1014-2452].

For those interested, this document is available online here: ftp://ftp.fao.org/docrep/fao/009/ah236e/

So we need to move from the philosophy to the practice.

Speaking of moving to practice, is there already a document describing how such an operation takes place ?

We need to accept that the public sector MUST change its roles and responsibilities. The private sector must be truly engaged and accept its new responsibilities. And this transformation, just like a subsistence farmer becoming an aqua-businessperson, is at times gut-wrenching; people can perhaps sometimes more readily accept the new philosophy in principle than they can embrace the related new action required in practice. Are we really ready to see

what we may perceive as a change in the balance of power? Are we ready to let the private sector assume its role? Are we ready to get rid of redundant, inefficient and outmoded government infrastructure and services; letting the business people get on with business? Are we ready to change the way we deliver services? Are we able to invest so that others can invest more?
Irrespective of perceived personal or institutional benefits [territorialities in tilapia terms], are we truly ready, willing and able to really collaborate on national and supra-national levels to achieve synergistic action? These are difficult but necessary questions.

I agree and would personally answer "yes" to all questions, but for me, the truly necessary questions would be the same that you list by replacing "Are we" by "How are we going to be". The point raised by Ram about the use of public funding is of course crucial in answering these "how". Public funding should not compete with private funding or foundation funding and should be targeted at a balanced bunch of actions between private, non-governmental and governmental sectors --all within their new roles, responsibilities and targets (fish production for some, poverty alleviation/reduction for others, resilience and income generation for me etc.)

Cheers

Lionel

Thu Jun 17 10:23:32 BST 2010

Yes Brummett,

Some things are painful and sad. I wish to agree with you and what Charles and the rest have said.

I however want to been keen on the situation that was found by Charles and the rest in Cameroon where no big fish could be seen in the ponds but tadpoles.

Having worked with local coastal communities in Kenya and Tanzania, I understand the intrigues that our people go through and how much crime we do to the poor men and women in the villages that we tend to help.

1. Most of the aquaculture projects in Africa are only well done through construction of structures like ponds, cages etc that are easily reported to donors but down the line they never work.

2. Just wondering whether in Africa and particularly in East Africa whether we have something called aquaculture extension? if it is who does it? Ideally its never done. So then how do we expect this fish farmer who have just been give a fish pond or crab cage to produce or even feed or monitor by heavenly sake.

3. By this simplification, it has now been seen that anybody can do aquaculture since its just construction of a fish pond and putting in fish..... Thus so many misleading people have come in to con the local person through donor funds.

4. If scientists could be extension agents this could be good; but they cannot also meet the consistency needed for aquaculture to pick up in the farms.

5. My call is for Africa to have a link between Research and Extension and for extension agents to be empowered with resources and be with the farmers on a more frequent basis.

6. Or else we are the robbers for the common man who is getting the technology that we develop in a poor way so that it does not help.

Mirera
Mirera H. O. David Research Officer Kenya Marine and Fisheries Research Institute (KMFRI) Mombasa-Kenya

Thu Jun 17 11:05:56 BST 2010

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4. If scientists could be extension agents this could be good; but they cannot also meet the consistency needed for aquaculture to pick up in the farms.

5. My call is for Africa to have a link between Research and Extension and for extension agents to be empowered with resources and be with the farmers on a more frequent basis

Yes, the role of scientists in the past and future is definitely at stake, with one of the main question being the impact of research. Once again, we might consider that only private research can fulfil efficiently the needs of development, but I personally don't hope so.

koko widyatmoko

Fri Jun 18 04:07:56 BST 2010

Dear Lionel and Mirera . . .

I like to make little comment from Indonesian point of view . .

"Scientists as extension agents . . . ." I doubt that . . . I found most scientists **do not know how to grow fish in real ponds**. They don't **even know how to feed the fish**. Very few scientists who **really work hand in hand with farmers in the farm**. Ofcourse this is the case I know, maybe its different in Africa . . .?

A gap between research institute and farmers (or the aquaculture industry) is a common problem in many developing countries, including Indonesia. It is true that through private research the result can directly delivered to farmers. On the other hand, government researches end up in seminars and libraries, where (once again) only scientist read the publications.
However, private company can help by pulling out researchers from their stations and work with farmers, conduct field research with farmers to implement the result from research institutes. Conduct routine discussion group between researchers, farmers and technician (or extension agents). A joint projects among feed companies or other industries that related to aquaculture can support this programme. No subsidies from government nor international funding agents. **It's all about business.** When farmers get profits, they will plant more fish . . . this means business is growing.

Cheers

Koko

Fri Jun 18 08:26:13 BST 2010

Dear Koko,

Yes, you are right, that's maybe the path, and at least, that's the trend.

I recently scanned hundreds of pages from CTFT archives for Sarnissa and CABI's Aquaculture Compendium (CTFT is the ancestor of Cirad in the aquaculture sector). This gave me the possibility to overlook the way French research for aquaculture development changed over decades, and this came out to be a very interesting experience for me.

From the 50's to the 70's, there was a huge interest and curiosity about almost everything related to aquaculture development. The people were very comfortable with every aspect related to fish farming, from ichtyology and systematics, to technologies, public policies, epistemology and philosophy ! It is very clear that they were completely open-minded and that the cross-disciplinary and cross-institute collaboration was efficiently and smoothly taking place. World famous fish taxonomists and biologists like J Daget or JC Micha were contributing papers and thoughts to the CTFT Journal "Notes et Documents sur la Pêche et la Pisciculture" etc. Interestingly, they were also concerned

by the same basic questions that we are facing and still discussing today, such as the use of local native species for aquaculture development etc.

Then came the time of "transfer", with a new generation. The work was still being done by public scientists, who claimed they were doing development, but in fact, were still experimenting, particularly for the rural approaches, where the knowledge was almost nonexistent at the time. For me, without their work -and errors-, we wouldn't avail today of tools such as the participatory rural assessment etc. Randy wrote "Experimenting with poor people" which for me, refers directly to what was done in the time, but for me this is not the core problem. The main problem I see is the one I tried to point out yesterday: people claiming they were doing development, but in reality they were still experimenting and producing knowledge. Another characteristic of the time was the focus that became much narrower, and (to make it short) almost everything became targeted at semi-intensive to intensive Nile tilapia farming (ponds and cages). It was the time of Natio-Kobadara and Tiné farms, the time that Bouaké strain was spread all-over the world, the time of the tilapia cage farming project in Niger river etc. We all know the results in terms of impact were much lower than expected, sometimes even negative, and this led to a general bashing that was probably over-easy, unfair, unbalanced biased and certainly not positive since obviously a lot of the knowledge we still use today has been produced by those large scale "experiments". There is a lot of grey literature that I consider much more useful for development than all peer-reviewed literature published during the last 10 years (personal opinion). But the excessive critics also led to disenchanted comments by the actors of that time ("teach man how to do aquaculture and he will need subsidies for ever") and certainly contributed to the unjustified and detrimental (from my point of view) withdrawal of French public actors from real research for development. Personally, I would prefer those people to defend their obvious advances than contribute to the general bashing of the time. That would make things easier for the people of my generation who are interested by research for aquaculture development because today, in France, you can be a scientist on biology, on economy, on genetics etc. but not on aquaculture. The result is that today, French research for development of aquaculture in Africa by NGOs such as Concepto Azul-Vige or APDRA is becoming quantitatively much more important than the one done by public research.

Is it a satisfactory sharing to have public research focussing mostly on theoretical and descriptive science, and research for development undertook by private and non-governmental sectors ? Although I could give some examples where the farmers are being abused by their advisers, I have to admit that the global outcome is positive. However, it is no secret that I am also very admiring the approach of the System group of the University of Stirling. Sarnissa is one their many products, and this is not surprise for me because I feel like they found the right balance and positioning for what should be public research for aquaculture development today.

Best regards

Lionel

Thu Jun 17 10:26:19 BST 2010

Hello Randy

I largely agree with you. There is a sad tendency in Africa to establish an aquaculture facility based on some donor funding that becomes available, and a really lavish facility is erected, followed by the pomp and ceremony associated with the official opening. Politicians slap each other on the back and feel pleased about the improved livelihoods that will result. Unfortunately, few of these facilities ever produce significant numbers of fish because the foundation was wrong; instead of a bottom line focus they had a here-and-now / grab the money while it is being offered focus.

What is needed is a medium to long term economic vision for any new project before the foundations are dug. Most rural Africans have little experience with fish farming, and so a process of training is required, not a once off event. We have just completed writing the manuals for a 16-week Tilapia Farming Training Course for Africa for a client that is serious about exactly that, getting the skills transferred to the workers and satellite growers that currently have no/limited knowledge or technical skills in a field they are venturing into. Furthermore, they have budgeted for permanent Extension Services to support the Growers associated with the Project.

It is interesting to consider how we as Aquaculture Consultants, Trainers and Service Providers would change our focus if a failed business meant a jail sentence for the designers and promoters of Projects.

Regards,
Leslie

Sun Jun 20 09:39:06 BST 2010

Dear all,

With the French performance in the World cup and the winter-cold weather in France (8.7°C here now !), I also have plenty of time to read the brilliant contributions on the forum. My impression is that the top question is now definitely the one listed by John Moelh: "Irrespective of perceived personal or institutional benefits [territorialities in tilapia terms], are we truly ready, willing and able to really collaborate on national and supra-national levels to achieve synergistic action". Obviously, people are defending different point of views, all very respectable, and the main challenge would be to find how to answer to John's question.

Sarnissa was developed for the purpose of information sharing, aimed at identifying such synergistic areas. So as an illustration, I would like to quote here the main two challenges we are facing at Cirad, that structure our activities for the coming years :

1/ At national level: Marion Guillou recently declared in Nature 464 (15 April 2010) about the GCARD conference:

"Developing countries at the conference also sent a strong message about the return in strength of family farms; that making these more productive is key to both alleviating poverty and meeting local and global food demand. It's a new political message: count on and help small farms. The international focus has long been on large-scale industrial farming, so this changes quite a few things. The themes of research for smallholdings are very different from those of large-scale farming, involving, for example, concepts such as crop rotation, complements of animals and plants, and the use of animal waste as fertilizer, so the research questions are not the same."

Marion Guillou is the chief executive of France's National Institute for Agricultural Research, Europe's largest agricultural-research agency, and president of the consortium Agreenium (http://www.agreenium.org/agreenium_eng/) that gathers top French agriculture research centers, including Cirad.

2/ At Cirad level, several priorities have been defined in our strategic plan (http://www.cirad.fr/en). These are:

- Ecological intensification (Producing more and producing better, while preserving the environment)
- Biomass energy and societies in the South (Clean, renewable and economical sources of energy)
- Accessible, quality food (Feeding urban and rural areas better)
- Animal health and emerging diseases (Monitoring and managing health risks)
- Public policy, poverty and inequality (Making agriculture a driving force for development)
- Agriculture, environment, nature and societies (Reconciling agricultural production and environmental protection)

For the aquaculture unit, as of today, the priority #1 structuring our activities is the ecological intensification and particularly the concept of integration at various levels, but it is not contradictory with others approaches as in-lighted by Marion Guillou, so I definitely answer "Yes" to John's question, but to go further, we need not define how we could do that.

Have a nice sunday !

September 2010 - And the Debate goes on……

African Fisheries Ministers are meeting in Banjul, the Gambia - CAMFA September 2010

What will be the outcome ????

Thank you to all those who contributed – keep talking

Best wishes from the SARNISSA Team

September 2010