Innovative Ideas to Feed the World

Young Professionals Conference

FAO Headquarters, May, 2013

Competition

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YouFID – Young Professionals' Forum for International Development in Rome, Italy http://youfidrome.wordpress.com/

The Research and Extension Unit of FAO - http://www.fao.org/oek/oek-home/en/

YPARD – Young Professionals Platform for Agricultural Research for Development - http://ypard.net/

YUNGA – Youth and United Nations Global Alliance - http://yunga-youth.weebly.com/

Title: Africa at Cross Roads: Harnessing Mobile Technology to Increase Agriculture Productivity (Perseverence F Ganga, WFP Ethiopia)

The time has never been good for Africa. It can take solid steps or miss a big opportunity. According to World Bank its agriculture sector could become a trillion dollar industry by 2030 if governments and the private sector radically rethink policy and support for farmers. This will potentially revolutionize agriculture and massively improve food security whilst drastically reducing poverty.

Drivers of Poverty and Food Insecurity in Africa

Most of the drivers of poverty and food insecurity in Africa emanate from poor agriculture productivity, poor incomes, poor market systems, high food prices, lack of productive assets and also the burden of HIV/AIDS.

Harnessing Mobile Technology to Increase Productivity: The Bigger Picture

Though pessimists have labelled Africa a laggard in terms of adoption of technologies the same cannot be said about mobile phones in fact one can argue that Africa has sort of become a trendsetter in mobile phone innovation if global successes like M-PESA, E-Vouchers and local successes like Eco-cash in Zimbabwe, are anything to go by. Surrounded by a multitude of problems, the penetration of mobile phones has been a critical mass to African innovators who are using them to solve some of these everyday problems. Statistics in Africa show that mobile phone penetration in the continent has been on a free-flow exponential trajectory. In Zimbabwe alone the penetration increased from 13% in 2008 to almost 100% in 2013.

One Africa One Mobile Application

All-encompassing phone applications which are tailor-made for famers to provide on-demand extension services like weather forecasting showing accurate all-round weather information with historical, hourly, weekly, monthly forecast data to help farmers to know when to start land preparation, planting, weeding etc; the application provides advice on what crops are best suited with the forecasted weather in that area; the application provides advice on what type of seeds and fertilizers are suitable for the area; the application will provides farmers with the nearest suppliers of the recommended inputs thus reducing time wasted by farmers to source seed; the farmers can form "buyer groups" so that they buy in bulk giving them a negotiating advantage with suppliers and cut costs in transport; the application can run GPS helping farmers to accurately calculate the area of planting so as to know the exact number of holes to dig for conservation farming and the exact amount of inputs needed thus preventing wastage. It provides life-cycle advice for farmers including post-harvest and preservation technologies. The application will also link to the Country/Region Commodity Exchange to provide farmers with real-time market data so that farmers know the prices of their produce on the market that way they know where and when higher prices are offered.

In this paper I argue that if Africa is to harness mobile technology it can reduce the number of years to attain a trillion dollar agriculture economy. I argue that in fact by 2020 Africa will be able to attain a trillion dollar agriculture economy.

Title: Youth Training for Technical and Professional Ability (YouTrain+)
(Raymond Erick Zvavanyange, YPARD Zimbabwe)

Introduction: Nearly one billion people globally suffer from chronic food insecurity[i]. We need to produce about 70-100 per cent more food, in light of the growing impacts of climate change, concerns over energy security, regional dietary shifts and the Millennium Development target of halving world poverty and hunger by 2015[ii]. Engaging youths (18-35 years) is critical to addressing present agricultural science problems[iii]

Innovative Idea: The Youth Training for Technical and Professional Ability (YouTrain+) is an interdisciplinary training program where youth solve societal problems through ability identification, field placement, assessment and evaluation. Youths should be versatile, engage in a battle of wits, challenge status-quo, and widen horizons. My extension and blog articles, communicates agricultural sciences technical and intellectual aspects. The time to feed the world through new technologies (e.g. Information and Communication Technology) is now[iv]!

Pillars of YouTrain+: YouTrain+ is premised on three pillars: (i) Human Resource; (ii) Ability; and (iii) Intellect. Pillar 1 (Human Resource) includes youths, mentors, and institutional and non-institutional personnel; Pillar 2 (Ability) consists of skills, talent, gifts, and motivation; and Pillar 3 (Intellect) consists of mental endowment (formal and informal training). Pillar 3 positions youths to be knowledge users and generators. **"Knowledge is like a garden: if it is not cultivated, it cannot be harvested"[v].** YouTrain+ builds on current knowledge frameworks[vi]. YouTrain+ is implementable by either state or private enterprises.

Strengths of YouTrain+: Builds capacity of youths as innovators, entrepreneurs, and concept leaders[vii]. YouTrain+ facilitates job creation, technical exchange, decision-making, and collaboration. YouTrain+ vision is to simplify difficult agricultural sciences issues as a public good.

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[vii] "Human Capacity and Entreprenuership" In: Calestous Juma. 2011. The New Harvest. Agricultural Innovation in Africa. Oxford University Press.

Title: Flexi Biogas systems: Inexpensive, Renewable Energy for Developing countries

(Karan Sehgal , IFAD)

Biogas is a clean, renewable energy obtained from biodegradable organic material such as kitchen, animal and human waste. The most common type of biogas system, and the most widely adopted in China and India, is a fixed dome system. Its construction requires skilled technical expertise and complex logistics, making installation expensive and time consuming. Fixed dome systems are permanent installations, so secure land tenure is also a prerequisite. These challenges make it difficult to adopt fixed dome biogas systems in developing countries, particularly in Africa. As a result, many systems have failed and adoption rates have been low.

Another type of biogas system, manufactured by Biogas International (a private commercial enterprise registered in Kenya) is Flexi Biogas, a flexible above-ground system that requires no digging and is simple to build and operate. The technology was designed and locally produced in Kenya inspired by Maasai culture which is always on the move. Biogas International designed these systems so that the Maasai, instead of carrying firewood, could pack up their "energy source" and move as they wish. This new generation of portable biogas system has a comparative advantage over fixed dome systems in terms of (i) the easiness to construct – installation takes less than five hours; (ii) the relative cheapness; (iii) no need of huge amounts of manure and water to start-up and operate the biogas system and; (iv) lightweight – can be carried on a bicycle or motorbike and thus easily transported into rural areas.

The Flexi Biogas systems have been installed (since May 2012) in dairy and maize farms in Kenya and Rwanda[vii] as part of a project entitled: *Making Biogas Portable: Renewable Technologies for a Greener Future*, under the Initiative for Mainstreaming Innovation funded through IFAD by the UK Department for International Development (DFID). In Rwanda, the Flexi Biogas systems have also been coupled with small-scale drying machines (powered by biogas) for maize/bean farmers to dry their produce especially during the rainy season. This can be applied for drying rice also in South East Asian countries like Vietnam and is another crucial application of biogas at the farm level aimed to reduce post-harvest losses.

At present, more than 80 percent of rural communities rely on traditional fuels such as firewood and charcoal mainly for cooking and lighting needs. The smoke inhaled from the combustion of firewood have huge health implications (especially for women and children) in terms of chronic respiratory diseases and eye infections leading to increased mortality rates. Within this scenario, the adoption of biogas can avoid more than 1.9 million deaths per year caused by health-damaging fuel wood and reduce the time spent gathering firewood. In addition, methane generated from human, livestock and agricultural waste (including garbage, sewage and kitchen waste) can be directly used as an energy source for cooking, lighting and generating electricity. Furthermore, the bio digester effluents ("slurry") can be used as crop fertilizer with long-term effects on soil fertility, replacing the reliance on expensive chemical fertilizers (produced from fossil fuel).

Title: Humanitarian Outsourcing of Support Staff (Todd Jefferson Hartley, WFP Dubai)

How can we, as humanitarian agencies, help overcome world hunger and malnutrition? We can improve the operation of our country offices by using humanitarian outsourcing to maximize WFP's investment in support staff.[vii]

My idea is to create support centers in clusters across the humanitarian community. Currently, the humanitarian community is structured around the concept of the country office. "At a minimum, a country office is made up of a country director, administration, finance and programme staff. . . . A more complex operation may also include the following staff: a deputy country director; logistics, procurement, security, ICT and/or public affairs officer . . . ."[vii] In essence, country offices have two components: programmatic staff and support staff. It is essential that key programmatic staff stay linked to the country office because of their unique understanding of the country's food security situation. Support staff, however, and especially administration, HR, and procurement staff are more properly positioned in support centers located in safer, more developed locations.[vii]

For example, WFP currently has three operations physically located in Jordan including the Jordan country office, the Iraq country office (re-located because of security concerns), and the Syria regional coordinator's office (re-located because of security and access concerns). Each operation has its own support staff which work independently. Significant funds could be redirected to food aid if the three operations worked through a common support center. Obviously, Jordan is an exceptional case because all three operations are located in the same country but the same principle holds true for small clusters of countries which are linked by cultural or political similarities or even between groups of UN and humanitarian agencies within a single country. For example, WFP has a support office in Dubai, UAE where a central unit provides support services for other WFP units and humanitarian partners for a set fee. A similar arrangement exists in most WFP liaison offices.

One benefit of the humanitarian outsourcing model is cost savings. This model groups support functions in one place, creating economies of scale. More work can be done by fewer staff with the savings going to beneficiaries. A second benefit of this model is security. Non-essential staff are moved out of more dangerous assignments and into support centers in stable countries. This avoids the possibility of the tragic, and unnecessary, loss of life. A third benefit of this model is uniformity. This model creates replicable systems which reduce time for repetitive tasks. By creating support centers, larger groups of staff with the same function will exist in one place. This enables further specialization within function and better opportunities for extra support during emergencies.

In summary, humanitarian outsourcing is one potential tool to solve the issue of world hunger and malnutrition by redirecting resources spent on operational support to beneficiaries.

Title: Sustainable Land Management for enhanced food security (Josephine Nakanwagi, NARO, Uganda)

The need to preserve natural resources to ensure continuous supply of food is one issue that cannot be over emphasized. Land degradation is one of the major challenges to sustainable development in Africa and world over (World Bank; 2006). The challenges of increasing population and the need for nutritious feeding given the limited land should be tackled with the urgency they deserve for environmental sustainability and human well being. One of such ways is through sustainable land and water management. This is considered an imperative for enhancing the productive capacities of land resources for increased agricultural productivity and ecological services (FAO; 2011). In my interactions with farmers in two projects: an IDRC funded project **''Going to Scale with Sustainable Land Management''** and a UNDP funded project **''Ecosystem Based Adaptation''** in eastern highlands of Uganda there are a number of findings of how farmers at local level perceive the need to manage their land and practices.

The SLM practices promoted included; **Contour bunds;** bunds are constructed across the slopes on cultivated land to reduce soil erosion by intercepting runoff and reducing its speed. These can be made more effective by planting napier grass and trees along the bunds,

Trenches; are dug along the contours to stop runoff, improve water infiltration and moisture storage capacity preferably trenches of 2.5ft deep and 2ft wide are applicable. These are further re-enforced with multipurpose trees along and napier grass,

Agroforestry; an agro ecosystem trees planted there are a source of fruits, fodder, control of soil erosion, nutrient recycling, carbon removal, providing tree products, amelioration of the micro climate, influence on rainfall and wind breaking.

Some farmers out of exposure from previous interventions appreciate the need to manage their land and were willing to carry out the practices. These are considered superior and referred to as champions simply because they have carried out the practices and are willing to teach other.

On the other hand farmers who were getting to know about SLM as a new concept showed low response and needed sensitization on the importance of SLM. Most farmers in the process complained of establishing and maintaining trenches and contour bunds being laborious simply because they could not see the value easily.

There is need in interventions of SLM to link it to food security, nutrition and incomes. An example is having trenches on one's farm which help control erosion and nutrient losses which are used by the crops to grow for food. At commercial level we can look at how many hectares of land have been affected by soil erosion and how much it translates into in terms of fertilizers for application. This gives farmers better understanding of value of carrying out SLM practices. Additionally SLM should be integrated with crops like maize, banana among others depending on the area's farming system to instigate interest from the farmers. Noting that at the heart of any efforts to manage land resources is the need to feed people.

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Title: Strategies for Combating Global Food Insecurity: The Food Profligacy and Loss Nexus (Jubril Olayinka Animashaun, University of Ilorin, Nigeria)

Prevention of food loss and waste can serve as a means to achieving global food security. Roughly about 1.3 billion tonnes of food are estimated to be wasted and/or lost globally every year[1]. If this estimate was appropriately utilized, it could feed about 868 million hungry mouths[1]. Food profligacy is a global concern and our actions and inactions make us all responsible and/or guilty; though in varying proportions.

In addition to the loss of valuable utilisable nutrients, food loss and waste are unsustainable practices with considerable environmental, economic[1] and public health implications[2]. Food production, loss and waste degradation bring about carbon dioxide emission, the accumulation of which is environmentally unfriendly. Since food production involves the use of resources that have opportunity costs its waste therefore constitutes an economic loss. Besides, food waste decomposition, as observed in most developing countries, is uncontrolled and encourages the proliferation of germs and microbes and attracts vectors of diseases which are of public health concern[2] . However with appropriate commitment food loss and waste can be reduced.

An aggressive global campaign needs to be launched on the consequence of the food we squander and leave to waste. What is considered a few grains or uneaten morsels of food, or a fruit thrown away or the milk left to go sour or the harvested produce that was not properly handled, if carefully managed could make the world more food secure and the Earth more sustainable.

This article proposes that the United Nations (UN) should set aside a day to be celebrated worldwide as "Food Waste and Loss Reduction Day" (A visual document highlighting this proposal is attached). Meanwhile, it suggests that the theme of World Food Day celebration should be a reflection of food waste and loss prevention. Equally, efforts at reducing food insecurity should focus on the design and distribution of manually operated agricultural processing equipments among agricultural households.

My contribution to the campaign is in line with my professional career. As a young academic researcher, a research proposal is underway to evaluate the socioeconomic determinants of food loss and waste among households across various demographic strata in Nigeria. Equally, a Non Governmental Organitisation (NGO) is proposed to champion the cause of food loss and waste reduction in Nigeria. The proposed NGO is awaiting registration by the relevant government agency in Nigeria. The successful implementation of the ideas advanced in this proposal would provide outcomes beneficial to all.

Footnotes

1. Gustavsson, J., Cederberg, C., Van Otterdijk, R. and Meybeck, A. 2011. G l o b a l f o o d l o s s e s a n d f o o d w a s t e extent, causes and prevention. FA0. Accessed on 02/05/2013 on http://www.fao.org/docrep/014/mb060e/mb060e00.pdf
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Title: A Comment (Xuan GAO, IFAD)

With all respect to the ambition of the conference's initiative to "Feed the World", and no doubt in the participant young professionals' ability to work out "Innovative Ideas" for it, I would like to share with the conference a few somehow "conventional" thoughts on the widespread and persistent issue of hunger, which are actually inspired by the title of the present event.

First, I am of the opinion that no one, whether a supranational organization or a leading agricultural scientist, should be supposed to "feed the world", but the people of the world themselves, who nonetheless are put as *the object* in the title of the conference or in some way treated as a third party standing by the shortage of food and waiting to be fed. It is not clear if the conference implies that the UN or UN (young or not) professionals are expected to assume the role as *the subject*, but if yes, some *traditional concerns* will naturally be provoked about the UN's arrogance and its ignorance of the significance of the people's ownership in development business.

What may make this even worse is the verb "feed", which by definition is not necessarily related to *food production*, but largely means to *give or supply food* to the hungry. There is little doubt that there is plenty of food in the world, if evenly distributed, enough to eradicate hunger. However, no matter how promising it looks, the solution does not lie in re/distribution of food. On the one hand, large scale involuntary redistribution of wealth is basically impossible in a world where private property rights are universally recognized. On the other, except in cases of emergency where immediate food aid is required for humanitarian purposes, most countries suffering from the shortage of food indeed have the potential to address the issue through *production*, even not necessarily the production of food itself.

Any products which can satisfy consumers of purchasing power would be able to earn a better life with more food for the hungry poor producers and their families. This leads to another conventional wisdom, namely, economic development through more liberalized international trade, in particular expanded access to the market of developed countries. Once such access is made available by advanced economies, most of the hungry poor people would not need to be "fed" by external food assistance any more. They would be able to live on their own hard work, just like what the Chinese and Indians have been doing, whom, with a total population of 2.6 billion, simply cannot be fed by anybody but themselves.

Upon these conventional thoughts, I propose only one "innovation", i.e. the change of mind-set of the international development community to stop treating the hungry poor people merely as the end destination of food aid, but to start seriously recognizing and promoting their potential as valuable productive force, and thus to help them to address food shortage through economic production and trade.

Title: A Global Agricultural Policy? *(*Codrin Paveliuc-Olariu, University of Liege, Belgium)

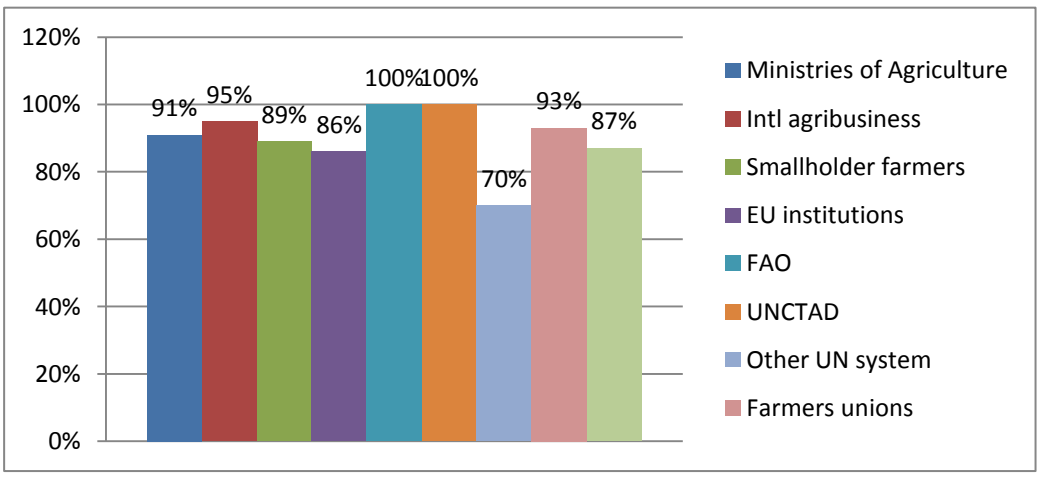
By 2012, almost 65% of all implemented agricultural policies that have a reference on food security only aimed on solving present day crisis, without integrating policies for preventing future ones.

While researching possible solutions for global food security, it was clear that tens of solutions have been proposed so far, proposals ranging from those with high feasibility (*development assistance to poor countries, aid for agricultural competitivenes growth*) to unlikely (*moving all people out of Africa*) and scary ones (*another World War was proposed by someone*). Over the course of years, few proposals have been in the policy fields, all of them proposing either changes in trade policies or development assistance.

In the past two years, when the reforms of the EU CAP and the U.S. Farm Bill began to come into the spotlight, the debate about a Global Agricultural Policy began, the emphasis being put on the trade of agricultural products. In 2012, Jim Harkness, President of the IATP, declared that such a policy would increase the discrepancies between regions and the number of undernourished people because "the poor would engage into a bidding war with the wealthy". Although he is not wrong, a policy should not be analyzed just from the perspective of agricultural trade. If we look at the CAP, we see that the emphasis is put on agricultural competitiveness and rural development.

When being asked about the possibility of a Global Agricultural Policy being developed, Victor Villalobos, Director General of the IICA, responded "I think all countries ideally would support such a policy, but the conditions are the sticking point. We all know that the work of global organizations in this area is complicated and achieving agreement on standards, trade, levels of aid, etc. are always going to be a challenge". While the creation of such a policy is welcomed (see Figure 1) by 90,11% of respondents, there is an unanimous opinion that it would be a challenge to obtain a consensus among the countries regarding its development and implementation.

Figure 1.Stakeholders` opinions (%) on the necessity of an integrated approach for global agriculture



Source: Elaborated by author using data from own research (2013)

While all stakeholders groups seem to agree that the status quo cannot bring change to the way global food security is handled and most agree that a shift in the paradigm is mandatory, when asked if they would support the development of such a policy, 74,3% of all respondents answered that "a clear and precise proposal must be put forward by SOMEONE ELSE". Such a proposal, while focusing on diminishing the number of undernourished, should also include the regulation of other fields in agriculture such as the use of chemicals, biotechnology, governance etc., in order to have a clear starting point for negotiations.

"We are now in the era where the homeland security is food security" (Makthesim Agan respondent) a global approach to food security is required because "many don`t actually see a food crisis coming" (Via Campesina respondent).

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Title: Smart Basket (Joana BORRERO, BeeGeok CHAM, Amanda HICKEY and Chamim FOROUGHI JABBARI, FAO)

According to FAO, approximately 1.3 billion tones, or 1/3 of all food produced never reaches a plate. In the US, this waste accounts for 25% of all fresh water use, 4% of oil consumed and a total of 165 billion dollars (NRDC) being squandered. Climate change is putting additional stress on agricultural resources that will be necessary to produce food for future generations. If we are to feed 9 billion people sustainably, we have to stop over-producing food that never feeds anyone. And in the developed world, consumers do most of the wasting.

WRAPs the Food we Waste report (2012) concludes that food waste continues because:
• Lack of advance planning, skills and knowledge regarding food storage and preparation
• Retail practices that encourage people to buy more than they need.
It's clear that consumers need better information about their food. We believe in new mobile technology as the best way to transfer information that enhances and facilitates people's lives. In fact, mobile users increasingly depend on apps to connect to and diffuse important information in a fast and convenient way.

What if you could download a mobile app that would save your family 2,000 dollars a year while reducing up to 15% of food that is wasted? Factors that affect food spoilage include the distance it traveled to the store, how its processed and stored etc. For this reason, expiration dates can be misleading, and people have a hard time planning their meals effectively. Our app would take these factors into consideration and generate a smart shopping list with links to recipes, storage tips and background information on the food purchased. It helps you purchase only the fruits and veggies that your household is likely to eat in time, reducing spoilage and overspending.

Moreover, you will be able to interact with your friends and neighbors and challenge them to reduce food waste together. Earn badges for creative food waste reduction while competing against your network friends.

How?

Some basic functions of the app:

- **Let's Shop**: At the supermarket, you will select fruits and veggies with our help. The app will enable you to create your own "Smart List" based on your preferences, portion size needs, spoilage time and the most efficient ways to preserve your food (example: SmartBasket tells you not to put two fruits that produce a lot of ethylene close to each other, as they will spoil faster).

- **Great recipes and tips** for using forgotten/aging foods to make great tasting meals (ie: zucchini bread, for zucchini thats gone mushy).

- **Games/Badges**: in order to make it interactive, you will be able to challenge and compete with your friends while unlocking badges and rewards, such as Phood Photographer, Creative Cook etc.

- **Next up**: Create partnerships with regional supermarket chains to promote the app and ensure that it runs on the best possible data for users in that community.

We believe that SmartBasket will be a fun and effective way to reduce food waste and save precious resources!

Additional Material: http://www.youtube.com/watch?v=bKK6Z4cHBxA&feature=youtu.be

Title: Technology transfer: Shifting from traditional farming to modern practices; resulting in new trend setting, eradicating poppy cultivation and eliminating food security. (Irum Kanwal, WFP Pakistan)

A joint venture of WFP, FAO, IFAD & Government Department of Agriculture, in FATA Pakistan, 2008-09 provided an excellent opportunity to join force and pool resources to reach the needy, vulnerable and poorest of the poor farmers with trainings packages aimed at improving their skills in new technologies and farming practices (onion seeds production).

Seed the most fundamental units of all the agricultural inputs playing a crucial role in agriculture development. It is crystal clear that if all the inputs are provided for crop production in abundant but use seed of inferior quality will result poor crop production. In this new era population pressure is increasing day by day while the agricultural land is decreases at the same rate. To overcome this threat, it is slogan of the day to increase quality crop production instead of crop production which is possible only by using quality seed. In advance countries, more focus was given to this important sector resulting in development of seed industry. Now they are not only producing quality seeds but also exporting to others and earn considerable amount of foreign exchange.

In order to minimize poverty level and evolve employment opportunities in FATA, especially in Orakzai Agency, development of livelihoods could play a decisive role that cannot be denied. For this very purpose, the World Food Program (WFP) had initiated a capacity building program under the head of “Agriculture Livelihoods Development” for the local farming community that has augment their productivity and ultimately the farm income. Keeping in view the demand for Swat-1 onion variety, WFP has selected it for its project with the aim to create potential source of income through onion seed production, a reliable mean for poverty alleviation & malnutrition persisting over area.

Initially a total of 124 plots were laid out in the target Agency but due to militants (Taliban’s) threat 28 plots were uprooted by farmers in upper Orakzai Agency and remaining 96 plots were successfully grown & harvested at the end of the season (June, 2009). A total of 992 farmers were trained by 10 master trainers from FAO & Agriculture Department in 59 villages of Orakzai agency (area is known for poppy cultivation, but WFP food assistance pushed them not to do so) in the month of October 2008. The farmers were trained at the spots as WFP has already provided them with onion bulbs (24,800 kg) and fertilizers (SOP= 1550 Kg, DAP=1550 Kg, Urea=1550 Kg). So, it was on-spot training. (Pictures attached).

Technical inputs being given by FAO & agriculture staff while WFP assisted them with food aid (6 months). The crop was able to produce seeds from bulbs after one year. On average, 46 kg seeds obtained from crop / farmer /2 kanal areas and sold 1 kg on 1300 PKR. Seeds were purchased at the farm services centres established by government on higher prices than the market resulted in enterprise development. Moreover, the area became the only seed bank for onion after devastating floods in Swat in 2009.

Title: Studies on Development, Characterization and Evaluation of Nutri-Bar for Internally Displaced People IDPs in Humanitarian Emergencies

(Syeda Mahvish Zahra, University of Sargodha, Pakistan)

Considering the combined nutraceutical qualities of indigenous cereals, vegetables, milk, dry fruit, spices and herbs, Nutri-Bars were developed. For this purpose dried apricot paste, dried pumpkin, dried egg white, roasted black gram and barley, crisped rice, ground apricot kernel, fennel, cinnamon, cardamom, black pepper, milk powder, grated coconut, jaggery and chocolate were utilized in different proportions and combinations. The results indicated that proximate composition and sensory attributes of bars were affected significantly within six treatments. There was remarkable difference in plain and chocolate coated Nutri-Bars regarding proximate composition. Chocolate coated Nutri-Bars were superior in terms of proximate composition. Amongst treatments T2 was ranked highest in sensory attributes. The studies further revealed that potential exists to produce economical Nutri-Bars with commercial value by utilizing the ingredients that are familiarized by Internally Displaced People of Humanitarian Emergencies. These ingredients are able to cope with their nutritional requirements i.e. coping iron and protein deficiency and relaxation to mental as well as emotional stress. It is hoped that production of these bars will reduce production cost and would ensure delivering on-time for well-being of IDPs of Humanitarian Emergencies.

Title: ***Save Food, Save Future*** **- Multimedia tool for sustainable diets and food consumption -** Daniela Demel (WFP HQ), Camelia Bucatariu (FAO HQ), Sandra Ferrari (FAO HQ)

Context

2012 data states that one in eight people is chronically undernourished.[vii] The causes of food and nutrition insecurity are interlinked dimensions of availability, access, utilization and stability.[vii] The world population is expected to reach 9.3 billion by 2050, of which 2/3 urban.[vii] FAO estimates that a 60% increase in global production will be necessary to meet the food and nutrition needs.[vii]

By contrast, approximately 1/3 of the yearly global food production for human consumption gets lost or wasted.[vii] On average, each consumer in Europe and North America wastes approximately 95-115 kg of food/year[vii], while the vast majority of that waste is avoidable.[vii]

Preventative measures in these regions, including targeted action at the household level and public awareness, could greatly affect the culture of food consumption, as well as attitudes towards the current massive food waste in developed countries.[vii]

Project proposal

To develop a practical ***multimedia tool*** that aims at raising consumers' awareness, prevent household food waste, promote local and national efforts to prevent food loss/waste, and raise funds for global food and nutrition security.

Save Food, Safe Future integrates:

1. The **smartphone / tablet application** FoodAlert that:

1.1. Monitors food expiry dates, origin and price[vii]

Consumers scan the barcode of each food item they purchase.[vii] The app alerts the user three days (customizable) before the expiry date.[vii]

1.2. Suggests recipes

Together with the alerts, it proposes nutritious recipes using the food that is due to expire.[vii]

1.3. Shares information and raises awareness

It provides tips on nutrition, food consumption and food waste reduction.[vii] On an anonymous and voluntary basis, the user can share food consumption data and saving.[vii]

1.4. Maps food donation hotspots

No time for cooking? Share your food![vii] Through GPS, the app indicates the closest *Save Food, Safe Future* partner restaurant. Its core concept is to offer a daily changing

small menu of dishes using (partly) donated ingredients. *Save Food, Safe Future* partner restaurants will raise public awareness of the value of food and donate part of their earnings to organizations fighting food insecurity and malnutrition.[vii]

1.5. Calculates savings

The app displays: (i) the monetary value, (ii) volume (by type)[vii] and country of origin of all products.

1.6. Encourage online donations

The app invites consumers to donate part of the saved monetary value to the same organizations as the restaurant to support the global fight against hunger. A private-sector partner equals the amount donated.

2. A **website**[vii] with
   - **2.1.** Core information and application download;
   - **2.2.** Statistics on food savings and donations from users and partners;
   - **2.3.** Links to partner websites, educational materials.

3. **Social media**[vii] to:
   - **3.1.** raise public awareness;
   - **3.2.** stimulate discussion;
   - **3.3.** spread news;
   - **3.4.** Offer incentives from private partners through Facebook, based on consumers' use of the app.

Expected Impact

Enabled consumers worldwide will save and share food, which will lead to reduced consumption and production pressure for an optimized and sustainable food system.[vii] Monetary donations from consumers and companies to organizations that fight hunger globally will support food and nutrition security.

Annexes

Annex 1: *Save Food, Save Future* 3min video, accessible on YouTube: http://youtu.be/MCXM4G_o1sI

Annex 2 (attached on p. 6): *Save Food, Save Future* logical framework

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Title: Walk the Walk (Rita Somfai, FAO Budapest)

Rationale

More programs, more coordination, more cooperation and more dialogues no longer work. By now people are immune to the endless advertising campaigns of NGOs asking for donations to fight extreme hunger and poverty in the world. The real depth of this enormous challenge must be addressed differently. The key phrase fighting hunger results over 40 million hits in web search engines. How is it possible that the world's greatest challenge has continued to increase over the past years, while technology, infrastructure and transportation have also continued to improve significantly?

Objective

Education is the missing link. And who is to provide the best schooling? Experience. Donors must experience hunger and sacrifice first-hand in order to own the problem. The idea is driven by one simple goal. To understand those in immediate need of help. But how can common people do that?

Approach

The answer is simple. As long as someone *talks the talk* everything seems easy and possible. What we need now is to walk the walk.

People indulge themselves by the idea of ending poverty and hunger with a click of a mouse. Good-willed individuals take a minute to donate funds to help a good cause. The act alone - though important- often means no sacrifice, neither experience to the person. Experiencing hunger through a meaningful sacrifice can transform people's approach to reach out and help on whole new levels.

We all know the saying, give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime. This admonition well implies that giving someone a fish in the long-run is not ideal. It is helpful for a moment. Religious texts speak of five thousand being fed by two fish and five loaves of bread. The multitude was not sent out to fish for themselves. They were first nourished physically so they can be nourished spiritually to learn necessary principles for developing self-sufficiency. In order to see someone become self-sufficient the most essential human needs must be addressed first.

Initiative

Skip a day meal. Participants go without food for 24 hours and offer the worth of their day meal in form of non-perishable food items or the amount thereof. The initiative benefits both the sender and receiver. For donors it is an opportunity for self-reflection and learning discipline over managing physical means and appetite. For the receiver it is a new day.

Directive

Participant countries launch a nationwide campaign promoting *skip a day meal* event entitled "walk the walk". Billboards depict smiling individuals with text that reads: she/he walks the walk. A pin is designed for all donors to wear. To ensure transparent operation a website is launched to monitor meal or money donations and their operational path. Recording Walk the walk memoirs by participants and recipients about what it means to be engaged in such experiment and how their perspective has changed.

Title: Feeding the World One Home at Night (Shivani Boodram and Jerome Smith, Metal Industry Company Limited)

It is common knowledge that the world suffers from a food shortage. The global population is ever increasing, by 2050 the world's population would have increased to almost sixty nine percent[vii], but its means of feeding millions of mouths have not.

Trinidad and Tobago is no stranger to the global food shortage with food importation, being approximatley ten percent of its total import bill[vii] and amounts to nearly four billion dollars as of 2010. This resulted in the government's food action plan in hopes of becoming self sufficient with respect to agriculture.It is our government's mandate that caused our company to specifically focus on an idea that can become the start of a revolution, starting with the Caribbean.

To overcome world hunger one must start at the root of the problem which is access to food, be it food at an affordable price or food grown by people themselves.The approach taken by our team incorporates both of the two solutions.

We have developed a vertical farming unit that is inexpensive, environmentally friendly and energy efficient incorporating a solar module. This new research and development, aims to further the state of the art of economic sustainablity in *urban hydroponics and family farming* hence meeting growing domestic demands for food.

The methodology adopted was applied engineering and research into current state of the art. Investigative procedures included research into relevant literature and scientific publications[vii] as well as an assessment of competitive products.

The results of our research and development effort has yielded a novel, patentable fertigation method which is manifested in an economic, portable, deployable solution featuring high plant density, low energy requirements, solar comptibility and simplicity for the average citizen.

Our value proposition would be:

1. Better nutritional food quality via growth controls and custom sensors.
2. Healthier produce,which means reduced dependency on toxic pesticides and weedicides.
3. Mitigation of adverse weather conditions and flooding thereby stabilizing price volatility and suppressing contamination.
4. Opportunities for deployment into educational institutions and schools to empower the youth in leveraging this new technology in agribusiness.
5. Local efficient, urban family farming, thus eliminating food miles and transportation losses thus saving cost, improving freshness quality and reducing our carbon footprint.

It is by the hopes of this innovative design that we can feed the world one home at a time.

Annex:

Prototype 1 with one weeks growth of chive plugs.

Prototype 2 (solar module) with a variety of crops.

Prototype 3 (kit version) and easily portable.

Title: The Global Agenda of Action in Support of Sustainable Livestock Sector Development (Anne Mottet, FAO HQ)

A clash between demand growth, hunger and natural resource scarcity

Livestock supports the livelihoods of about 1 billion poor in the world and contributes directly and indirectly to food security. It provides 13% of global calories and is a source of essential nutrients. It also plays a vital role in ensuring access to food in volatile economies or natural disaster as a source of cash flow (FAO, 2011). And it provides fertilization and draught power to cultivate about 40% of the earth arable land.

Growing populations and urbanization are translating into increasing demand for livestock products, particularly in developing countries. This global demand is projected to increase by 70 percent to feed a population estimated to reach 9.3 billion by 2050.

This is happening at a time when concerns not only about resource scarcity and climate change, but also the need for more equitable development and the urgency of hunger and poverty reduction through agricultural development, are assuming ever greater importance.

Food security, sustainability and economic growth at the same time

Currently, the livestock sector is the world's largest user of agricultural land, directly as pasture and indirectly through the use of feed crops. Meat, milk and eggs will therefore only be able to contribute sustainably to global food security if these higher resource needs are brought in line with global resource availability.

Because of huge performance gaps within systems, species and countries, there is a large untapped potential to reduce the sector's environmental burden and strengthen its contribution to economic development, social progress and food security. Such potential can, for example, be realized through the use and adaptation of existing and proven technology, and relies, among other things, on removing policy and institutional barriers to knowledge, services, and market access.

A novel initiative for global joint action

The size and complexity of the challenges facing the livestock sector development has led to the recognition that this task can only be tackled effectively through concerted action by all stakeholder groups. Moreover, given the public good nature of the sector's environmental, social and economic challenges and its increasing economic integration, collective global action is needed.

The Global Agenda of Action (the Agenda) is a partnership of livestock sector stakeholders committed to the sustainable development of the sector. For the first time, it brings together representatives from the public and private sector, producers, civil society and non-governmental organizations, research and academia, and inter-governmental organizations committing to tackle the sector's development issues. FAO/AGAL acts as the support group to the partnership.

The Agenda focuses on the improvement of resource-use efficiency in the global livestock sector to support livelihoods, long-term food security and economic growth while safeguarding other environmental and public health outcomes.

It aims to inform, guide and catalyze practice change in livestock production, and has committed to embark on joint activities, such as stimulating interaction and collaboration, enhancing access to information, informing via analyses, assessments and harmonized metrics and methodologies; piloting with voluntary guidelines and strategic recommendations and facilitating innovation and investment.

Title: Vertical Farming Education and Research Centre (Katja Majcen, FAO HQ)

Introduction

With the swelling global population figures, reaching 9 billion by 2050, and the exploding global demand for food, feed and fibre, agriculture will be competing very closely with urban development for both, land and water. During the 2011 CCRSPI Conference in Australia, MS Swaminathan, the father of economic ecology, according to the UN, mentions several key points that should be taken into account to meet the challenge of future food safety.

A new green revolution is predicted, aiming to increase production by improving productivity, while considering, amongst others, the impact of climate change, the conservation and enhancement of natural resources and the spreading ecological footprint of human beings. There is no endless supply of areas that can be converted to agricultural use and much of the land on which the world's food is grown will become exhausted or no longer usable.[1] Simultaneously, the rising temperatures, due to climate change, are raising the topic of flexibility, where farmers need to operate in highly variable environments. [2]

Project description

In order to achieve the goal, we must invest in people. Both skills and expertise should be taught, first of all, to existing farmers, and especially to younger generations in order to get people involved and to create productive conversations to better understand and manage to overcome the barriers in the near future.

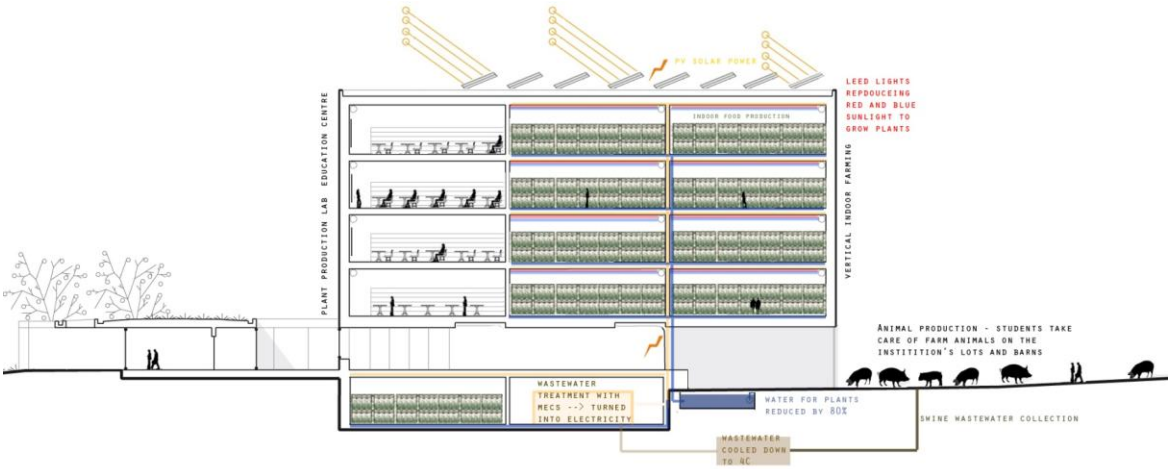
The combination of the factors of limited land and water availability, increasing temperatures and education could lead to the creation of an appropriate institution provoking changes in the future. I looked into "vertical farming", a multi-layer plant production unit, which, as such, doesn't appear as an innovative idea, since it was coined, in 1915, by the American geologist Gilbert Ellis Bailey. [3]

The idea consists of using an old warehouse for year-round indoor food production, on several floors, supervised by scientists and students. In recent years, *PlantLab*, a Dutch company, has developed a water-saving, multi-layer indoor food production centre, where plants are grown in a hot and humid environment, with the help of LED lights, which only transmit a certain range of solar light, needed by plants to grow efficiently.[4] However, this system requires a large amount of energy, while the current global situation is trying to reduce its consumption, by finding renewable solutions.

The Ferguson Academy for Young Women in Detroit is a good example of an educational centre, where young women are taught how to produce self-sufficient amounts of food, which could lead to a successful small business, reducing local unemployment and increasing income, in a very simple way. The students take care of various farm animals on the school's lots and barns. [5]

The “Vertical Farming Education and Research Centre” could be surrounded by several lots and barns, housing animals, such as swine, whose cooled down wastewater, treated with Microbial fuel cells (MFCs)m according to a research made by Pennsylvania State University scientists in 2010,[6] can be used to generate electricity for the LED inside the building.

Conclusion



These educational and research centres should be, first of all, created at a local and regional level in developed countries, in order to make these people understand the problem. Then, the knowledge and technologies can be spread to developing countries, which are more affected by the expanding population.

Title: Save.Use.Produce (SaveUP) - Building resilient urban and peri-urban nutrient cycles for promoting food and nutrition security and mitigating climate change (Afton Halloran, Camelia Bucatariu, FAO HQ).

Objectives

- To produce high quality protein for human consumption by converting food waste into insect protein for use as poultry and aquaculture feed;
- To enhance nutrient cycling.

Context

- World population is expected to rise to 9.3 billion by 2050[vii];
- Food production must increase by 60% over the next 40 years[vii];
- Population growth is becoming a largely urban phenomenon[vii];
- Consumption of animal products is likely to be 70% higher in 2050 than at present[4];
- 870 million people are chronically undernourished[vii] (including micronutrient deficiency[vii]).

Rationale

FAO 2011 estimates yearly global quantitative food losses and waste to be: cereals (30%); root crops (40-50%); fruits and vegetables (40-50%); oilseeds (20%); meat and dairy (20%); and fish (30%).[vii]

Growing demand for protein is putting pressure on agricultural and food-feed systems. Global food-feed systems are resource-hungry and therefore demand resource efficiency. Business as usual could be catastrophic for their economic, environment and social sustainability; thus, leading to food insecurity, malnutrition and enhanced climatic changes.

Potential resources such as legally classified food waste are not always optimized or efficiently integrated into nutrient cycling. Resource efficiency settings must *address malnutrition and unsustainable consumption concurrently8; reducing food supply chain inefficiencies can help enhance food and nutrition security and mitigate climate change.*

Rearing insects for feed is already practiced in some countries[vii] and is a concrete solution towards supplementing animal feed and indirectly providing safe and sustainable[vii] high quality protein for human consumption.

Innovative idea

The idea focuses on increasing the efficiency of urban and peri-urban food systems for mass nutrient and dietary energy flows (ANNEX I):

1. Recover municipal food waste[vii] to be used as safe feed for rearing insects[vii] e.g. Black soldier fly (BSF)[vii];

2. Harvest insect larvae/frass[vii] from the production system and process into animal feed for peri-urban poultry (broiler and eggs) and/or aquaculture (tilapia, trout and/or carp);
3. Use leftover residues after harvesting insect larvae/frass, poultry litter and aquaculture waste, directly or after composting, as a fertilizer for urban and peri-urban agriculture[vii] and/or use them for biogas production and use the residue from the biogas plant as fertilizer.

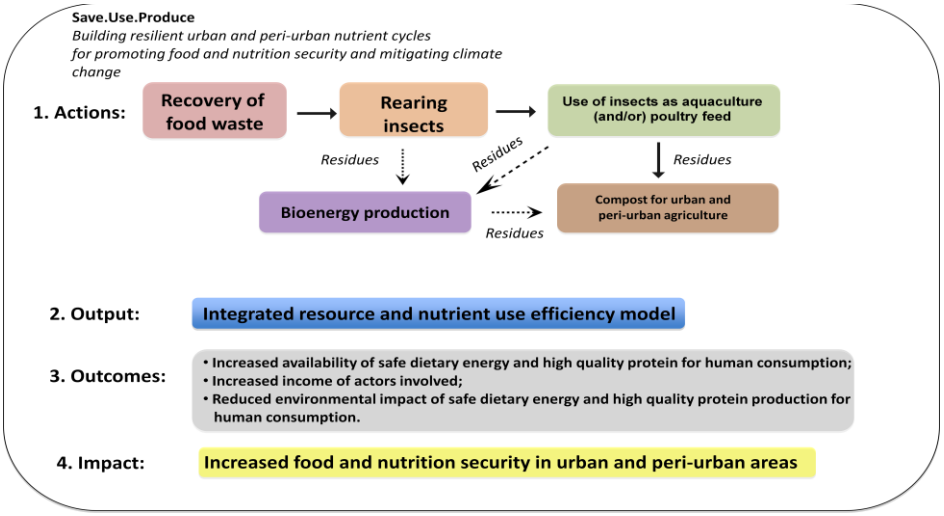
Method

1. <u>Food waste available and characterization:</u>
   a. Determine the amount/type of municipal food waste (from consumers, retailers, hotels, etc);
   b. Calculate the food supply chain losses (weight (kg) and energy (kJ);
   c. Risk assessment for use of municipal food waste as insect feed and of reared insects as animal feed;
   d. Determine the energy and protein use efficiency from food waste to insect biomass to the aquaculture/poultry production chain;
   e. Calculate the energy and protein balances in food waste-insect-aquaculture/poultry-fertilizer/biogas-fertilizer integrated system.

2. <u>Infrastructure and other requirements assessment:</u>
   a. Existing /potential bio-waste collection infrastructure;
   b. Capacity/technology for separation of the food waste to be used as feed for insect rearing;
   c. Operational and/or potential rearing facilities to supply;
   d. Demand for food waste by insect rearing facilities;
   e. Supply/demand for insects for use as feed;
   f. Regulatory frameworks governing insects as feed.

ANNEX I

Framework of identified opportunities and impact



ANNEX II

Publications list

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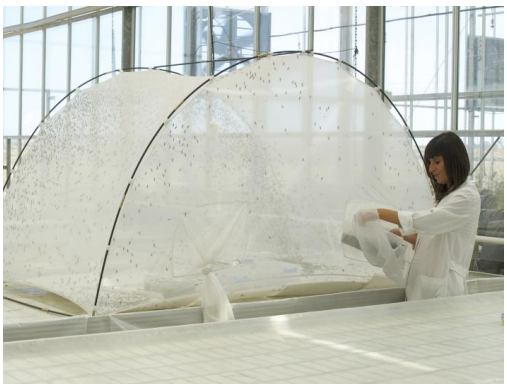
Photos

Kenya, 2013. Food market in Nairobi (Photos complements of Ib Knutsen)

Black solider flies are reared for feed in Spain (Photos complements of Yelitza Vasquez)



Feeding trials with meal made from Common housefly larvae (Photos complements of David Drew)

Videos

FAO Media Centre 2013, *Insectes comestibles*. Forthcoming 13 May 2013 (Reference: F0027/fr).

Title: "COURSEWORK-on-FEEDING" (Marco Bianchini, FAO)

Project overview

University students can synergistically contribute to eradicate hunger. Since food security is highly multidimensional, students from any disciplines will be involved in this project.

A Mobile and PC application, called "COURSEWORK-on-FEEDING", will involve universities' students to be part of a project that aims to provide technical assistance for NGOs and local organizations that are dealing with food security issues.

The project is based on a twin-track approach: 1) in the short-term, it provides assistance to NGOs and other local organizations; 2) in the medium and long-term, it shapes new experts in food security, by making the most of the human resources available within the universities.

Once this application is downloaded on a PC /Mobile, students can use it whenever they have to pick a topic for a coursework or a dissertation, which is often the firs critical task of the coursework.
In fact, the application provides a list of specific issues raised by NGOs and local organizations worldwide associated with the students' area of interests. In doing so, students have the opportunity to work simultaneously on their coursework but also providing technical assistance to beneficiaries contributing to a project aiming to eradicate hunger.
The most successful coursework will be published on a free-online database.

How the application works

Fulfilling the application format, students will provide information about their coursework, area of interests and other relevant information (Annex 1).

Correspondingly, the beneficiaries will specify their needs, their objectives, a detailed description of their project and the students' profile that are looking for (Annex 2 and3).

The application will match the students profile with the beneficiaries, providing the list of topics related to the students' coursework/dissertation.

Project sustainability

By using this application, students are going to be part of a coursework competition award.
In fact, both beneficiaries and students will pay a symbolic amount if they want to use this application, as following indicated.

Students will pay from 0.1 to 5 euro for each coursework submitted, according to the student's socio-economic status. Similarly, the beneficiaries will pay from 10 to 500 euro, for each issue raised, according to their economic status and other parameters.

In doing this, the award at stake is based on the number of students that have chosen to work on that specific topic plus the amount paid by the beneficiaries.

The best coursework submitted will win half of the award at stake. The other half will be used for humanitarian aids and to cover the costs of the application as well.
Including the students attending online and distance universities courses, this project can reach a significant number of students.

As coursework are mandatory in many universities courses, this application provides mutual benefits for both the stakeholders involved.

Students:

- ✓ find a specific topic for their coursework
- ✓ improve their problem-solving skills;
- ✓ have the possibility to win the award;

Beneficiaries:

- ✓ access to a low-cost technical assistance;
- ✓ access to tailored assistance in any specific discipline.

Students are an overlooked resource for the future of food security in the world.

ANNEX

Movie: https://www.youtube.com/watch?v=WAxCx07UUI4&feature=youtu.be

Annex 1: The application form used by the students to specify their area of interests and needs

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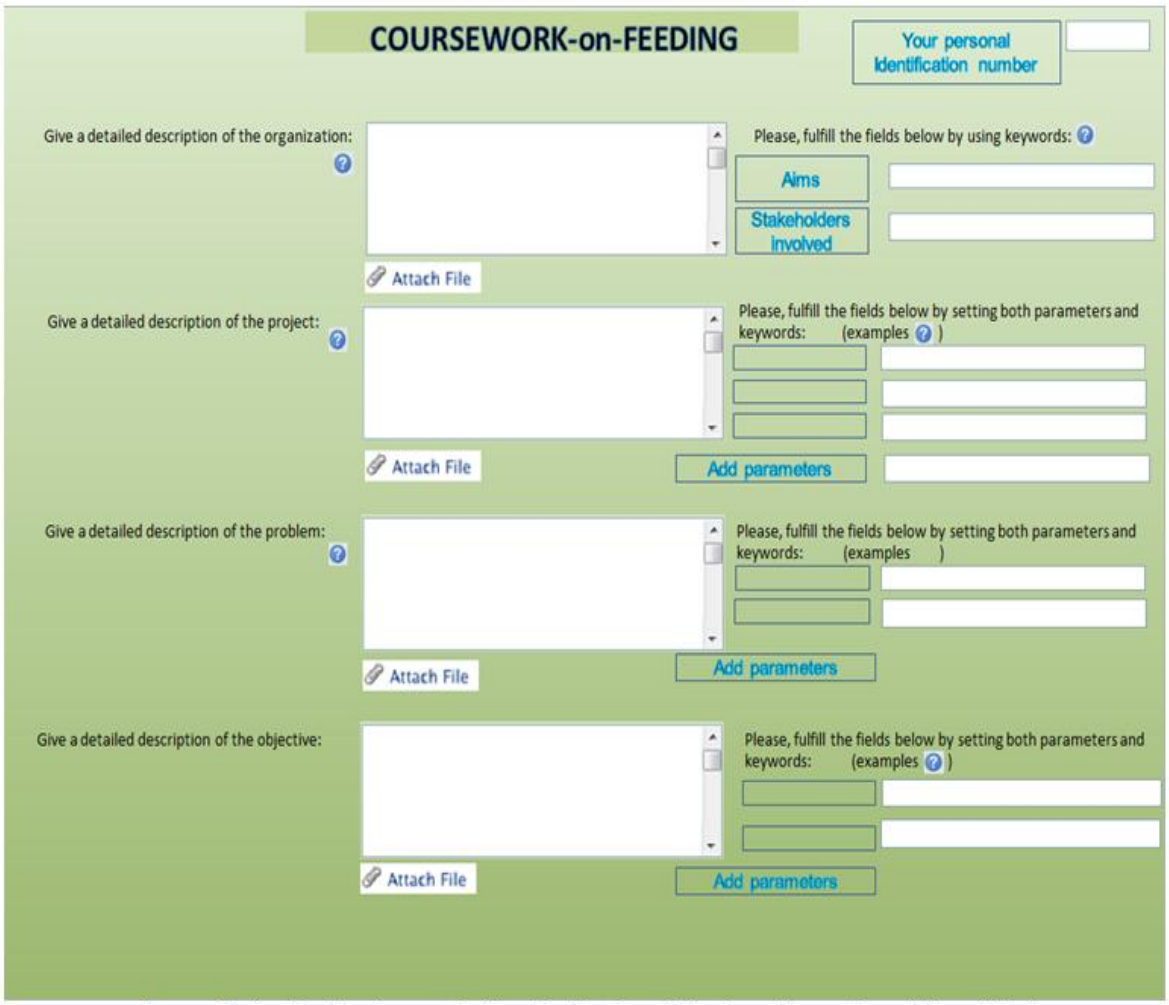

Annex 2: Application form submitted by the beneficiaries giving a description of their needs and providing useful information for selecting the ideally students' profile.

Annex 3: Application form fulfilled by beneficiaries giving a description of the students' profile needed.

Tittle: Go "Private" but Spread Far - ICT(Information and Communication Technology) and Private Partnership (Na Eun Choi, IFAD)

Going Private

Resource mobilisation is becoming a new issue in the international development arena. With new challenges facing the human kind, the need for international development is becoming more complex and expanding. Yet with the traditional donors facing financial and economic problems, resource mobilisation has become a greater challenge. Thus International Organizations are moving towards a more vigorous partnership with the private sector.

This essay proposes a potential field of project partnership where involving the private sector can become especially powerful in feeding the world - it is the Information and Communication Technology.

Spreading Far:
Information and Communication Technology for Development (ICT4D)

Connection is the first step of being together, understanding the need, and helping. We live in a world where connection has become easier than ever. However, information technology has been also noted as a factor of enlarging the gap between the developed world and the poor, namely the "digital divide".

Yet with a switch of thought, it may in fact be how we can close this gap and proactively feed the world. Connecting through Information Technology is an innovative and effective way of providing market access, infrastructure building, capacity building, fund raising, and knowledge sharing.

However, one challenging aspect regarding ICT4D is that at one point of the project, it will require procurement of IT hardware and expertise. This is where Private Partnership could play a pivotal role.

(1) Benefits for the "Private" sector: Corporate Social Responsibility

Through cooperation with the International Organizations on ICT projects, private companies can effectively utilize their Corporate Social Responsibility budget. Major ICT companies are already important sources of financial resources in the international development. By further incorporating them into ICT projects for rural development, we can introduce rewarding opportunities for these companies while enhancing the lives of the rural poor.

(2) Strategy, knowledge, and expertise of the international organizations

Investing and aiding the rural poor requires accumulated expertise, knowledge, and complex strategy. The private sector can benefit from the strategy, knowledge, and expertise of the international organizations, leading to a win-win-win situation for all the private sector partners, International Organizations, and the rural poor.

Conclusion: Innovative Partnerships to Feed the World

Maximizing the potential partnership with the private sector ICT companies for ICT4D in the international organizations will open up new opportunities for feeding the world, effectively solving the problems of resource mobilisation. Highlighted as above, Information Technology can improve the lives of poor rural people in diverse aspects, especially by giving them autonomous incentives and resources to fight against hunger and food insecurity. Yet without development assistance, poor rural areas may never acquire the proper access to the potentials of the information and communication network in time. This is why the partnership with private companies can make a far-spreading change for the food security of poor rural people.

Title: Food Security Receipt The main ingredient is to move as a front (Marco Bianchini, FAO)

The Statement of Needs

Education deprivation has been found directly correlated with food insecurity[vii]. Simultaneously, undernourishment amongst children reduces their learning capacities and lower school enrolment attendance[vii]. Improving education in rural areas increases employment prospects, health, food security, resilience and coping strategies mechanisms to climate change, food crises and cultural challenges[vii].

FAO in "The State of Food Ïnsecurity" (SOFI) in 2005, recognizes in education the most powerful engines for hunger and poverty reduction[vii].

Project description

The project combines the principles of:

- empowering rural education,
- the needs to include principles of Plant Genetic Resources for Food and Agriculture (PGRFA) within the primary and secondary schools,
- the application of the principles of sustainable intensification;
- the potentiality of microfinance as an economic engine for rural development;
- the potentiality of e-learning courses and the collaboration between the educational system of the north and the south of the world;

Project structure

The model is composed by the following parts, as shown in figure 1:

- primary and secondary schools students in rural areas produce seeds of local and/or improved varieties of short cycle vegetables and/or cereals, depending on the agronomic context;
- seeds are sold within the communities;
- local seeds companies and gene banks should be involved to provide useful genetic materials;
- crops are grown applying the sustainable intensification principles,
- the microfinance sector will provide tailored financial services allowing the model to be spread successfully across the villages;

- Local teachers, NGOs and students will be taught on breeding and pre-breeding principles through the use of tailored e-learning courses provided by universities;
- Schools might work in collaboration with local seeds production companies;
- Graduated students might be employed by the local seeds production companies and/or might be the teachers of the next generation;

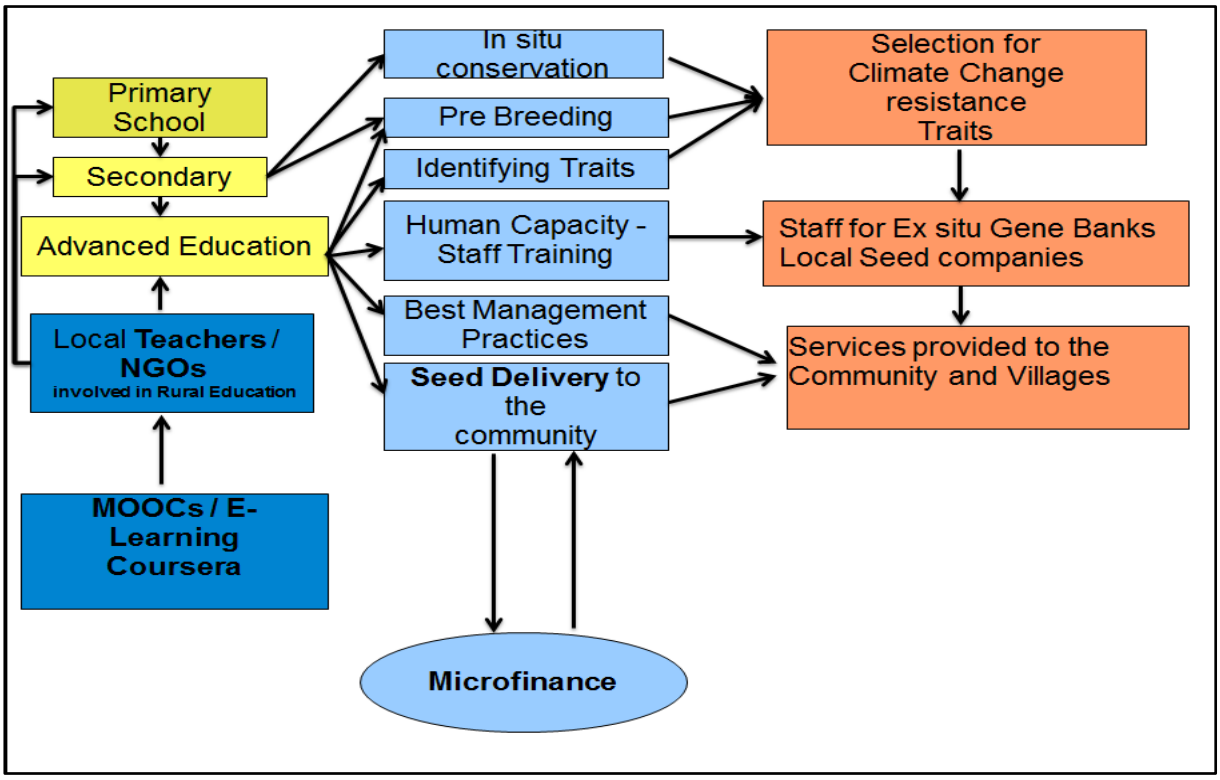

Figure 1: Model description, phases and interconnections

Rural primary schools have been already involved in production and dissemination of improved seeds within a pilot project implemented in Tanzania, by ICRISAT in 2004.

What is new in this project is the abovementioned combination of stakeholders and therefore its potentiality to become a large scale model.

Using e-learning courses and microfinance as a way to assist and sustain the model, this project can be replicated in several rural communities.

Moreover, while improved varieties of cereals are widely sold by seeds companies, farmers do often rely on farmer to farmer informal seeds delivery system for vegetables.

Focusing on vegetables instead than on cereals, will allow schools to sell desirable products and also to shorten the production cycle, facilitating the use of microfinancial services.

Project outcomes

Rural education would benefit the most by this project as it would make schools partially or totally economically sustainable. Further, by teaching the concepts of breeding and pre-breeding, students will learn the good management practices for sustainable intensification and other disciplines such as mathematics, languages and science.

In doing this, this project will be promote the sustainable use of PGRFA and the associated in-situ conservation, providing at the local level an effective tool-kit for resilience agriculture.

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Title: PMIR (Price Monitoring using Interactive-Voice Response) Technology

for Monitoring Food Prices

A Mechanism of using Automated Phone Calls to a Grocers' Network

S.F. Raza (World Food Programme, Pakistan)

Establishment of a comprehensive food security monitoring system requires substantial resources that may fall beyond the technical/financial capabilities of a developing country. However, food price monitoring is amongst the most simple and cost effective means of gathering relevant information on food accessibility. Furthermore, it may serve as an important early warning tool to help identify geographically apart inhibited areas where the food security situation seems deteriorating.

Existing government-driven Price Monitoring Systems (PMSs), generally report on food prices only for specific markets, irrespective of their food insecurity status. Such information deprives food security practitioners of the evidence-base, deemed necessary to design/implement effective programs for communities lying outside the scope of conventional PMS. It therefore, becomes difficult to identify the areas with degree of food insecurity and justify their position for policy makers and donors. Owing to these limitations, the influence of PMSs on policymaking and programme design remains limited to macro-level conclusions only.

The conventional method of data collection using mobile phones requires a specific type of mobile phone, installed with specific software, hence making it less convenient for untrained enumerators and rendering it unviable for PMS through grocers' network.

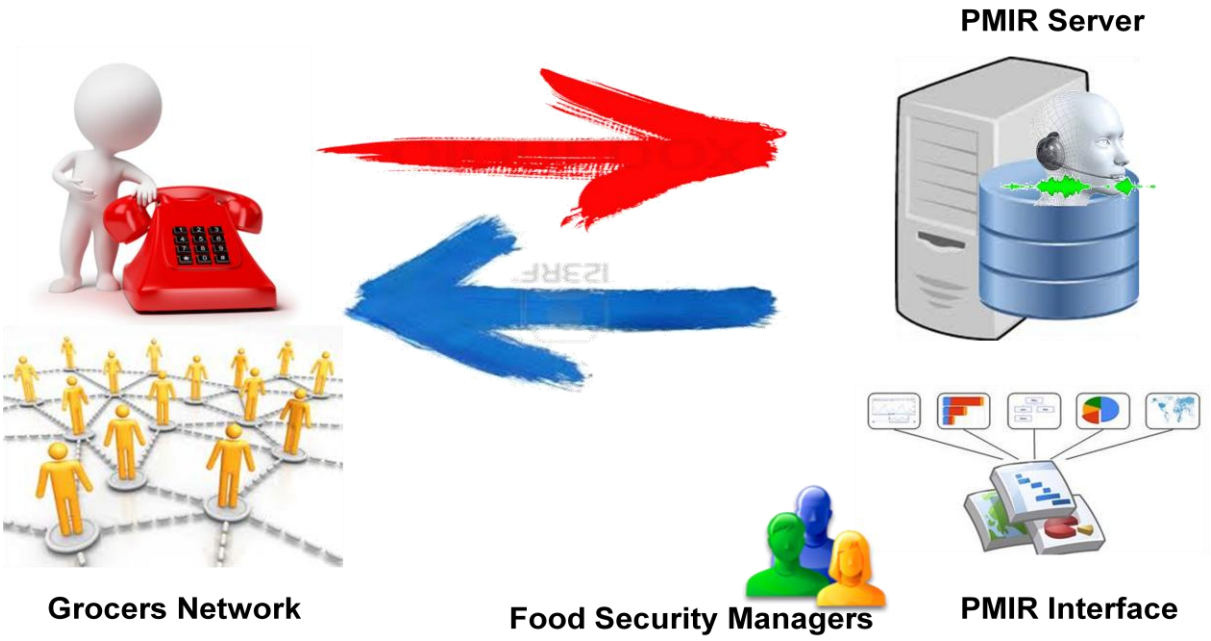
The objective of the PMIR is to provide a simple, user friendly and cost effective, predictive food price monitoring mechanism that enables food security practitioners to predict food access issues across the country.

Interactive Voice Response (IVR) is a technology that allows a computer to interact with humans through use of voice and phone set's keypad-tones. Interviews of general grocers and retailers based on automatic phone calls, offers a simple and cost effective way to collect prices of staple food alongwith local unskilled daily wage rates in their area. This may prove to be an effective source to complement the information gaps with a higher update frequency. Network of grocers can call or be called through an automatic system to ask questions about the consumer prices of selected food items. These questions can be responded by pressing the prices on the phone keypad. At the end of interview, the responder may receive a few minutes worth of airtime credit-voucher (say @$1/interview). Thus providing a systematic evidence-base for programming at micro level in remote/inaccessible areas without any logistics cost. The technology doesn't require a particular handset or any particular software installed on the client side. The development of a PMIR will adhere to the following steps:

1. Establishment of an initial network of 144 volunteer grocers (@ one grocer per district) at country level.
2. Setting up of a PMIR Server Machine containing the price database and allied software(s) for managing the calling record of the grocers accessing the server through a toll free number.
3. Designing of an interactive and self-explanatory set of audio questions for the grocers.
4. Formulating a reporting mechanism for generating automated analyses regarding various elements of food security for a particular area.

PMIR-resembling mechanism can be used for other imaginative tie-ins including security incident reporting or reporting of food requirements for WFP programming.

PMIR Process flow



Title: Poverty Alleviation through Global Education and Efforts (Fidelis Onotu, PAGE Nigeria)

Feeding the world need multiple approaches, as the world food security is threatened by many crises. PAGE Initiative, a Nigerian Based Non-governmental organization has come up with two simple innovative ideas on how to feed the, taking Nigeria as a case study.

1. **Education**

The word "PAGE" came from pager which (often called a beeper) a telecommunications device for short messages (SMS). We educate on innovative Farming by sending text messages to millions of Nigerians, directing them to websites that teaches about how to feed their family. This approach seems very small on a global scale, but image if every family is able to provide vegetables, fruits and protein for themselves.

2. **Social agro- business**

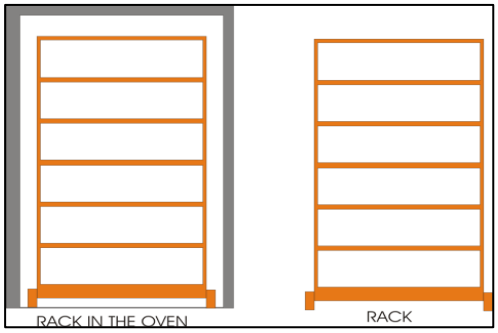
The other innovative idea is using simple food driers. As of 2011 33% of global food productions are wasted annually. In low income countries (like Nigeria) most loss occurs during production.

We have designed and presently fabricating a drying oven that is easy to construct and replicate in as many communities as possible.

Concept

The whole idea is to preserve food that would otherwise be wasted, and to boost the economy and production of agricultural products.

Rural subsistence farmers normally do not product more than what they can eat or sell for the basic reason of wastes, but with this oven farmers are sure that whatever is harvested cannot waste.

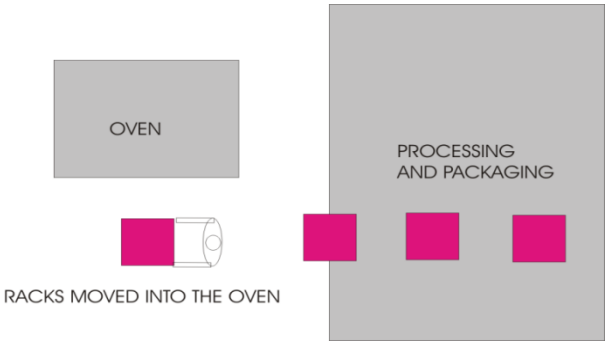


To feed the world there should be zero waste, and one way to achieve this objective is to use very cheap drying technology that can handle large verities of food.

Technical details

Oven is fabricated from 100% locally available sourced material found in most rural areas in Nigeria, these materials are cement, sharp sand, laterite, galvanized iron sheets, ball bearings and 2 inch angle bar for the racks etc.

Dimensions of oven: 2m x 2m x 2m



Dimensions of rack: 1.8m x 0.8m x 0.8m

Fuel: Pressurized kerosene

Hours of operation: 24 hours a day

Inner wall of the oven: galvanized iron sheet

Cost of fabricating oven and four racks: $1200

Loading Capacity: 12 cubic meter of food

Types of food it dries: all types of food items

The total cost of setting up this processing center is between three thousand and three thousand five hundred dollars ($3000 - $3500)

Operations

After our NGO (PAGE Initiative) introducies the idea to a community we intend to running it as a social business for the women, train them for atleast six months befor handing it over (by

selling the center) to a prominent womens corperative association of the host commuinity, there are three groups of benifitaries of the project namely:

1. Independent investors: this can be an individual that buys large quantity of raw foods and dry them for commercial purposses.
2. Members of the coperative: each member contributes a certain amount for the purchase of either raw or dried food, the food is then shared accordingly at a cheaper rate.
3. Direct employment: in this case WOMEN.

Title: Care Farming (Hajnalka Petrics, FAO)

Zero hunger cannot be achieved until the most disadvantaged are excluded from economic and social development and unless their needs and rights are incorporated into the work on food security. New ways of social integration are needed in order to improve the lives of the most vulnerable including through increased solidarity and services that are based on this principle. Care farming can be one of these new ways.

Care farming is an innovative activity for farmers and it includes all activities that use agricultural resources, both plants and animals, in order to promote or generate therapy , rehabilitation, social inclusion, education, alternative income and social services in rural areas. It includes farming practices that support services in rural areas for specific target groups such as children, the sick and the elderly and those that promote disadvantaged people's (people with low contractual capacity i.e. intellectual

and physical disabilities, convicts, those with drug addiction, minors, etc.) social integration,

rehabilitation, education and care.

The concept of care farming is embedded in the multifunctional agriculture paradigm which

emphasizes that beyond its primary function of producing food and fibre, agricultural activity can also produce a wide variety of noncommodity goods and services, e.g. shape the landscape, provide environmental benefits, affect social and cultural systems and contribute to economic and social viability and food security of rural communities.

Leveraging on the multiple functions agriculture can fulfill, care farming can contemporarily produce multidimensional, that is economic, social and health, benefits for multiple actors of the rural society. First, it can constitute an onfarm diversification strategy that generates an alternative income source for the farm family that offers the care/social service at the farm.

Secondly, it is an alternative practice for social service offered in a green environment that contributes to the social integration and eventually health improvement of the most disadvantaged. Thirdly, by alleviating the work burden related to unpaid care work performed by the family members (mostly women) of the direct beneficiary, it frees time up that can be dedicated to productive activities and thus to improve household food security through increased incomes. Finally, it can be an effective means to enhance urban-rural linkages and generate local networks for social protection.

The originality of this proposal lies in looking at care farming from time poverty perspective. I argue that care farming can be an effective means for reducing the work burden of rural women and thus for their potential economic empowerment which is key for food security and hunger eradication.

References:

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Title: Making international assistance more efficient in times of crisis and climate change (Nina Koeksalan, FAO)

Between FAO Headquarters, the Rio+20 Conference and fieldwork, I became aware that complex global problems could in part be solved surprisingly easily on a local level. Agricultural systems can now withstand extreme weather conditions and be adapted to climate change in the long term with the help of proven technologies combined with traditional knowledge. In addition, those practices serve already today to diversify livelihoods, create stable incomes while sustainable manage natural resources. The institutionalisation and implementation of such approaches, however, come up against practical obstacles, from smallholders who are skeptical about new methods, to communities which lack the capacity to implement action plans, to national governments which often do not have adequate financial means or other political priorities. There is a need to further identify local methods and synergies, strengthen institutional mechanisms and to promote dialogue between political actors, science, and the private sector, in order for international and national strategies to become effective.

My innovative idea to feed the world today and in the future is not a one-fit all solution, master plan or a pioneering technology. It is rather an approach how to make international assistance more effective by applying five main principles (beside many others):

1. **Revert on** existent technologies, capacities, schemes and make them operational: although technological progress is needed, many challenges for food and nutrition security could be solved already if concepts, mechanisms, technologies would be better established and up-scaled.

2. **Create ownership**: personal contribution of national and local stakeholders can ensure sustainable continuation of projects after international assistance and funding has left. Supply-driven assistance has to further give way for participatory bottom-up approaches by involving actively national partners. This respects political autonomy, self-determination, accountability and capacity development.

3. **Common understanding**: the most innovative research findings will have no impact if no one understands them. The lack of a common understanding of key terminology and concepts can be overcome by defining clear definitions and simple translations into local contexts.

4. **Apply interdisciplinarity**: Technical assistance should not only be designed along sectors (forests, agriculture, fishery etc.), but also along cross-cutting priorities (such as capacity development, strategic partnerships, gender equity, and knowledge management). This approach bears in mind that specialized focal points on gender, climate change etc. in countries are responsible for more than one sector. Further it creates partnerships and networks between stakeholders in respective sectors, between line ministries and institutions and thereby using personnel and financial capacities more efficient.

Foster synergies: Climate change adaptation, disaster risk reduction, climate-smart agriculture, save and grow or sustainable natural resources management - what matters for smallholder farmers herders, foresters and fishers is their livelihood security- no matter how we call it. While for international and national strategy development certainly these concepts do include different stakeholders, to trickle those strategies effectively down to a local level – where their impact will be perceived – means to promote and