A forum for sharing information about Farmers and Agri-Business in Laos

Climate, Farmers and Agribusiness

Climate-FAB is a blog about how the climate crisis is affecting rural livelihoods in Laos and what is being done to address the problem. Please join us in sharing your experience, questions, documents and data. Let's sow the seeds of informed action.

Andrew Bartlett
April 2023

Introducing Climate-FAB

22 November 2022

There hasn't been much news in Laos about COP27 climate conference. Did the Lao Government participate in the meeting in Sharm El-Sheikh, Egypt? Does it make any difference to the citizens of Laos? What is the relevance for members of LaoFAB?

Let's try to answer some of these questions.

COP 27 was attended by more than 45,000 scientists, politicians, environmental activists and business representatives who were trying to decide what should be done to reduce global warming and address the disastrous impacts of the warming that has already taken place.

Yes, Laos was among the 190 countries represented at the meeting. The Lao PDR statement, made by the Minister of Natural Resources and Environment, is available here. It's short. The key paragraph is as follows…

Currently, we are working on forestry carbon sequestration, clean energy, green industry, electric mobility, circular economy, and carbon financing instruments. All of these strategies and actions could help Lao PDR to pursue its path to decouple greenhouse gas emissions from economic growth aimed at achieving net-zero emissions by 2050.

No direct reference was made to agriculture, farming or the food system which employs over 60% of the population.

COP 27 also saw a joint statement from ASEAN, which is available here. This mentions that the ASEAN Member States *"Look forward to conclude the Koronivia Joint Work on Agriculture which identifies priority areas for the sector in the transformation to low emissions and resilient food system at COP-27"*

The Koronivia agreement was an outcome of COP 23 in Fiji. According to FAO this was "*a landmark decision [that] addresses six interrelated topics on soils, nutrient use, water, livestock, methods for assessing adaptation, and the socio-economic and food security dimensions of climate change across the agricultural sectors"*

You can find further information about Koronivia at this FAO website, including some dull reports and a couple of uninspiring animated videos.

The achievements of the Koronivia Joint Work were reviewed at COP27. You can find the conclusions here. It's hard to read (Greta Thunberg would undoubtedly describe it as 'blah, blah, blah') and the only decision seems to relate to the establishment of an online portal '*for sharing information on projects, initiatives and policies for increasing opportunities for implementation of climate action to address issues related to agriculture and food security'.* So, another website. Great!

The delegates of COP27 also decided to establish something called FAST (Food and Agriculture for Sustainable Transformation Initiative), also managed by FAO, and something else called AIM (The Agriculture Innovation Mission for Climate) which includes *yet another* online platform for sharing research results. You may remember similar announcements at COP26, including the 'Global Action Agenda for Innovation in Agriculture', otherwise known as Climateshot. I haven't seen any evidence of follow-up action. Not suprisingly, Thunberg and others declared COP26 to be a failure, *"a PR event, where leaders are giving beautiful speeches and announcing fancy commitments and targets while behind the curtains the governments of the global north countries are still refusing to take any drastic climate action"* [Ref.]

We need to do better. A LOT better.

Let's be frank, all of these meetings and statements seem very distant and detached from our daily lives in Laos. It's no surprise that COP 27 got very little attention in local media. But let's also be clear, climate change is VERY relevant to farmers and agribusiness in Laos.

Here are some of the key message from the Climate Risk Country Profile for Lao PDR, published last year:

- Lao PDR is amongst the most vulnerable countries to projected climate change trends, as its communities face significant climate-related hazards that are exacerbated by poverty, malnourishment, and high exposure of poor and marginalized communities.
- Without action, the population annually exposed to river flooding is projected to double to over 80,000 people by the 2030s. However, flooding impacts could be even greater as the potential for increased loss and damage from flash flooding and landslides are poorly understood.
- A significant adaptation effort is required to address reductions in yields driven by projected increases in the incidence of extreme heat during the growing season of staple crops such as rice, particularly for poorer communities operating subsistence and rain-fed agriculture.
- The impacts of climate change are likely to fall disproportionately on the poorer and more marginalized communities.

According to the Lao Government, flooding and drought throughout 2018 and 2019 cost the economy around $750 million [Ref.]. In 2021, the National Disaster Management Committee reported 235 incidents over the previous ast five years, affecting 1,860,165 people. A total of 121 people lost their lives and damage to infrastructure, socio-economic development and the environment was estimated at 5.5 trillion kip (US$ 575 million) [Vientiane times, 10 Jun 2021].

The team at LaoFAB wants to bring more attention to these issues, which is why we are launching Climate-FAB, a series of blog posts about how global warming is affecting rural livelihoods in Laos and what is being done to address these problems. We would like this to be a conversation, not a lecture series, so please join us in sharing your experience, data,

questions, links etc. If you also want to share documents, please upload them to the Climate Change and Adaptation folder at the LaoFAB Repository.

Climate-FAB #2. Fuelwood

30 November 2022

Last week we launched Climate-FAB with a post about COP27. This week we want to focus on something more specific, a topic with practical relevance to millions of people in Laos: the use of wood and charcoal as a source of energy.

I also want to highlight how the promotion of stoves that reduce the consumption of fuelwood are becoming a BIG THING in rural development… and not for the first time time. While earlier cookstove projects in Laos focussed on the benefits to women's health (see, for example, this factsheet) they are now scoring points with donors and companies interested in climate mitigation and offsetting.

Improved cookstoves are not a new idea. According to this World Bank report, the Improved Charcoal Bucket Stove (ICBS) was developed in Thailand in the 1980's. In 1997, the FAO funded a programme to introduce the ICBS into Laos, implemented jointly by the Thai Department for Alternative Energy Development (DEDE) and the Participatory Development Training Center (PADETC). This document highlight the role of PADETC in introducing the 'Hor Por' stove in Laos, while also noting that "It is estimated that on average Lao villagers use between one to two cubic meters of firewood per person per year."

More recently, the Ministry of Energy and Mines (MEM) reported that the average rural household in Laos consumes 163 kg of fuelwood and another 35 kg of charcoal per month. Urban households consume less wood but more charcoal. The national fuelwood consumption is estimated at approximately 2 million tonnes per year [Ref].

Following the early lead by PADETC, a number of other organisations have been involved in promoting cookstoves, including Oxfam, SNV, and WWF, with funding from the EU, AusAID and the World Bank. SNV alone claims to have been responsible for the dissemination of more than 150,000 improved cookstoves using a market-based approach [Ref] backed by the use of social media (see this Facebook page). An important role in this work has been played by a Lao non-profit, the Association for Rural Mobilisation and Improvement (ARMI, formally known as NORMAI).

LURAS is one of a number of projects currently cooperating with ARMI. During a recent field visits in Xieng Khouang where ARMI planned to organise cookstove demonstrations and solicit interest in cost-sharing the purchase of stoves, they discovered that another project had handed out stoves *to every household* the previous day. It seems that the market-based approach to promoting improved cookstoves in Laos is now facing a challenge from a very different market, namely carbon offsets. In this case, a carbon finance and private equity

business called C-Quest Capital is collaborating with Civitas to distribute 100,000 stoves in Laos, "therefore reducing greenhouse gasses" as part of the carbon credit trade.

A Google search of the terms "cookstoves" + "carbon credits" indicates that Laos is not the only country where this kind of project is happening. Of ten carbon trading projects recently listed by one certifying company, six of them were for cookstoves [Ref]. This trend in carbon financing was noticed by UNFCC as far back as 2014 [Ref] but by 2016 studies in India "found no statistically significant difference in wood use between families who used the new stoves and the control group." Do they make a difference in Laos?

Fuelwood is not only used for cooking at the household level. More than two decades ago, the Director of PADETC, Sombath Somphone, represented Laos during meetings of the Asian Regional Cookstove Programme (ARECOP), contributing information about the different stoves used in Laos for making noodles, salt, sugar and paper. Details of those stoves can still be seen in this fascinating compendium, originally published in 2001.

In addition to noodles and salt, there are several value chains currently promoted by development projects that involve considerable amounts of wood during processing. As part of the work of LURAS in Xieng Khouang, I have observed a large and growing amount of wood being used in tea processing in the Phousan area. I have suggested that we might want to promote the establishment of woodlots as part of our support for tea production groups, but this idea is usually met with laughter. Who needs woodlots when the villages are surrounded by forest! Nevertheless, some of the Chinese tea factories in the area are now using electric dryers. Should we be encouraging small producers to do the same?

In addition to the use of wood as a source of energy for domestic cooking and rural industry, a large amount is also turned into charcoal for the urban market while some is being exported to Thailand, Vietnam, China, Korea and Japan [Ref]. Keith Barney has studied the '*well-developed regional consumer and industrial demands for a range of charcoal products'.* His 2016 paper on Lao charcoal commodity networks describes how '*Most of Laos' black charcoal is produced by smallholder farmers, accessing scrap timber from sawmills, or household land and swiddens, or from land cleared for plantation development'.* I read somewhere that the export of black charcoal had been banned, but I don't know if the trade continues.

What this vast amount of wood burning means in terms of greenhouse gas emissions in Laos is unclear. The benefits of these projects in terms of mitigation are also unclear. What *is* clear is the fact that every Lao household is involved in the carbon cycle. As part of their daily activities, they are converting large amounts of solid carbon into greenhouse gasses. Yes, fuelwood is a type of renewable energy, just like hydropower, but that doesn't mean it has a neutral impact on the environment.

All comments welcome!

Climate-FAB #3. Agroforestry

07 December 2022

Is it possible to make money from trees without cutting them down? To find the answer, we need to stop thinking about agriculture and forestry as two seperate topics. Instead we need to start thinking about **agroforestry!**.

The agriculture sector is a significant producer of greenhouse gasses that contribute to climate change, while also suffering the consequences in the form of droughts, floods, fires, new pest problems and loss of yields. In Laos, the expansion of cash crops such as maize, cassava and bananas have contributed to the widespread loss of forest and replaced shifting cultivation, a traditional system that helped protect biodiversity and regenerate soils [ref]. But there are alternatives!

Agroforestry has been defined simply as 'agriculture with trees' [ref]. This covers a wide range of practices and products but always involves the management of interactions between trees and other crops and/or animals with the aim of producing food and/or income. It's the *management of the ecosystem* that makes agroforestry different from both the casual collection of wild products (eg. mushrooms. where there are no management interventions) and the establishment of plantations consisting of single species (eg. rubber, where there are very few ecosystem interactions).

There is a wide spectrum of management interventions as part of agroforestry in Laos, including the following:

- The introduction of community regulations and production zones to prevent over-harvesting of indigenous forest products. The best documented case being the management bitter bamboo in Namo District of Oudomxay [ref.] A similar approach has been applied to a many other forest products, including frogs! [ref]
- Planting new varieties or species within natural forest to generate more income. A good example is the coffee being grown in the Keoset cluster of villages in Xieng Khouang [ref.] Similarly, the introduction of the Guangdong variety of cardamom in Phongsaly and a number of other Northern provinces [ref].
- Adding or protecting trees in landscapes where they will provide ecosystem services in support of other crops. The planting of shade trees for tea and coffee is widely practices in Laos, while Agrisud has documented 13 species used for creating green fences. Elsewhere, Sean Foley has reported on 'Invisible Forests - Trees in Rice Landscapes in Lao PDR'.
- Finally, there is the possibility of comprehensive regeneration of land that has been severely degraded by monoculture farming or industry such as mining. I am aware of only one example in Laos, which is the ongoing work being done in Kham District by PAFO Xieng Khouang with support of the RECoSeL project and CIRAD. Here a forest coffee ecosystem is being established on land previous used for maize production. This presentation by Ian Lang (in Lao) will give you an idea of the fascinating work that has started. The Team Leader recently informed me that they are currently identifying more

local species to be associated with the coffee at different stages of growth and under different soils/agroecological conditions.

What have these examples of agroforestry in Laos got to do with with Climate change? Here are some of the benefits :

- Tree crops maintain soil cover, thereby preventing soil erosion and reducing the possibility of landslides. This is especially important in mountainous areas that experience intense rainfall;
- Forests also ameliorate extreme temperatures, thereby protecting crops during heatwaves and frost. In Xieng Khouang, the coffee grown under forest survived frost on two occasions in the past decade, while coffee bushes grown in the open were damaged and yields lost;
- The biodiversity of a forest ecosystem helps to minimize pest problems that may otherwise to get worse due to climate change. Obviously, this biodiversity is also providing food, medicinal plants, and construction materials to the local community... all of which are often overlooked in economic analysis.
- Finally, agroforestry is putting carbon back into the soil unlike other farming systems that are contributing to deforestation and greenhouse gas emissions.

The big question relating to agroforestry, one that is asked by farmers, government officials and development workers, is how much money can be made from the type of products mentioned above? Is there an unavoidable trade-off between environmental and economic benefits? Will rural communities have to accept lower incomes in order to protect soils and biodiversity, and improve resilience to climate change?

The views of LaoFAB members on these questions would be welcome. There have been plenty of studies in Laos that document the market potential of agroforestry but I've seen very few that make direct comparisons with alternatives such as maize and cassava. The fact that so many farmers continue to clear land for these cash crops suggests they offer better incentives, at least in the short term in some parts of the country. In other areas, tea and coffee production is obviously profitable, although these crops are not always being grown as part of the biodiverse agroforestry systems mentioned above.

Adding to the literature on the market potential of NTFPs are two recent reports that have been uploaded to the LaoFAB repository. The first is titled "*Value chain and market assessment of nine agricultural commodities in three provinces of Northern Laos",* available here. Produced by a team led by Tassilo Tiemann for the CliPAD project (Climate Protection through Avoided Deforestation), this report has details about the markets for Bong bark, Tung oil, Paper Mulberry, Sichuan pepper, Rattan, Siam Benzoin, Bamboo, Sacha Inchi, and Sesame from Houaphan, Luang Prabang, and Sayabouri. Notably, Table 18 *does* include a comparison of the returns from benzoin, upland rice and maize. The second report by the same team has details of buyers for these agroforestry products, available here.

I also want to share the link to a recent blog at the Helvetas website about communities producing Cardamom, Red Mushrooms, Broom Grass and More in Phongsaly, where farmers seem to be happy with the returns.

Hundreds of other files can be found in the repository on forest management, NTFPs, bamboo & rattan and related topics, but we always welcome new contributions.

Climate-FAB #4: The IRAS project and 'capacity-building'

14 December 2022

This week, I want to look at a pioneering project in Laos that aimed to improve capacity at all levels of the agriculture sector to cope with the impacts of climate change. We are talking about IRAS: *Improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts*.

There was a post about IRAS on LaoFAB last year, but today I want to dig a bit deeper in the achievements and lessons of this project. I hope we can introduce other completed or ongoing projects in future posts, for which I would welcome contribution from members.

IRAS was a 4-year UNDP project (2011-2015) involving three ministries (MAF, MoNRE and MoLSW) with a budget of USD 4.4 million from the Global Environment Facility. Field activities were carried out in 34 villages across 4 target districts of Savannakhet and Xayabury Provinces. A summary of the project is available here.

The project had a 4-pronged approach:

i. strengthening of the national knowledge and information base on climate change impacts in Lao PDR and their effects on agricultural production and food security;
ii. enhancement of the capacity of sector planners and agricultural producers to understand and address climate change related risks and opportunities for local food production;
iii. demonstration and promotion of diversified and adaptive agricultural practices and other off farm livelihood alternatives at the community level;
iv. adaptation monitoring and learning as a long term process that assures that lessons learnt do benefit the local population, as well as national policies and international climate change adaptation efforts.

According to UNDP, the project was a great success. IRAS trained 803 people and provided technical support to 637 households. 126 large water jars were provided along with 288 tube well rings. They also 'produced and disseminated 2 climate change videos and numerous posters, booklets, brochures, and T-shirts' [Ref].

Despite this impressive list of outputs, I wonder how many members of this forum have encountered evidence of the capacity that IRAS aimed to build?

IRAS seems indicative of a number of interrelated problems associated with agriculture development projects in Laos, specifically: the short-term nature of the interventions, the way in which the development community operates in silos, and the failure to institutionalise results in the government system.

- The final evaluation of IRAS points out that 4-years was not enough to bring about the desired changes, adding that this shortcoming should have been realised from the start. Although the planned activities were completed, it was impossible for impacts to be achieved in such a short time. Instead, there was a vague hope that other donors and the government would take up responsibility for further implementation.
- When IRAS was designed, co-funding and practical cooperation was expected from 6 other projects supported by a range of donors (incl. World Bank, ACIAR, and other UNDP-GEF projects) but none of them allocated budget to the work of IRAS and the final evaluation was unable to identify any linked activities.
- The IRAS project was a great success, that's according to UNDP: *"The capacities of sectoral planners at national, provincial, district and kumban levels were strengthened to understand and address climate change related risks to local food production."* Really? The final evaluation suggested that NAFRI would subsequently play the role of 'lead agency' but noted that the Institute didn't have the staff or budget to do it. And now? The project website is dead, the training manuals have largely been forgotten, the concerned organisations have been restructured and staff dispersed.

I must add that a follow-up project was planned with the name Resilient Integrated Food Systems (RIFS). You can read about RIFS in this USD 40 million proposal from UNDP to the Green Climate Fund, along with this presentation made at a MAF workshop in Vientiane in 2016. The proposal was still pending in 2019. Does anybody know what happened after that?

Personally, I haven't come across much evidence of the capacity that was built by IRAS. In the past year, the LURAS project that I am working for has been piloting a community-based climate adaptation process with farmers. I will say more about this in a future blog post. For now, let me mention that in working with some of the government organisations that were previously involved in the IRAS project, it felt like we were starting anew, with a blank page. This amnesia also exists among development agencies where most of the international staff have been recycled since IRAS ended in 2015.

What's the problem with capacity-building efforts in Laos? I explored this issue in a discussion paper I wrote nearly a decade ago. My conclusion was that projects needed to '*bring capacity-building efforts closer to the communities that are supposed to benefit from this assistance'*. That paper includes suggestions about how community capacity might be strengthened and measured. We are trying to put those lessons into practice as part of the on-going LURAS Project, with more direct benefits at the village and household level. Will this approach be scaled out and sustained by the Government after the project is completed? Or will LURAS be forgotten like IRAS, leaving behind a set of familiar 'problems' (lack of research, weak extension, unproductive farmers) thereby justifying another round of capacity-building?

We need to do better. Surely, we cannot claim that capacity-building projects are a success unless the capacity they create is utilised on a sustained basis.

At the very least, the documentary outputs of these projects should remain accessible along with opportunities to discuss the lessons being learned. The files for the English versions of the IRAS training manuals were uploaded to the LaoFAB repository last year. It took longer to track down the Lao versions, but thanks to Lina at DAEC and Noy and CLICK, the files are

now available at Lao44.org. The links are below. Please take a look, share these materials *and use them!* Let's make sure that the capacity built by IRAS doesn't disappear.

LAO VERSIONS of the IRAS materials are in this folder at Lao44.org:

That folder also includes other material in Lao language relating to climate adaptation

ENGLISH VERSIONS

IRAS reports are now in this folder at the LaoFAB repository. Direct links to the training manuals are as follows:

Training Module 1 - Upland Farming https://laofab.org/document/view/4889

Training Module 2 - Lowland Farming https://laofab.org/document/view/4890

Training Module 3 - On-Farm and Community Level Water Management https://laofab.org/document/view/4891

Training Module 4 - Crop Production. https://laofab.org/document/view/4892

Training Module 5 - Small Livestock Production. https://laofab.org/document/view/4893

Climate-FAB #5: Plasticulture

21 December 2022

It is commonly assumed that plastic waste is an urban issue. Wrong! It's also a big problem is rural areas, and the commercialisation of farming is making it worse.

What has this got to do with climate change?

There are two answers to that question. The answer first relates to why and how plastic is being used in the agriculture sector. The second relates to the material itself.

Plastic has many uses in agriculture but in the context of climate change the most important is *environmental control*. Producers use plastic sheets to manage temperature and moisture levels, conserve water, reduce soil erosion, and protect plants from weeds and insect pests. As weather patterns becomes less predictable, with record-breaking temperatures and intense storms, the ability of small farmers and agribusiness to manage the microclimate in which production takes place could be essential to their survival.

How is this environmental control carried out? In Laos we can see the following uses of plastic by farmers:

- plastic mulches: thin polyethylene film is placed directly in the ground with holes through which crops can grow. A widespread practice in China for more than 40 years, I first saw plastic mulch being used in Laos in 2009 on a tobacco crop in Xieng Khouang (picture here).

- shade houses: black or green mesh - also polyethylene - is suspended over plants. This is often used for small nurseries but I have also seen it used to cover hectares of land for orchid cultivation in Oudomxay (pictures here)
- Drying beds: bamboo or metal frames covered with clear polyethylene film (such as the coffee drying beds in Xieng Khouang in this video).
- Greenhouses with a 5-10 year life span: larger than the drying beds, these structures are usually made with local timber, in which crops such vegetables are grown, with polyethylene roof and sides that are open or covered in netting (picture here from Oudomxay)
- Greenhouses and drying houses with a 10+ years life span. Rigid structures with metal frames covered in polycarbonate sheets (picture here of a tea drying house, in Houaphan)

The thin polyethylene film used as a plastic mulch needs to be replaced every season, while the thicker film used for covering drying beds and greenhouses can last between 5 and 10 years. Polycarbonate sheets are more durable and will last between 10 and 20 years; they are also a lot more expensive, but Lao researchers have calculated a pay-back period of 2.5 years when used for drying chill, coffee, and bananas in Champassak [Ref].

The amount of plastic waste being generated by the agriculture sector in Laos is unknown, but it is steadily expanding along with Chinese investment in the sector. China accounts for 75% of global consumption of plastic mulch, that's approximately 2 million tons of plastic per year, covering 10 percent of China's cultivated farmland [Ref]. Chinese researchers claim that the economic benefits of using plastic mulching are around USD $10 billion per year [Ref], but the Government is introducing new regulations to control the huge amount of plastic waste being generated.[Ref].

Which brings us to the material itself. Plastics like polyethylene and polycarbonate are derived from fossil fuels. Oil is the primary feedstock and the production process has a significant carbon footprint. In simple terms, plastic is making a significant contribution to the climate crisis. It is also a serious threat to biodiversity.

We are all aware - or should be - of the need to eliminate single-use plastic in our daily lives, including items such as disposable water bottles and shopping bags. It amazes me that development projects still organise meetings at which ridiculously small water bottles are handed out to every participant. That should stop. But what about our support for agricultural practices that use plastic for environmental control? My own project has supported the use of drying beds for coffee farmers, while a number of other projects are supporting the construction of greenhouses for organic vegetable production. These practices consume kilometres of plastic film. Have we thought about what will happen to all of that polyethylene film? Not yet.

Environmental control is not the only reason that Lao farmers are using more and more plastic. Empty pesticide containers can be seen at the edges of fields and along water courses across the country (example here), while a distinctive blue plastic film is used in banana plantations to protect the fruit from insect pests (example here). Although not the focus of this article, these other uses of plastic also make a significant contribution to the problem of waste disposal as shown in the linked pictures.

There are three ways of disposing of plastic:

- Recycling: This is an unrealistic solution for farm waste in Laos. Search for plastic+recycling+greenwashing and you will find plenty of articles and videos that expose the myths behind recycling. This is an issue on which Greenpeace and the World Bank can agree. The Bank has recognised that *'Southeast Asia has emerged as a hot spot for plastic pollution'* while the economics of recycling in the region don't add up.
- Incineration: Burning plastic releases toxic chemicals unless the incineration is carried out at specially equipped facilities. This research paper describes how "Incineration of plastic waste in an open field is a major source of air pollution. … The toxic substances thus released are posing a threat to vegetation, human and animal health and environment as a whole."
- Landfill: This involves the *burial* of waste and should not be confused with open dumping. This is the most likely option in Laos, but one that requires careful management in order to minimise environmental contamination. Here you can read what happened when heavy rain in Vietnam caused a landfill site to release thousands of tonnes of greenhouse waste into the local community. How about waste in Vientiane? Take a look at these videos and decide for yourself if the Municipal waste site is an open dump or an environmentally safe landfill operation: click here and click here.

An idea that has been gaining international attention in relation to plastics is that of a 'life-cycle approach' (LCA). UNEP explains that *"a life-cycle approach to plastics considers the impacts of all activities and outcomes associated with producing and consuming plastic materials, products, and services'.* Such an approach might help us to give more attention to the type and amount of materials we select. For example, can farmers use an organic mulch made of rice straw rather than a plastic mulch? Or if they choose plastic, how about a thicker film that can be reused? And importantly, they need to consider how and where they are going to dispose of any plastic waste.

A life-cycle approach may be be a step in the right direction, but it is far from being a solution to the problems caused by plastic. As this paper concludes "reduced consumption of the underlying need for plastic is the only way to ensure reduced environmental impacts".

If LCA is to be effective, the approach needs to be backed up by tougher regulation. We can't depend on voluntary compliance when the use of plastic generates income for farmers and companies while the impacts on health and the environment are born by society as a whole. Certain practices need to be banned or tightly controlled by the national government and local authorities. The UN certainly thinks that Southeast Asian countries need tougher plastic policies, but much of the action taken by regional governments - such as Thailand banning plastic bags, food containers and plastic straws [Ref] - seem to be directed at urban consumers rather than the farm sector. Earlier this year, the World Bank published a 48-page report titled Get CLEAN and GREEN—Solid and Plastic Waste Management in Lao PDR which completely ignored the issue of farm waste.

Perhaps the biggest challenge to the waste management policies of Asian Governments in recent years has been China's ban on the import of 24 types of waste, including plastic. As a result, China's waste imports declined 95.4% but imports *into Southeast Asia increased by*

362%! [Ref]. In Laos, according to the 'CLEAN and GREEN' report mentioned above, the amount of imported plastic waste rose from 7,800 to 100,000 tons in 2019. Thailand plans to follow China's lead with an import ban in 2025 [Ref], which could lead to even more dumping in Laos.

Can Laos manage all of this waste? An overview of waste management legislation is included in this presentation by MONRE. A National Plastics Action Plan (NPAP) is now being developed [Ref] and our friends at Green Vientiane - who have played a leading role in awareness raising and community action against plastic waste - have a seat at the table. Will the issue of farm waste be considered as part of the NPAP? Agricultural plastics have been recognised as one of the problems that should be addressed by a Global Treaty of Plastics, currently being prepared under the leadership of UNEP, but this issue must also be incorporated into policy, legislation - and action - at the national level.

In conclusion, agricultural development projects face a dilemma with regard to plastics. On the one hand, the use of plastic can help farmers adapt to climate change, make more efficient use of water, control pests and increase income. On the other hand, 'plasticulture' has a significant carbon footprint and creates a huge problem for waste disposal.

What do the members of LaoFAB think should be done to solve this dilemma?

Further Reading:

FAO, 2021 Assessment of agricultural plastics and their sustainability: A Call for Action

UNEP, 2022 Plastics in agriculture – an environmental challenge

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Climate-FAB #6: A Year of Disasters

29 December 2022

The end of the year is a time for reflection on the past and planning for the future. Here is a selection of year-end reports relating to climate change, some filled with doom and gloom while others offer a glimmer of hope.

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Counting the cost 2022: a year of climate breakdown

A new report by Christian Aid identifies 20 of the most destructive climate disasters of the year. The ten most financially costly events all had an impact of $3 billion or more. Most of these estimates are based only on insured losses, meaning the true financial costs are likely to be even higher, while the human costs are often uncounted.

Read the blog from Christian Aid and download the Full Report

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Climate Breakdown and the Failure of Multilateralism

Extreme weather events in 2022 once again underlined that the planet is in an age of climate breakdown. Record-breaking heat waves in Pakistan, India, China and Europe were followed by extreme drought conditions in Europe, the United States, Kenya and China's Yangtze basin. Following intense heat conditions, from June till October, Pakistan was wrecked by the most destructive floods in its history, which affected 33 million people, destroyed crops and vital infrastructure worth billions of dollars and took more than 1,700 lives. Floods also resulted in hundreds of deaths in Brazil, India, Afghanistan and Nigeria. As in previous years, over a dozen typhoons battered the Philippines in 2022 causing significant damage to agriculture and livelihoods, with poor and rural communities bearing the brunt as climate victims. Even as the Intergovernmental Panel on Climate Change (IPCC) had issued its most severe warning in its 2021 report, underlining 'code red for humanity', global emissions from fossil fuels hit a record high of 36.6 gigatonnes in 2022, according to latest projections by scientists.

With the planet at an inflection point, the stakes could not be higher for governments to deliver decisions to meaningfully address the causes and manifestations of climate change. Remarkably, despite the extreme events this year and mounting evidence of devastation over the past two decades, the 27th edition of the Conference of the Parties (COP27) of the United Nations Framework Convention on Climate Change (UNFCCC) in Egypt was largely yet another hot air summit, and failed to secure commitments on most of the urgent and long overdue actions to address the climate crisis in responsible ways. Corporate sponsors and lobbyists continued to dominate with a record-breaking 636 fossil fuel representatives, affiliated with some of the biggest climate villains such as Shell, Chevron and BP, in attendance to ensure that their interests were protected. Ninety percent of the sponsors of the Egypt Summit (including Coca Cola, Siemens Energy, General Motors and Microsoft) have intrinsic ties with the fossil fuel industry.

Full Statement from Focus on the Global South

Our Favourite Climate Tweets of 2022

My favourite, from UN Secretary General, Antonio Guterres:

Climate activists are sometimes depicted as dangerous radicals. But the truly dangerous radicals are the countries that are increasing the production of fossil fuels. Investing in new fossil fuels infrastructure is moral and economic madness.

Here you will find more favourite tweets from Greenpeace

Battling Climate Change and Transforming Agri-Food Systems: Highlights from the 2022 Asia Pacific Rural Development and Food Security Forum

The future for interventions that transform agriculture, improve food security, reverse climate change, and improve nutrition and health will be a holistic one. Multidisciplinary efforts and collaborative actions by governments and development partners are essential. There should be no more siloes and much more coordinated thinking. This holistic approach brings further complexity as it implies that development partners, government departments, donor countries, and developing and emerging economies need interventions

that will require design, communication, and management skills that explicitly aim to be "joined up" vertically and horizontally. The skills needed to achieve this will not be acquired by accident. Increasing the capacity to invest in and apply these skills and attributes is the conclusion that follows from this discussion.

Download the full report from ADB

Yearbook of Global Climate Action 2022

Around the world, non-State actors are taking climate action in ever greater numbers. Race to Resilience partners are delivering resilience action in more than 100 countries, with projects that range from the leveraging of financial resources and nature-based solutions to the setting up of early warning systems. More than 11,000 non-State actors – including businesses, financial institutions and cities – from 116 countries have now committed Race to Zero's target of net-zero carbon emissions by 2050. The Global Climate Action Portal (GCAP) has seen 38 per cent more participants since COP 26, while nearly 90 per cent more companies have registered in the past year. Much work has been achieved around improving accountability and ensuring the climate action that does get done is framed in a local and regional context.

Full Report from the United Nations Framework Convention on Climate Change (UNFCC)

Climate Issues to Watch in 2023: Towards COP 28 and Faster, More Urgent Climate Action

The latest climate science from the Intergovernmental Panel on Climate Change is clear: Millions of people are already exposed to acute climate-fueled food and water insecurity, and progress in adapting to the impacts of climate change is uneven, fragmented, and insufficient to prevent human suffering and loss of life in the face of increasing impacts. Part of the challenge in addressing these impacts has been a lack of financing for resilience, as available finance is roughly 10% of what is needed and is not reaching those on the front lines of climate change, such as smallholder farmers, whose livelihoods are entirely dependent on favorable climate conditions. Most worryingly, while daily losses attributed to climate impacts exceed $200 million, negotiators at COP 27 did not formally place adaptation finance on the agenda.

Negotiators now have a framework for the global goal on adaptation, which is meant to be developed and agreed by COP 28. It would also provide greater accountability for adaptation action and delivering the financing needed to reach the global goal, including ratcheting up the pressure on developed economies to deliver the additional $40 billion a year in adaptation finance by 2025 that they pledged at COP 26.

Full report from the UN Foundation

In East Asia Pacific, There's Plenty of Hope in the Climate Fight

Climate change is already having a profound impact on East Asia and the Pacific. This is a region that includes 13 of the 30 most climate-vulnerable countries on the planet, and which without concerted action could see millions more people fall into poverty due to climate impacts in the next few years.

In the face of such facts, it can be tough not to feel exhausted or a sense of despair. 'Climate anxiety' is very real.

Yet, there *are* plenty of reasons for hope, for optimism. Here are five of them… from the World Bank.

Climate-FAB #7: Community-Based Adaptation

04 January 2023

Happy New Year! There was very little response to my round up of 2022 in Climate-FAB #6. I hope this was because our members were busy partying and not because they were too depressed by the climate crisis. This week we be giving more attention to what is being done on the ground to address the crisis.

Responses to climate change in the agriculture and forestry sectors can be categorised according to actors and purpose, in other words the 'who' and 'why'. In terms of who, the main actors are government, rural communities and agribusiness companies. In terms of why, the purpose can be mitigation, adaptation or a combination of both.

In this week's blog, I want to focus on Community-Based Adaptation. But before going further, let's make sure we understand the difference between mitigation and adaptation.

Mitigation addresses the **causes** of the climate crisis. This involves reducing the levels of greenhouse gasses (GHGs) in the atmosphere that are creating global warming by lowering emissions of those gasses or enhancing 'sinks' that capture and store GHGs. Mitigation is the main purpose of the REDD+ projects in Laos, supporting the expansion of forests that act as a carbon sink (see the National REDD+ Strategy).

Adaptation addresses the **effects** of the climate crisis. This involves action that reduces the vulnerability of people, their homes and livelihoods to the impacts of climate change, including extreme weather and rising sea levels. Adaptation is the focus of the Climate-FAB blog this week, in which we look at international experience and examples from Laos.

Community-Based Adaptation (CBA) has been defined as "*a community-led process, based on communities' priorities, needs, knowledge, and capacities, which should empower people to plan for and cope with the impacts of climate change*" [Ref]. This is not a new idea; October 2022 saw the 16th International Conference on CBA held online with participants from 30 countries [Ref].

International experience in the design and implementation of CBA projects and programmes has been well documented. Details vary from place to place, but common features are i) a participatory assessment of local vulnerability, ii) inclusive decision-making about measures to improve resilience, and iii) collective action to implement those measures. Readers who are familiar with Disaster Risk Reduction (DRR) projects will recognise this process. In practice, CBA in developing countries like Laos usually involves a combination of processes from DRR with practices from sustainable agriculture.

Here is a selection of international resources that describe CBA approaches, tools and cases:

- weADAPT is a collaborative platform on climate change adaptation issues managed by the Stockholm Environment Institute (SEI). It allows practitioners, researchers and policy-makers to access credible, high-quality information and connect with one another.
- A key contributor to weADAPT is The International Institute for Environment and Development (IIED) which maintains its own collection of online resources.
- CEDRIG is a set of guidelines, tools, and cases developed by SDC under the umbrella of 'Climate, Environment and Disaster Risk Reduction Integration Guidance'.
- More specific, CRiSTAL is a project-planning tool that helps users design activities that support climate adaptation at the community level. CRiSTAL was developed by a partnership that included Helvetas, ISSD, IUCN and SEI.
- The UNDP Guidance Note on CBA can be downloaded here. This has case studies from 7 countries including Vietnam

The past couple of years has seen the emergence of a new term - **Locally-Led Adaptation (LLA)** - which aims to be more precise than CBA (and - perhaps - less susceptible to corporate capture) by expecting practitioners to sign up to a set of 8 principles [Ref]. Those principles are …

1. Devolving decision making to the lowest appropriate level.
2. Addressing structural inequalities faced by women and vulnerable groups.
3. Providing patient and predictable funding that can be accessed more easily.
4. Investing in local capabilities to leave an institutional legacy.
5. Building a robust understanding of climate risk and uncertainty.
6. Flexible programming and learning.
7. Ensuring transparency and accountability.
8. Collaborative action and investment.

Turning to Laos, our own Sean Foley wrote a report on 'Growing Resilience: Adapting for Climate Change in Upland Laos' for Norwegian Church Aid back in 2009. Among Sean's recommendations was the establishment of a "Climate Adaptation Knowledge Network". It hasn't happened yet… but it is still a good idea!

More recently, in 2017, Oxfam and the Ministry of Labour and Social Welfare published Guidelines on Integrating Disaster Risk and Climate Change into Village Socio-Economic Plans**.** These guidelines are available in both English and Lao versions at the linked page.

Building on all of the above, and taking into account the experience of the IRAS project (see Climate-FAB #4) the Lao Upland Rural Advisory Service (LURAS) is currently implementing a CBA process that is known as Climate Resilient Extension Development (CRED). I will be sharing lessons from this ongoing work in future posts. For now, let me just outline the steps in this CBA process:

Step 1: Community Engagement: Planning meetings with Village Development Committees (VDCs). Review of activities under completed, on-going and planned projects. Community awareness-raising meeting on 'Coping with Change'.

Step 2: Vulnerability Assessment: Collection of baseline data from VDC and a stratified sample of households incl. impacts of - and responses to - past weather-related events. Preparing landscape maps, production calendars, community asset lists. Analysis of data and preparation of a menu of adaptive measures to be offered.

Step 3: Selection of Adaptive Measures: Community meetings to prioritise measures on the menu, with gender-separated voting. Follow-up collation of technical specs and cost estimates. Activity proposals prepared.

Step 4: Implementation of Adaptive Measures: Agreements made between community, local authorities and project, including cost-sharing arrangements and management responsibilities. Work carried out with technical back-stopping and supervisory visits as required.

Step 5: Community Assessment: Meetings to review progress and agree on follow-up action, including maintenance responsibilities.

Step 6: Scaling Out: Farmer-to-farmer exchanges, video documentation, sharing via social media and presentations to policy makers at provincial and national levels.

We will be revisiting the CRED process for Community Based Adaptation in future posts. Meanwhile, members are encouraged to make comments, ask questions and share other examples.

Climate-FAB #8: What's so smart about 'climate-smart agriculture'?

11 Jan 2023

Let me be upfront about this topic: I don't like the term 'Climate Smart Agriculture' (CSA) and I am sceptical about how the idea is being promoted.

What come to mind when we use the term 'smart' in today's society? We have smart phones, smart watches, smart TVs, smart cars, smart homes and even smart cities. The 'smart' epithet is generally used to describe technologically advanced products, particularly those that use internet connectivity - along with digital sensors and AI-supported data analysis - to replace human labour and intelligence. In most cases, smart tech doesn't do something that wasn't already possible, rather it does old things in new ways, specifically it requires devices that improve efficiency and which need to be upgraded or replaced a regular intervals. A win-win for consumers and manufacturers!

Is that the kind of thing that proponents of Climate Smart Agriculture have in mind?

FAO introduced the concept in 2010 in a background paper prepared for the Hague Conference on Agriculture, Food Security and Climate Change [Ref]. That paper defined Climate Smart Agriculture as "agriculture that sustainably increases productivity, resilience (adaptation), reduces/removes GHGs (mitigation), and enhances achievement of national

food security and development goals." The examples given by FAO in this first report suggested that this was a case of 'old wine in new bottles', including conservation agriculture, agroforestry, biogas, livestock mineral blocks, and farmer field schools.

The term may have seemed like a good idea in 2010, as a catchy theme for a conference, but it has since taken on a life of its own, signifying novelty and cleverness in a way that is both appealing and conveniently vague for governments and donors who want to convince their constituents that they have answers to one of the the biggest challenges of our time, *and* for companies that have products and services to sell.

The consequence of this ambiguity is that CSA now means different things to different people:

- To some, CSA involves smart tech such as the use of drones and GPS to carry out precision spraying [example/example], greenhouses and 'vertical farming' controlled by digital sensors and robots [example/ example], and - as proposed by CP Thailand - blockchains and satellite imagery to manage global supply chains.
- To others, CSA opens the door for biotechnology that has been tightly regulated in the past, but which GMO advocates now claim will be necessary to produce crops under the hash conditions created by climate change, such as droughts and attacks by new pests [example/example]
- As noted above, CSA has also been used as a catch-all for a wide range of practices applied for decades under the umbrella of 'sustainable agriculture'. FAO's Online Sourcebook for CSA includes practices such as planting shade trees, the System for Rice Intensification (SRI), recycling livestock manure… along with gender mainstreaming and policy studies. What's new, or could be, are efforts to measure the benefits of these practices in relation to mitigation of GHG emissions and/or adaptation to the negative impacts of climate change. However, work in this area is lacking or still at an early stage [Example].
- There are also plenty of examples of the CSA label being used as part of green-washing. It helps sell everything from policies and projects to equipment and chemicals. The Third World Network (TWN) was an early critic of CSA [Ref], soon followed by NGOs such as CIDSE [Ref] and - more recently - the civil society participants of COP27 [Ref]. The central complaint is that climate initiatives like CSA are being hijacked by corporate agribusinesses that aims to maintain dominance of supply chains in the global food system.

If you are looking for examples of so-called CSA in Laos, you should check out the website of the ASEAN Climate Resilience Network. The page for Lao PDR mentions the SRI, drought and submergence tolerant varieties, intercropping with legumes, and Direct Seeding Mulch-Based Cropping (ie. Conservation Agriculture)… all of which have received enthusiastic attention from researchers and/or NGOs, but none of which have been adopted at scale by farmers. The main challenge for scaling up is reported to be inadequate human resources. Is this a call for more capacity building? If it is, please see Climate-FAB #4.

While positioning itself as the originator and leading source of expertise on CSA, FAO faces internal criticism from staff who have been promoting an alternative approach to sustainability, namely agroecology (AE). The proponents of AE are inclined to see big industrial agriculture as part of the problem rather than the solution to the climate crisis.

The arguments for and against Big Ag can be found in some unexpected places: this article in Foreign Policy sets out how large companies are taking agriculture in the direction of ecological collapse, while this article in The Guardian let's those companies defend their position, allowing the CEO's of Olam and Mars to make the opening and closing statements (with a counter-argument from Devlin Kuyak at Grain sandwiched between these corporate giants).

The tension between CSA and AE within FAO remains unresolved, as evidenced by the equivocation in the Frequently Asked Questions that accompanies its own online sourcebook. One of the questions in the FAQ is **Does CSA promote agroecological practices?** The answer: *A more efficient use of resources improves both productivity and farm incomes, while reducing emissions. Agro-ecological principles and practices play an important role by enhancing ecosystem services to sustainably increase productivity.* Hmm. Was that a yes or a maybe?

If you are looking for a more definitive view on the relationship between CSA and AE, it can be found in a report published in 2019 by the High Level Panel of Experts (HPLE) of the Committee on World Food Security:

This report describes several innovative approaches to SFSs [Sustainable Food Systems] and clusters them in two main categories: (i) sustainable intensification of production systems and related approaches (including climate-smart agriculture, nutrition-sensitive agriculture and sustainable food value chains) that generally involve incremental transitions towards SFSs; and (ii) agroecological and related approaches (including organic agriculture, agroforestry and permaculture) that some stakeholders consider to be more transformative. While the former category starts from a premise that, to address future challenges, productivity per unit of land needs to increase in a sustainable manner, which is what is meant by sustainable intensification, the latter emphasizes reducing inputs and fostering diversity alongside social and political transformation focused on improving ecological and human health and addressing issues of equity and governance.

Finally, if you are looking for a definitive view of the contribution that CSA might make to addressing the climate crisis, you should consider reading the reports of Working Group II of the IPCC, the latest of which is Chapter 5 of the 6th Assessment. Here are a few extracts:

Climate-smart agriculture (CSA) is an approach that aims to increase agricultural productivity, enhance food security, adapt to climate change and, where possible, reduce GHG emissions.

The concept has received criticism based on the absence of conceptual clarity of the interrelations between productivity, food security, adaptation and mitigation and because of limited evidence on the efficacy of CSA for achieving adaptation and mitigation outcomes at a global scale.

Some argue that CSA operates within an apolitical framework that tends to minimise issues concerning power, inequity and access, and is overly focused on technical approaches

CSA is explicitly referenced by more than 30 countries in their Intended Nationally Determined Contributions (INDCs), but measuring the degree of its implementation still represents a challenge.

Some argue that CSA may undermine gender equity, entrench and solidify power, and result in the disproportional allocation of new labour-intensive activities to women . Uptake of some climate-smart technologies can further marginalise the most disadvantaged local groups

So, that's why I won't be promoting Climate Smart Agriculture in this blog. We need to do a much better job of climate mitigation and adaptation in the agriculture sector, but the conceptual ambiguity of CSA, and how that ambiguity is being exploited for the purpose of greenwashing, makes me think we should avoid using the term. Let us know if you disagree!

Climate-FAB #9: 'Slash and Burn' … is it a problem?

19 January 2023

This is a contentious issue that comes up every couple of years at LaoFAB. The words 'slash and burn' convey a sense of destruction, but is the practice as bad as it sounds in terms of climate change?

The Government position is clear. One of the five priority measures for the agriculture and forestry sector listed the Government's 2011 Climate Vulnerability and Adaptation Assessment was "Continue the slash-and-burn eradication program". Interestingly, the report - published by the World Bank - contained no evidence or explanation to support such a conclusion [Ref].

Researchers across the world have often come to a different conclusion to the GoL when looking at the contribution that slash and burn makes to climate change. But before referencing some of that work, let's make two general points:

- The practice of slash and burn is carried out in different ways in the agriculture sector. In Laos, for the most part, slash and burn is practiced on a rotational basis in upland landscapes as part of a traditional system of rainfed rice production, ie. shifting cultivation or swidden. Elsewhere, slash and burn is carried out as a method of forest destruction to establish industrial crop plantations and livestock pasture, ie. landscape conversion. Swidden and landscape conversion have *very* different impacts on the carbon cycle.
- The practice of slash and burn converts biomass into a number of gasses and particulates. One study put the global CO2 emissions from shifting cultivation at 740 million tonnes per year [Ref], about the same as all the cars in the USA. Burning also produces soot (black carbon), a health hazard with a short short-lived contribution to atmospheric warming, but a longer term impact if it lands on arctic ice or the Himalayan glaciers [Ref]. However, the burning also puts carbon back into the soil in the form of biochar, which remains stable for hundreds or thousands of years, thereby acting as a carbon sink (ie. a form of sequestration) [Ref]

Clearly, the impact of slash and burn on climate change depends on a range of factors; the questions of *who, why, where, when and how* all make a difference! So, what do the experts have to say?

Let's start with a major study by Alan Ziegler and others. In 2012 they published a landmark paper titled "Carbon outcomes of major land-cover transitions in SE Asia: great uncertainties and REDD+ policy implications". Here are some of their conclusions:

"Our meta-analysis of over 250 studies reporting above- and below-ground carbon estimates for different land-use types indicates great uncertainty in the net total ecosystem carbon changes that can be expected from many transitions, including the replacement of various types of swidden agriculture with oil palm, rubber, or some other types of agroforestry systems. These transitions are underway throughout Southeast Asia, and are at the heart of REDD+ debates. Exceptions of unambiguous carbon outcomes are the abandonment of any type of agriculture to allow forest regeneration (a certain positive carbon outcome) and expansion of agriculture into mature forest (a certain negative carbon outcome). With respect to swiddening, our meta-analysis supports a reassessment of policies that encourage land-cover conversion away from these [especially long-fallow] systems to other more cash-crop-oriented systems producing ambiguous carbon stock changes – including oil palm and rubber. In some instances, lengthening fallow periods of an existing swidden system may produce substantial carbon benefits, as would conversion from intensely cultivated lands to high-biomass plantations and some other types of agroforestry.". [Ref]

The Ziegler paper is highly recommended for policy makers. It says almost everything that needs to be said about the matter. Nevertheless, I'll mention a few more reports to show that other researchers have reached the similar conclusions.

A briefing paper for the UNFCCC Intersessional Meeting held in Bangkok in 2009 concluded that "More carbon is being sequestered in areas under shifting cultivation than under other forms of land use, like permanent cropping of seasonal plants, or plantations." [Ref]

The author, Christian Erni, went on to say… "Contrary to what is often being projected, the carbon sequestration capacity of industrial tree plantations such as oil palm monocultures is generally lower than that of agroforestry systems, including traditional longfallow shifting cultivation, which is more beneficial to local people and biodiversity."

Erni's conclusion is supported by a 2019 'Assessment of Carbon Footprint of Upland Rice Production in Northern Thailand', where traditional shifting cultivation acted as a carbon sink [Ref]

A 2020 review of more than 80 articles on 'slash and burn' by Chinese researchers concluded that "Large-scale slash-and-burn for commercial agriculture and livestock farming is the major contributor of greenhouse gases." [Ref]

The authorsof that review, Kuok Ho Daniel Tang and Pow-Seng Yap, went on to say…. "Carried out on a small scale for subsistence farming by the indigenous, slash-and-burn agriculture does not yield major environmental concern…. It is the large-scale deforestation by slashing and burning to establish commercial pastures and plantations that quickly turns slash-and-burn agriculture into the culprit of environmental pollution, leading potentially to the worsening of climate change."

What about the literature from Laos?

Early papers on shifting cultivation in Laos looked at a range of issues including crop yields, food security, soil fertility, weed management, biodiversity, indigenous rights and development policy…. *but almost never considered the relationship with climate change.* The LaoFAB repository includes works published in the decade between 1990 and 2000 by Parisak Pravongviengkham, Sombath Somphone, Pheng Souvanthong, Olivier Ducourtieux, Sam Fujisaka, Catherine Aubertin, and Peter Kurt Hansen. A quick search of these 7 papers shows that the word 'carbon', the acronym 'GHG' or the phrase 'climate change' doesn't appear *in any of them*. This may seem surprising to a younger generation of researchers given that shifting cultivation involves burning large amounts of biomass, but it's an indication of how recently and rapidly the issue of climate change has emerged as a priority. [All these papers and more can be found in the folder on Shifting Cultivation at the LaoFAB repository: https://laofab.org/folder/view/413]

The only hint that climate change was on the mind of any researchers in Laos before the turn of the century is buried deep in the 250-page report of a conference on shifting cultivation held at Nabong in 1993, edited by Rio Pals and Dirk Van Gansberghe [Ref]). Here you can find a single reference by Laurent Chazee to "The atmospheric pollution by release of important quantities of carbon dioxide (acidity and greenhouse effect)."

Fortunately, more attention has been given to this issue in Laos in recent years, although the results have not always been reflected in the policies of the Government or the decisions of donors, for example in the design of REDD+ projects. I'll finish with a quote from a paper by Zeigler, Fox and our own Jean-Cristophe Castella which references the studies that were ongoing in Laos at the time of publication in 2012:

"From a carbon perspective, intermediate/long-fallow swidden systems could conceivably represent optimal land-use options in some situations. In addition, lengthening the fallow periods in existing swidden systems or managing the tree and bush phases of fallows more effectively may result in maximum carbon benefits. As some transitions from swidden to alternative land uses may produce undesirable negative impacts on ecosystem services and local livelihoods, both carbon and non-carbon benefits, as well as economic considerations, must be taken into account in the development of REDD+ policies." [Ref]

Climate-FAB #10: Coping with change

25 January 2023

Climate change is not a problem for Lao farmers.

That may sound like an odd thing to say, but the fact is that Lao farmers are not worried about CO2 emissions or global warming or the international agreements that have led to an increase in funding for mitigation and adaptation. Farmers are worried about the things that affect their daily lives. Yes, that includes the weather, and - when asked - many of them

complain that rainfall has become less predictable. Sometime there is not enough water, and sometimes too much. Is this a problem (which implies there is a solution) or is it an act of nature beyond their control? Meanwhile they have many other issues to deal with: the decline in access to forest products, outbreaks of pests and diseases, the prices of inputs, the availability of labour, disputes with neighbours, unofficial taxes… it's a long list!

What are the implications of those of us who are designing, managing and implementing projects that aim to improve the resilience of farming communities to climate change? How can we convince farmers that *our problem* should also be *their problem*? Should we separate the challenge of adapting to extreme weather from all the other issues that farmers are facing, many of which may seem more urgent, more weighty and more solvable to them? Is it necessary to explain to villagers *why* rainfall is becoming less predictable? Do they need to understand carbon cycles in order to improve forest management, and should we teach livestock farmers about methane emissions?

I would love to hear what others think. Below are some notes on how the Lao Upland Rural Advisory Service (LURAS) is currently addressing this challenge. But before that, let me tell you a story…

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A few years ago we were conducting a baseline study in Oudomxay. Focus group discussions with villagers included questions about environmental change. In one village there had been a devastating flood just a few months earlier. A wall of water swept down the river in the middle of the night, destroying houses and drowning a number of people. I could see that the hillsides that had been stripped of vegetation to plant maize and wondered if the farmers made any connection with the disaster. We asked them what they thought was the cause of the flood. Their explanation involved a pair of large snakes that had been captured in the village. Somehow the farmers had managed to drug the snakes and were planning to take them to the town where they could be sold to the Chinese. One of the snakes died soon after being captured, but the other was loaded onto a truck. It was a huge creature, bigger than they had ever seen before, filling the back of the vehicle with seven giant coils! On the way to town, the snake woke up and started to move about.The truck began to rock from side to side. The farmers got scared. They stopped the truck and let the snake escape into the forest. They went home and … *that was the night the flood came!* Obviously they had annoyed some powerful spirits by capturing the snakes.

The following day we were asking similar questions in a different village. Had the farmers noticed any changes in the weather in recent years? Yes, they said. It had been getting warmer. We asked a follow-up question: did they know why the weather was getting warmer? There was a pause and then one farmer said 'electricity'. Amazing! Was he be making a connection between power generation and climate change? More follow-up questions were asked. No, he had simply noticed that the weather had got warmer since power cables had been installed. He assumed that the cables were generating heat.

These are cases of mistaken causal inference, magical thinking, superstition… however you classify these explanations, it is obvious that most rural people have a different understanding about how the world works. Do we need to change that?

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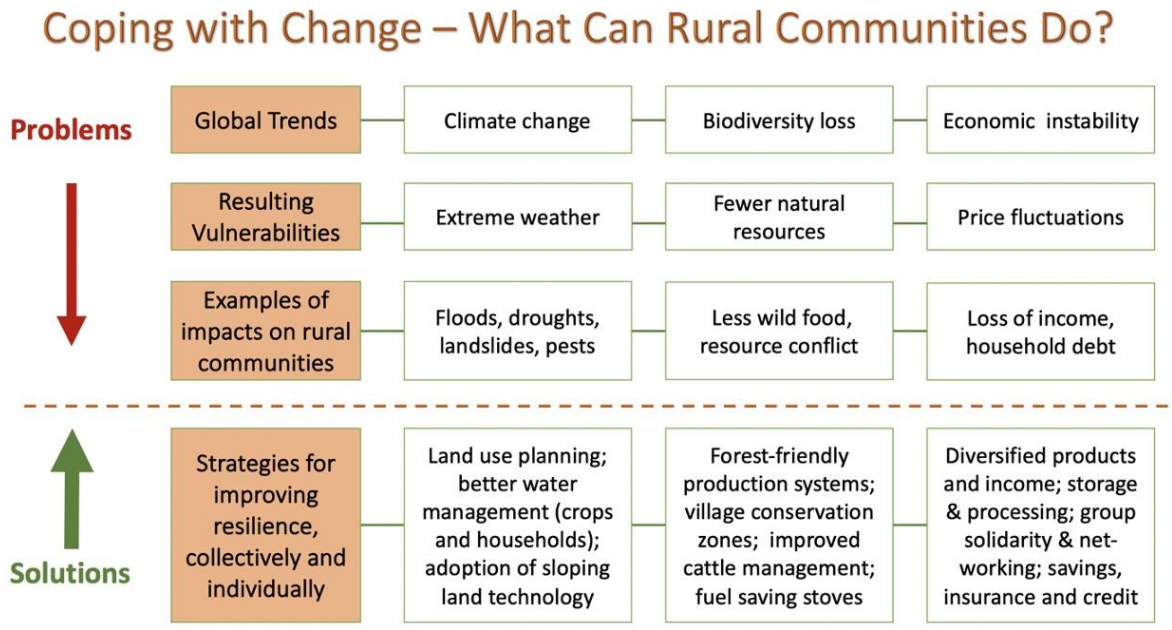
There has been a lot of discussion within the LURAS team about the extent to which farmers and field workers need to understand the science behind climate change in order to make decisions and take action that reduces their vulnerability. Not only are the causes of climate change beyond the comprehension and responsibility of most rural people in Laos, it is not possible to attribute any specific disasters in the project area to global warming. The weather has always been unpredictable in the uplands of Laos, partly due to the El Niño-Southern Oscillation (ENSO). Furthermore, the occurrence of floods, landslides, uncontrolled fires etc. is also affected by other changes in the landscape. Commercialisation of agriculture is both a major driver of those environmental changes and another source of livelihood vulnerability due to unstable markets, inflation, input availability etc.

Consequently, the team has decided to use a pragmatic narrative, one that is both simple and holistic, as the basis for Climate Resilient Extension Development (CRED). This narrative focusses on what all CRED actors are able to understand and accept: that rural people in Laos can - and should - take practical steps to cope with the impacts of the interrelated changes affecting their livelihoods. This narrative is illustrated in the framework below. Our focus is on lower level problems, the *impacts* of climate change and other aspects of the agrarian transition, that are directly experienced by rural communities.



The LURAS team has turned this framework into experiential learning materials that are used in village meetings at the start of a community-based adaption process. The steps in that process were described in Climate-FAB #7.

The focus of these meetings is on two things: a) observable changes in rural livelihoods, and b) the measures that can be adopted to improve the ability of individuals and communities to cope with those changes. These issues are addressed in a participatory manner; community members share what they have observed, what they have done, and what other action they think could be taken. There are no lectures on climate science, and the issue of changing weather patterns is integrated with the other challenges that rural communities are facing.

Copies of the 'Coping with Change' flipchart are available at the LaoFAB repository in English and Lao.

Our experience in organising these meetings has been positive. But these were pilot activities facilitated by project staff in a small number villages. We are now about to scale up the CRED process to another 30 or so villages where the meetings will be facilitated by the District Agriculture and Forestry Offices. Can experiential learning and participatory decision-making be carried out at scale in Laos as part of community based adaptation? We will soon find out!

Climate-FAB #11: Online Resources

02 February 2023

This week I want to share links to thousands of pages of information about climate change, agriculture adaptation and resilience. I've uploaded 5 books to the LaoFAB repository, and selected 5 of the most useful online portals. This should keep you busy until next week!

Books:

Wajid Nasim Jatoi et al (2022) *Building Climate Resilience in Agriculture: Theory, Practice and Future Perspective*

Md Saidul Islam and Edson Kieu (2021), *Climate Change and Food Security in Asia Pacific: Response and Resilience*

Choudary, Kumar and Singh (2019) *Climate Change and Agricultural Ecosystems: Current Challenges and Adaptation*

FAO (2013) *Climate Smart Agriculture Sourcebook*

And recommended reading for anybody who is struggling to cope and/or raising children during these crazy times: Sarah Jaquette Ray (2020), *A Field Guide to Climate Anxiety: How to Keep Your Cool on a Warming Planet*

Websites:

ASEAN Climate Resilience Network, supported by GIZ Indonesia

Asia Pacific Adaptation Network (APAN) coordinated by UNEP in Bangkok

WeAdapt: Regional Climate Change Adaptation Knowledge Platform for Asia, managed by SEI

Climate change resources at ELDIS (more than 6,000 documents)

Climate Change Knowledge Portal of the World Bank

And just for LaoFAB members:

We have a folder on Climate Change and Adaptation at the LaoFAB repository with another 200 files, that can be found here.

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Here is a late addition to the list of online resources... my favourite podcast on climate change: it's called Outrage + Optimism and features the amazing **Christiana Figueres** who was leading UNFCCC at the time of the Paris Agreement. You can find it wherever you get your podcasts and at this website: https://www.outrageandoptimism.org/

Outrage + Optimism has excellent coverage of global negotiations and interviews with a variety of world leaders (eg. Kevin Rudd, Joseph Stiglitz, Rebecca Solnitt), but as the name suggests this is also an opportunity for the hosts to vent their frustration and seek hope in the darkness.

For those of you who already downloaded A Field Guide to Climate Anxiety, and the many more who *should* download it , the Outrage + Optimism podcast is highly recommended.

Remember, fear is the mindkiller but anger is an energy.

Climate-FAB #12: It's all about water

09 February 2023

Climate change often seems incredibly complex. The latest assessment by the Intergovernmental Panel on Climate Change (IPCC-AR6) consists of over 10,000 pages written by hundreds of researchers [link]. But when it comes to community-based adaptation (CBA), there is one issue that demands more attention than any other: water management.

At the village level, the *experience* of climate change usually takes the form of droughts and floods, along with destructive storms and landslides. The Lao Government Strategy on Climate Change estimated that flooding and drought throughout 2018 and 2019 cost the economy around $750 million [Ref]. In 2021, the National Disaster Management Committee reported that 235 such incidents over the previous five years had affected 1,860,165 people; a total of 121 people lost their lives and damage to infrastructure, socio-economic development and the environment was estimated at 5.5 trillion kip (US$ 575 million) [Ref. VT 10 June '21]

The report of IPCC-AR6 mentioned above devotes many pages to what it calls "*The Centrality of Water Security in Climate Change and Climate Resilient Development."* The report notes that *"Most SDGs cannot be met without access to adequate and safe water"* and goes on to say that *"water-related adaptation in the agricultural sector makes up the majority of documented local, regional and global evidence of implemented adaptation"*

The IPCC report includes many projections about the likely impacts of climate change, but I've selected just one more quote: *In parts of Asia, where flooding impacts on agriculture are already significant, projections indicate an increase in damage to area under paddy by up to 50% in Nepal, 16% in the Philippines, 55% in Indonesia, 23% in Cambodia and Vietnam and 13% in Thailand (2075– 2099 compared with 1979–2003)*

[These quotes are taken from Chapter 4 of the AR6 report from Working Group II, pages 551-712]

A Disaster Risk Assessment carried out by ADB in Laos in 2019 concluded that the likelihood of droughts and floods in the North of Laos was 'high' and required a range of mitigation measures including changes to cropping patterns, water management and the design of irrigation infrastructure [Ref]. Consequently, when the Lao Upland Rural Advisory Service (LURAS) started to support community-based adaptation in Xieng Khouang, the team fully expected villagers to prioritise improvements in irrigation. What we didn't expect was that improvements to household water supply were an even higher priority.

Women are especially concerned about the availability of water for drinking, food preparation, sanitation and kitchen gardens. In almost every village we visited, existing infrastructure for household water was insufficient and/or in need of repair. These problems have been exacerbated by population growth, resettlement and village consolidation, as a result of which households are increasingly competing for water.

The LURAS team, myself included, are not experts in water management. Nevertheless, we have been supplying cement and pipes to villagers who are making their own improvements to both irrigation and household water systems. Among the many lessons we have been learning, I'd like to share the following three points:

Firstly, and most obviously, community-based adaptation to climate change cannot be managed from within the box of a single technical discipline such as irrigation, WASH, agriculture, social welfare etc. This presents the Government and donors with a challenge when it comes to identifying implementing organisations. Fortunately, the LURAS partner in MAF is the Department of Agricultural Extension and Cooperative (DAEC), which has the flexibility to pull in expertise from other Departments at the Provincial and District levels when needed.

Secondly, there is a need to update the standard procedures for Participatory Land Use Planning (PLUP) to give far more attention to water: sources, structures, seasonal flow rates, farm and household requirements, etc. Many of the villages where LURAS is working already have maps prepared as an outcome of PLUP conducted in the past decade or so, but they lack the information needed to design water management interventions. Consequently, many days have been spent inspecting headworks deep in the forest, measuring water volumes, and so on. That's a lot of fun, and maybe it's unavoidable given

the rapidly changing landscapes, but it would have been nice to have the main features of the system more clearly identified in advance.

Thirdly, let's not forget this is about *management*. It's easy to get distracted by the flow rates and bill of quantities. The CBA process implemented by LURAS (see Climate-FAB #7) is designed to encourage a high level of local ownership; villagers actively participate in the planning and construction of improvements to irrigation and household water systems. Nevertheless, it has been necessary to organize additional activities to get agreement on how these systems will be managed. Increasing the supply of water doesn't eliminate the competition for access. Agreement on rules and responsibilities are also required to manage that competition.

As I said above, I'm not an expert on water management. I'd love to hear about the experience of other LaoFAB members who have been working on these issues.

Climate-FAB #3: More Chat About Water

16 February 2023

Water management is a big issue, so we will stay with it for another week. Also, I'll continue to experiment with ChatGPT which - while not perfect - seems capable of producing answers that match or exceed the standard of many government policy statements and the public relations efforts of international development agencies. I don't suppose you would allocate millions of dollars to implementing the suggestions of a chatbot... or would you?

Here are the four questions that I asked ChatGPT this week:

A. Which organisations are supporting irrigation projects in Lao PDR, and what have been their achievements (with references)?
B. What lessons have been learned about establishing water user groups in Lao PDR? Why do they fail and how can they be improved? (With references)
C. What have been the constraints to meaningful participation by women in the management of water resources in rural areas of Lao PDR, and what action has been taken to improve the benefits of water management projects for women?
D. Who should I ask to get the best advice about water management in Lao PDR? I need the names of organisations and individual experts, as well as links to websites and reports.

Answers as follows. The last of these is especially interesting... all comments welcome!

A. Irrigation Projects

1. International Fund for Agricultural Development (IFAD): IFAD has been supporting irrigation projects in Lao PDR since 2002, with a focus on small-scale irrigation and water

management. IFAD has provided over US$20 million in grants and loans to support the development of small-scale irrigation systems, as well as the construction of dams and other water infrastructure. The projects have improved access to water for more than 100,000 people in rural areas, increased agricultural production, and improved food security. (Source: https://www.ifad.org/en/web/operations/country/home/tags/lao_pdr)

2. Asian Development Bank (ADB): ADB has been supporting irrigation projects in Lao PDR since 2005, with a focus on improving access to water for rural communities and increasing agricultural productivity. ADB has provided over US$200 million in loans and grants to support the development of small-scale irrigation systems, as well as the construction of dams and other water infrastructure. The projects have improved access to water for more than 500,000 people in rural areas, increased agricultural production, and improved food security. (Source: https://www.adb.org/countries/lao-pdr)

3. World Bank: The World Bank has been supporting irrigation projects in Lao PDR since 2006, with a focus on improving access to water for rural communities and increasing agricultural productivity. The World Bank has provided over US$400 million in loans and grants to support the development of small-scale irrigation systems, as well as the construction of dams and other water infrastructure. The projects have improved access to water for more than 1 million people in rural areas, increased agricultural production, and improved food security.(Source: https://www.worldbank.org/en/country/laopdr)

B. Water User Groups

Water user groups (WUGs) have been established in Lao PDR as a way to manage water resources and improve access to water for rural communities. However, there have been mixed results in terms of their success. The following lessons have been learned about establishing WUGs in Lao PDR:

1. Poor governance and lack of capacity: WUGs often lack the necessary technical and financial resources to be effective, as well as the capacity to manage complex water management issues. Poor governance structures can also lead to conflict between members, which can undermine the effectiveness of the group.

2. Limited participation: Many WUGs are dominated by male members, with limited participation from women and other marginalized groups. This can lead to unequal access to water resources and decision-making power within the group.

3. Lack of incentives: WUGs often lack incentives for members to participate or contribute financially, leading to low levels of commitment from members and a lack of sustainability for the group.

4. Weak enforcement mechanisms: Without strong enforcement mechanisms, it is difficult for WUGs to ensure that rules are followed and that water resources are managed sustainably over time.

In order to improve the success rate of WUGs in Lao PDR, it is important that they are well-governed with clear rules and regulations, that they involve all stakeholders in decision-making processes, that they provide incentives for participation, and that they have strong enforcement mechanisms in place. Additionally, it is important that WUGs receive adequate

technical support from government agencies or other organizations so that they can effectively manage water resources over time

(Khammouane Provincial Water Resources Office & UNDP Laos 2020; World Bank 2018).

C. Women's Participation

The main constraints to meaningful participation by women in the management of water resources in rural areas of Lao PDR are related to gender inequality, lack of access to resources, and limited decision-making power. Women are often excluded from decision-making processes due to traditional gender roles and cultural norms that limit their ability to participate in public life. Additionally, women often lack access to resources such as land, credit, and education which can limit their ability to engage in water management projects.

In order to improve the benefits of water management projects for women, the Lao government has taken a number of steps. These include increasing access to education and training for women in rural areas; providing support for female entrepreneurs; creating gender-sensitive policies; and encouraging greater participation by women in decision-making processes related to water management. Additionally, the government has implemented a number of initiatives aimed at improving access to resources for women, such as providing microfinance loans and grants for female entrepreneurs. Finally, the government has also established a number of programs aimed at raising awareness about gender equality and promoting greater participation by women in water management projects.

D. Sources of Expertise

Organizations:

1. Mekong River Commission (MRC): The MRC is an intergovernmental organization that works to promote and coordinate sustainable management of the Mekong River Basin. The MRC has a number of resources and reports related to water management in Lao PDR, including the “Mekong Water Resources Management Strategy” and the “Mekong Basin Development Plan”. Website: https://www.mrcmekong.org/

2. International Union for Conservation of Nature (IUCN): IUCN is a global environmental organization that works to protect nature and promote sustainable development. IUCN has a number of resources related to water management in Lao PDR, including the “Lao PDR Water Resources Management Strategy” and the “Lao PDR Water Resources Management Plan”. Website: https://www.iucn.org/laos

3. World Wildlife Fund (WWF): WWF is an international conservation organization that works to protect wildlife and their habitats around the world. WWF has a number of resources related to water management in Lao PDR, including the “Lao PDR Water Resources Management Strategy” and the “Lao PDR Water Resources Management Plan”. Website: https://www.worldwildlife.org/laos

Individual Experts:

1. Dr Sombath Somphone: Dr Somphone is an expert on water resources management in Lao PDR with over 20 years of experience working on issues related to water resources

management, hydropower development, and climate change adaptation in Lao PDR and other countries in Southeast Asia. He is currently a Senior Advisor at the MRC Secretariat in Vientiane, Laos, where he provides technical advice on water resources management issues in Lao PDR and other countries in the Mekong region.

2. Dr Phouvone Boupha: Dr Boupha is an expert on hydrology and water resources management with over 25 years of experience working on issues related to hydrology, hydropower development, climate change adaptation, and integrated water resources management in Lao PDR and other countries in Southeast Asia. He is currently a Senior Hydrologist at IUCN Laos Country Office where he provides technical advice on hydrological issues in Lao PDR and other countries in Southeast Asia

[Note: Chat-GPT is known to 'hallucinate' [Ref], constructing plausible but false responses from available information. This was the case when the application responded to the question 'Who should I ask to get the best advice about water management in Lao PDR?' Sombath Somphone was an expert in many areas related to climate resilience in Laos… but *not* an adviser to MRC. If you want to know more about his work, please visit this website. As for 'Phouvone Boupha', I've not been able to find any reference to a person of that name working for IUCN in Laos].

Climate-FAB #14: Cattle and the climate… is this a policy blindspot?

22 February 2023

We've all seen the news that Laos is planning to increase its exports of cattle to China. This will generate income for farmers and revenue for the government, both of which are needed, but it will also generate environmental problems that nobody wants to deal with… or so it seems.

The Vientiane Times has reported that "The government is encouraging farmers in all 18 provinces across the country to breed cattle for export, driven by growing demand from China" [Ref]. That article went on to say that "Under an agreement signed between the governments of the two countries, Laos has been granted a quota of 500,000 cattle for export to China." Linked to this agreement is a FAO training programme that has just started "to accelerate safer cattle trade between the two countries and improve cattle export to China"[Ref].

Here's the problem: cattle production makes a significant contribution to the climate crisis, more than the aviation industry in terms of greenhouse gas emissions. According to FAO, livestock production is responsible for 14.5% of global GHG emissions, with cattle (beef and dairy) responsible for about two-thirds of that total [Ref]. FAO has also reported that livestock grazing is responsible for almost 40 percent of forest loss [Ref].

[If you are looking for a more detailed examination of the harm done by the global livestock industry and the 'meatification' of diets, you may want to read Tony Weis's book, The Global Hoofprint, available here]

While it's true that Laos makes a very small contribution to these global statistics, the relationship between livestock production and climate change is an issue that cannot be ignored locally. Livestock is an important part of Lao farming systems. Around 38% of rural household keep cattle and 29% keeping buffaloes [Ref] with a total of almost 2.4 million animals at the time of the last agricultural census [Ref]. An increase in cattle production for the Chinese market, if not properly managed, could wipe out the gains from ongoing efforts to reduce emissions in Laos as part of schemes like REDD+.

But the issue of cattle and the climate *has* been ignored in Laos. It's not addressed in the National Strategy on Climate Change [Ref], policy studies on the livestock trade [eg. Ref], the Climate Risk Profile of ADB and the World Bank [Ref], or the Food Systems Profile published by FAO, EU and CIRAD [Ref]. Climate adaptation projects have also been avoiding the issue. The livestock training module produced by the IRAS project (see Climate-FAB #4) did *not* provide any advice on management of cattle or buffaloes - which make up 88% of farm animal biomass in Laos - and instead focused on small animals ie. pigs, goats and chickens.

Among livestock experts, there is a tendency to get defensive when you talk to them about the issue of climate change. They like to claim that data on livestock emissions is unreliable because it is based on research from the US or Europe, not from less intensive systems in the developing world [eg. Ref]. Nevertheless, there is good reason to believe that cattle in Laos are producing high levels of methane per kilogram of meat (in other words a high *emission intensity*) due to the fact that they have poor health, poor feed and a low DLWG [Ref and Ref].

What we should be able to agree on that a large number of rural people depend on livestock farming and are not going to stop raising animals because of our concerns about climate change. In which case, **we need to find ways of reducing the emissions from animal production systems in Laos**. If you are wondering how we can do this, a good place to start is the FAO brief on Livestock Solutions for Climate Change. If you only read one reference in this post, it should be this one. In summary, FAO proposes three ways to reduce emissions from livestock production:

- productivity improvements that reduce emission intensities;
- carbon sequestration through improved pasture management;
- better livestock integration in the circular bioeconomy.

With these points in mind, the Lao Upland Rural Advisory Service (LURAS) has included improved livestock management in its menu of climate adaptation measures. Improving animal health through vaccinations and supplementary feed is expected to reduce emissions intensity, while the establishment of well-managed pasture is expected to provide better protection of soils and biodiversity than either free-range grazing or cash crops such as maize and cassava. Nevertheless, any benefits these measures bring about in terms of climate mitigation and adaptation could be cancelled out if there is a significant increase in the total number of animals.

Which brings us back to the GoLs ambition to increase livestock exports to China. Policy goals related to trade and the environment often pull in different directions, but Laos has dealt with this kind of dilemma before, for example in dealing with illegal logging and banana plantations. It's about time that somebody produced a better analysis of the pros and cons of turning Laos into a cattle ranch for its neighbours to the North.

Climate-FAB #15: Systems change and 'Earth for All'

28 February 2023

In recent years there has been an increase in studies, conferences and statements on the subject of *Food Systems Transformation*. It seems that everybody is calling for a radical change in the way food is produced, processed, transported, marketed and consumed, from the UN [eg. Ref] and multinational corporations [eg. Ref] to non-profit foundations/NGOs [eg.Ref] and activist-farmers [Ref]. Surely they can't all be calling for the same thing, can they?

Climate change is not the only reason behind these calls for change, but it's an increasingly important factor. The IPCC has estimated that agriculture, forestry and related land use are responsible for between 13% and 21% of global GHG emissions [Link] while stating that "Increasing weather and climate extreme events have exposed millions of people to acute food insecurity" [Link].

Despite the doubling of crop yields in the past 50 years [Ref] hundreds of millions of people across the world continue to suffer from hunger and malnutrition. The covid pandemic and the war in Europe have added to the view that the global food system is unable to deliver the goods during a crisis. Last year, WHO reported that the pandemic had added 150 million to the number of people affected by hunger, bringing the total to more than 800 million [ref].

The phrase *Food Systems Transformation* is open to different interpretations, rather like Climate Smart Agriculture (see Climate-FAB #8). In part, the ambiguity rests in the word 'transformation' which suggests something *more than development but less than a revolution.* In other words, something broader and more substantial than the piecemeal, incremental changes that have been promoted in the past, but not a dramatic overthrow of the entire system, at least not in the minds of the agri-food companies who are making billions from the crisis [Ref]. Clearly, different actors in the food system want different types of change.

There is also a challenge in applying a systems approach to food-related problems: where is the boundary of our analysis? As we move outward from our core problem, breaking through the walls of disciplinary silos, looking at an ever-growing number of causes and effects, we have to decide where to stop our analysis … because everything is connected to everything else! So, again, where is the boundary of the food system? Regardless of whether our core problem is food security, climate resilience or agroecological

sustainability, a systems approach requires that we consider energy and infrastructure, demographics and culture, and - ultimately - the global economic system. This is when you begin to wonder if a transformation of the food systems should focus on food! The Lao Food Systems Profile illustrates some of these connections [Ref see Fig.1] while also throwing doubt on the idea that the systems approach can be meaningfully applied to a national/territorial silo like Laos.

If we take a systems approach to its logical conclusion, we need to consider planetary boundaries and adopt a global perspective when seeking transformation. This brings me to a major new publication: **Earth for All: A Survival Guide for Humanity**. Don't be put off by the title, which makes this sounds like the kind of book you might buy at an airport and then dump when you reach your destination. This is a serious piece of work by some world-leading scientists who have updated the analysis of the ground-breaking 'Limits to Growth' published in 1972.

For me, the key message of Earth for All is that we cannot solve the Climate Crisis, the Food Crisis, the Energy Crisis or the Debt Crisis… in isolation. Human society is facing an Omnicrisis that needs to be addressed in an integrated manner. At the heart of this mess is the global economic system that has driven all of us to a cliff edge. Improvements in human wellbeing, if they are to be widespread and sustained, require a significant redistribution of wealth and lower levels of consumption by the richest countries. Not easy. Not a problem that is going to be addressed by smart tech, a policy tweak, or a capacity-building project. We cannot mitigate and adapt our way out of the Omnicrisis without addressing global poverty and inequality. *That* would be a transformation.

The Earth for All book is available here and the Earth4All website is here. If you are only interested in the food system, you can jump to Chapter 6 of the book. And if you don't have time for that, here is the key paragraph:

We propose six principles for a new era in food production in the Anthropocene.

- *First and foremost, no more expansion of agricultural lands into forests, wetlands, or other ecosystems. We must grow more food on less land and regenerate degraded land.*
- *Second, farms must become stores of carbon, not vast emitters—within the next decade or so.*
- *Third, our farms must enhance the rich diversity of life.*
- *Fourth, the future of our civilization depends on the health of our soil. We must restore our soils to good health.*
- *Fifth, we must manage our ocean and freshwater resources for resilience.*
- *And sixth, we must support more local production for local consumption where possible.*

All of these principles can be applied in Laos. I hope we can take a deeper look at some of them in future Climate-FAB posts. In addition to calling for changes in the way we produce food, Chapter 6 also calls for changes in our diet and the elimination of food loss and waste. Your response to any of these ideas would be welcome.

Of course, these are not new ideas. Food First is a think tank that has been calling for radical change in the global food system for nearly 50 years. In 2009 they published '**Food Rebellions!**' in which they describe how 'Agroecological smallholders are the planet's safeguards against the looming collapse being provoked by industrial agricultural systems'. That book - which you can download here - references the work of the 400 scientists who carried out the International Assessment of Agriculture (IAASTD) along with the work of farmer movements across the world. More than a decade later, we are yet to see the type of systems change that Food First has been calling for. The data and analysis in Earth for All adds to the urgency.

Finally, I want to recommend the latest edition of the Outrage and Optimism podcast, which includes interviews with two of the Earth for All authors, one of whom - Johan Rockström - is known to some members of LaoFAB. You can find the podcast here.

Climate-FAB #16: The climate crisis is not 'gender neutral'

08 March 2023

Today, the 8th March, is International Women's Day. Let's take a look at how women are affected by the climate crisis.

'Women and girls experience the greatest impacts of climate change, which amplifies existing gender inequalities and poses unique threats to their livelihoods, health, and safety'. That's according to a UN report published last year that also highlighted how women have a a key role to play in adaptation [Ref]. If you are not convinced, take a look at the diagram on page 49 of this earlier report; it's a problem tree that illustrates how gender inequality is central to climate vulnerability in the agriculture sector.

What are the implications for our work in Laos?

This is an issue that deserves attention at all levels, from the legal framework down to the smallest community-based project. Starting at the top: ADB published a report last year on 'Women's Resilience in the Lao PDR' that focusses on how laws and policies in Laos address the issue of gender equality in climate change and disaster risk management [Ref]. Here is what the executive summary has to say:

The Lao PDR has increased the education rates of girls and has made progress in the representation of women in managerial and senior roles in both the public and private sectors. However, high rates of violence against women and children persist, and as reporting is uncommon, victims/survivors often do not have access to justice. Compared to men, women also have poor employment opportunities and working conditions, as well as limited access to land and financial capital. These key areas of socioeconomic development are likely to be exacerbated further with the rise in climate and disaster-related risks. Therefore, alongside the challenges of combating disaster and climate impacts, it is crucial

to ensure that women's socioeconomic resilience is increased so that women and men move forward with increased equality of outcomes. This requires a focus, not only on how climate and disaster-related laws and policies can be more gender responsive but also on improving gender equality in key socioeconomic areas that impact women's resilience.

The report concluded that although the Law on Gender Equality (2019) mandates gender mainstreaming in laws and policies across all areas of work, there is a notable lack of commitments to equality and nondiscrimination in key laws and policies related to disaster risk management, environment, and climate change. In addition the report calls for increasing women's participation in DRR, climate change adaptation, and environmental decision making.

This last point is crucial. Government programmes and development projects are usually planned and managed by men. A quick read on patriarchy, power and climate (by the Economist, surprisingly) is available here. Elsewhere, Matcha Phorn-In, an activist from Chiang Mai has said: "Humanitarian programmes tend to be heteronormative and can reinforce the patriarchal structure of society if they do not take into account sexual and gender diversity." [Ref]

The need to raise the voice and perspectives of women in decision making about climate adaptation is both a reflection of women's rights under Lao law *and* a key to making these programmes and projects more effective. The UN report mentioned above identifies three reasons why women should be recognised as 'agents of change' [Ref]:

- women involved in farming activities tend to make climate-resilient choices towards achieving food security within their households
- women tend to take future generations into account in their decisions and therefore make choices that could help to increase resilience
- women and indigenous peoples are custodians of traditional and indigenous knowledge that can inform adaptation and mitigation efforts.

These generalisations could have easily been written by ChatGPT. How about some concrete examples? Let's see what we can find….

The CGIAR network of international agricultural research institutes has identified 6 practical steps to support women farmers as key actors in the drive for climate resilience [Ref]:

1. Target private and public climate investments toward women who need it most
2. Make productive resources and labor-saving technologies available to women
3. Design climate information services to reach and benefit women
4. Support women's collective action for increased resilience
5. Promote women's leadership and participation in decision-making at all levels
6. Collect gender-disaggregated data

That's still rather vague. Can we do better?

Further ideas can be found in a report on 'Advancing Rural Women's Economic Empowerment Through Climate-Resilient Agriculture', published last year under a joint FAO-IFAD-WFP initiative. The measure advocated in this report are as follows: [Ref]:

1. An enabling policy environment
2. Promoting local, ancestral and indigenous knowledge and practices
3. Access to climate-resilient agricultural inputs and services
4. Promoting rural women's land rights and tenure security
5. Saving water and energy —and rural women's time
6. Access to capacity-building, training and information
7. Ensuring rural women's and girls' voice, agency, participation and organization

That last report includes plenty of interesting example, but none of them are from SE Asia. This article from the Stimson centre does slightly better in that respect, mentioning women environmentalists in Thailand, Vietnam and Cambodia.

Where are the women environmentalists in Laos? What local efforts have been made to implement any of the measures listed above? Help me out, please!

OK, the LaoFAB repository includes a great report on labour-saving technology for rural women [Link], along with a number of excellent studies on women's land rights [eg Ref, Ref, Ref]. But I'd like to see more documentation that explicitly addresses the gender dimension of climate adaptation and disaster risk management in Laos, not just in abstract terms but with concrete examples. If you are aware of any cases, please let us know!

The LURAS project is trying to address this issue. The community-based process supported by the project includes baseline studies and community decision-making that disaggregate the perspectives of men and women. This has led to the project giving more attention to household water supply than was originally expected (see Climate-FAB #7 and #12). Our experience in implementing this process also made us think that more effort was needed to address a number of gender-specific roles in the management of natural resources. This led to the development of a sub-menu of activities that we are calling 'Household Resilience,' described below. I'll be honest, we are struggling to implement this plan. This is not the place to go into the difficulties we are facing, which seem to affect a lot of development efforts related to women's empowerment in Laos, but we would welcome any feedback!

Household Resilience

Household Resilience activities are an addition to the existing process for Climate Resilient Extension Development (CRED). These activities are primarily aimed at women, focusing on the domestic roles that are affected by climate change. The options for household resilience activities currently include training and follow-up support related to the three topics given below.

Better utilization of water: households in the uplands are often vulnerable to a shortage of safe drinking water, and water for other domestic use such as sanitation and kitchen gardens. These sessions will introduce how to store and filter water at the household level, and collective action to maintain the supply system and avoid wastage.

Better utilization of firewood: firewood is the main fuel used in cooking in rural households but availability is declining in many places, *and* open fires are contributing to poor health. These sessions will introduce improved designs of cookstoves and how to use them.

Better utilization of local foods: the expansion of commercial agriculture has improved incomes but this has not always led to improvements in diet. These sessions will introduce locally relevant measures for establishing and maintaining a healthy diet and the biodiversity on which this depends, including both individual action such as food preservation, and collective action such as and the establishment of conservation zones for NTFPs and aquatic species.

Further topics may be added as a result of lessons learned during the Pilot Stage, but it is important to note that this is *not* a WASH initiative. LURAS is prioritizing the utilization of household water and fuel wood due to the links between gender, climate change and food security, rather than with sanitation and health.

Climate-FAB #17: Meta-Study on Climate Adaptation in Laos

13 March 2023

I'd like to thank everyone who came out to the Department of Agricultural Extension and Cooperatives (DAEC) last week for a meeting of the Sub-Sector Working Group on Farmers and Agribusiness (SSWG-FAB). Close to 50 people attended the meeting on the theme of climate adaptation. All of documents from that event can be found in this folder at the LaoFAB repository.

The meeting saw the launch of the report of a 'Meta-study of climate adaptation measures tested by upland farmers in Laos', by Dr Latsamy Phounvisouk from the National Agriculture and Forestry Research Institute (NAFRI). The study was commissioned by the Lao Upland Rural Advisory Service (LURAS) with funding from SDC. The final report of the study can be downloaded here. Dr Latsamy's presentations are also available in English and Lao.

The Executive Summary of the report is below. All I need to add is that much of the discussion at the meeting focussed on the issue of sustainability. A lot of adaptive measure have been tested in Laos but many are not sustained or scaled up once projects come to an end. [Note: this issue was explored with regard to the IRAS project in Climate-FAB #4]. A number of participants pointed to the importance of *ownership* as a basis for sustainability, both by government and rural communities. Given the budgetary constraints faced by the Government, it was suggested that the private sector should play a greater role in promoting and sustaining new farming practices. However, it was pointed out that the commercialisation of agriculture often led to destructive monocultures rather than diversified farming systems that are needed to improve resilience to climate change. Exceptions could be found in the tea and coffee sector, where agroforestry practices were helping protect biodiversity and generate income for both farmers and companies.

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Meta-study of climate adaptation measures tested by upland farmers in Laos: Executive Summary

The present study was undertaken with the objective to analyse climate adaptation measures already tested by upland farmers in Laos. Although seven projects were initially selected for the study, due to a lack of sufficient information, only five were included. These are:

1. Improving the Resilience of the Agriculture Sector in Lao PDR to Climate Change Impacts (IRAS), FAO;
2. Eco-Friendly Intensification and Climate Resilient Agricultural Systems in Lao PDR (EFICAS), CIRAD;
3. Climate Protection through Avoided Deforestation (CliPAD), GIZ;
4. Northern Uplands - Promoting Climate Resilience (NU-PCR), CARE/CCL/SAEDA;
5. Strengthening Agro-climatic Monitoring and Information Systems (SAMIS) to improve adaptation to climate change and food security in Lao PDR, FAO.

A brief summary of the above projects is included in this report. After reviewing these projects and the climate change adaptation measures used in these studies, the measures were broadly classified into the following ten categories:

- Capacity building of stakeholders through knowledge transfer and training
- Climate/disaster vulnerability assessment
- Weather forecasting
- Land use planning
- Improved water management
- Improved livestock management
- Improved forest management
- Introducing new crop varieties
- Participatory action research/testing agroecological practices
- Gender/women's empowerment

The different activities undertaken in these projects were then listed under the above categories. It is vital to emphasize that the activities carried out by these initiatives are specifically tailored for the location, the crop, the culture, and the specific disaster to which the affected area is vulnerable. Futhermore, it is significant to keep in mind that the implementing partners have diverse focus areas and capacities.

The following table shows the projects that undertook activities related to the ten categories of climate change measures, according to the information that was available. Activities related to capacity building of stakeholders through knowledge transfer and training and land use planning were the two most frequently used methods by the projects included in the study. These were followed by weather forecasting, improved water and livestock management, participatory action research/testing agroecological practices and gender/women's empowerment. The measures least employed were climate/disaster

vulnerability assessment, improved forest management and introduction of new crop varieties.

No	Measures	Projects
1	Capacity building of stakeholders through knowledge transfer and training	IRAS, EFICAS and NU-PCR
2	Climate/disaster vulnerability assessment	NU-PCR
3	Weather forecasting	NU-PCR and SAMIS
4	Land use planning	IRAS, EFICAS and SAMIS
5	Improved water management	IRAS and EFICAS
6	Improved livestock management	EFICAS and NU-PCR
7	Improved forest management	CliPAD
8	Introducing new crop varieties	IRAS
9	Participatory action research/ testing agroecological practices	EFICAS and NU-PCR
10	Gender/women's empowerment	IRAS and NU-PCR

A SWOT (strengths, weakness, opportunities and threats) analysis was conducted for all the activities in each measure. Though this analysis was subject to the availability of information, it permitted a better understanding of the activities and could be useful for future project managers, planners and policymakers who are making decisions about climate adaptation. An attempt was made to prioritize these measures at different levels i.e. national, sectoral and community level.

Capacity building of stakeholders has been attempted through training events and study tours for staff of various organizations at national, provincial, and district levels. Providing staff with regular access to technical training and innovative methods like gaming was also found to be effective.

The climate/disaster vulnerability assessment to understand the key hazards faced by the communities form a very important preliminary step. The key hazards were: crops most affected; communities' struggles with animal pests and poor hygiene conditions; other types of risks related to market prices of inputs and crops; market access and relationships with buyers and contracts. This requires training of the staff involved and retention of individual staff for the long term.

Seasonal and short-term weather forecasts have changed the farmers' planning of the farming calendar and practices. Farmers acknowledged the importance of informed decision making and proactively seeking and sharing this information. However, this measure is dependent on local capacity building processes to understand, interpret and act on this information.

Participatory Land Use Planning (PLUP) has been used with very effective results in some of these projects. Its utility has also been improved by modifying it to include land vulnerable to flooding, drought and erosion. This shows that existing tools can be scaled up and used efficiently to combat climate change effects.

Improved water management is another important measure which can not only protect crops from climate change effects, but can promote resilient livestock production. Small-scale community irrigation was found to have a visible effect on climate change resilience

and livelihood diversification. Irrigation infrastructure construction/rehabilitation should ideally be allocated to irrigation development projects.

Livestock management is a pillar of resilience for communities. Effective actions include: support for permanent fencing to separate livestock areas from crop production areas; the establishment of forage plots to improve livestock feeding; animal housing and water access; also improvement of animal health through organic feed, herbal medicine and vaccination.

Improved forest management is another measure that aids in balancing economic and forest cover goals, as well as understanding the sources of forest decline. One of the pilot solutions implemented is the provision of communal land rights to village land through the use of existing resources such as PLUP. Lessons learned from implementing this strategy could provide a solid foundation for the construction of community land titles to enhance sustainable resource management.

Four drought-tolerant rice varieties (TDK1, TDK 1/1, TDK 8 and TDK 11) piloted in flood/drought prone areas have shown better yield compared to the local seed used before. Participatory action research includes PLUP and the transformation of these plans into action plans and on-farm experiments and demonstrations related to crops, livestock, and forest-integrated management.

In gender/women's empowerment, activities such as: encouraging women to participate in local Provincial Agriculture and Forestry Office (PAFO) and District Agriculture and Forestry Office (DAFO); organising gender-specific events; and creating village savings and loan groups for women engaged in farming, have strengthened women's agency and their involvement in decision making which was found to be particularly fruitful.

Some of the measures such as gender/women's empowerment, land use planning, weather fore-casting, and improved water management were acknowledged by the farmers as well as the programme heads to be successful.

In conclusion, vulnerability assessment could be one of the first and most fundamental actions to take. Various situations in farming communities require specific adaption plans. Our advice is to make use of the opportunities offered by the previously tried adaptive measures and apply the lessons learnt to future projects. While many of these adaptive measures produced positive results, it was found throughout the study that they were neither maintained nor scaled up. This significantly implies the need for effective policy, institutional leadership, cross-sector collaboration, and resource availability. The opportunities provided by the previously tried adaptive methods should be utilised, and future projects should include the lessons learned. Throughout the planning stage, it is essential to assess the viability of measures and to set up processes for expanding them.

Climate-FAB #18: Climate Risk and Vulnerability Assessment (CRVA)

22 March 2023

This week I want to take a look at Climate Risk and Vulnerability Assessment (CRVA), a critical tool for understanding the potential impacts of climate change on agriculture and identifying adaptation strategies. There is widespread agreement that CRVA should be carried out as part of any project that aims to improve climate resilience, but there are a number of challenges to conducting a meaningful assessment. And there are some good examples in Laos that illustrate both the potential and constraints.

Let's start with a generic CRVA **methodology** [Ref: ChatGPT]

1. Identify the scope: The first step is to define the scope of the assessment by identifying the geographic area under consideration and the sectors or systems that will be assessed.
2. Collect data: The next step is to collect data on climate patterns, historical trends, and future projections using various sources such as meteorological data, satellite imagery, and climate models.
3. Assess vulnerability: The vulnerability assessment involves identifying the exposure of different sectors or systems to climate risks such as droughts or floods. It also considers their sensitivity or capacity to adapt to these risks.
4. Identify adaptation options: Based on the vulnerability assessment results, potential adaptation options are identified that can help reduce exposure or increase resilience.
5. Prioritize options: The final step involves prioritizing adaptation options based on their feasibility, effectiveness, cost-effectiveness, and social acceptability.

If you want something more detailed, I can recommend the SDC methodology known as CEDRIG, which has it's own website and toolbox, and this GIZ Guidance Note for *Planning, contracting and effective backstopping of CRVA.*

How about the **challenges** to making this a meaningful exercise? Well, here are some that come to mind: [Ref: all my own work!]

- Heterogeneity of environmental conditions, which makes regional, provincial and even district data of limited use in predicting weather and its impacts for individual communities.
- The unpredictable nature of the climate crisis, which limits the usefulness of historical data. Looking forward, we need to expect the unexpected!
- The integrated nature of vulnerability in rural communities, which means that it is difficult to separate CC risks from other sources of vulnerability [See C-FAB #10, Coping with Change]
- A tendency towards *a priori* decision-making by government departments and development agencies. For example, it's inevitable that an irrigation department will

focus on water management, just as NGOs are likely to identify opportunities for community based adaptation.

Another challenge seems to be the amount of time it takes to carry out CRVA (or could it be a lack of commitment to using participatory or evidence-based approaches?). For example, a rural infrastructure project managed by UNDP in Laos was expected to conduct 48 assessments [Ref] but a 'Lessons Learned' report at the end of the project stated that while 'CRVA approach is an effective tool for involving the population into the project … in this particular intervention it came up too late for many sites that had already moved on with infrastructures that did not take into consideration EbA measures [Ecosystem-based Adaptation] [Ref]. This sounds a bit like the case of dam construction starting before the EIA is completed.

The most detailed CRVA report that I have come across in Laos was prepared in 2019 for the ADB Sustainable Rural Infrastructure Sector Project (SRIWSM). The report - available here - consists of more than 80 pages of data and analysis, covering rainfall patterns, flood risks, storm tracks, landslide incidence, drought susceptibility, crop water requirements - and more! - followed by engineering and agricultural recommendations. Obviously this was an expensive exercise, and it's not clear how much difference it made to project implementation, but the data could be useful for anybody working in the Northern Uplands.

A more recent CRVA has been carried out by the Climate-Friendly Agribusiness Value Chains Sector Project (CFAVC), also funded by ADB. The project is currently being implemented in 6 six provinces of Central and Southern Laos, and the consultants responsible for the CRVA made a presentation at the recent meeting of the Sub-Sector Working Group on Farmers and Agribusiness. The files are available at the LaoFAB repository in both English and Lao. The presentation notes that two key vulnerabilities are particularly critical for agriculture in Lao PDR: i) the future precipitation patterns and their distribution throughout the year; and ii) the incidence of extreme weather events.

The main consequences of these vulnerabilities for agricultural production in Lao include:

1. Increased demand for water in all regions due to increases in crop evapotranspiration in response to increased temperatures;
2. Increased water shortages, particularly in the spring and summer months, increasing the water requirement for irrigation, especially in areas with current water stress;
3. Reduced water quality due to higher water temperatures and lower levels of runoff in some regions, particularly in summer, imposing further stress in irrigated areas; and
4. Increased risk of flooding due to the expected concentration of winter rainfall.

Based on the analysis described in the CFAVC presentation, the consultants identified the following categories of adaptation measure:

- **Sustainable climate smart agriculture**: supporting sustainable soil, water, agricultural production.
- **Diversification**: Introduction of drought, flood and pest resilient crops and improved cropping systems.

- **Managing climate risk**: concentrate on climate-related hazards and their impacts by ensuring infrastructure systems are resilient to potential increases in extreme weather events such as storms, floods and heat waves etc.
- **Value chain adaptation**: Promoting and incentivizing broader private sector and agri-business involvement in adaptation initiatives.
- **Capacity building & training**: Focusing on capacity development and tend to involve institution strengthening, training, information sharing and technology.
- **Access to climate information:** Including dissemination of weather and climate forecasts and access to early warning systems.

We all know that ADB spends most of its funds on infrastructure, so it will be no surprise that implementation of the CFAVC project will involve pouring a LOT of cement. But there are very good reasons for doing that in view of the vulnerabilities that have been identified.

Climate-FAB #19: Offsetting… and beer

01 April 2023

I am happy to announce that I will soon be launching a new business, one of a growing number of initiatives in Laos to offset emissions of greenhouse gasses. After many years of research, I have developed a potentially award-winning drink that will soon be freely available throughout Laos. And I mean *totally free*, you won't need to pay a single kip!

I tried to register the name of this drink as ***Beep Lao***, but the producers of another popular beverage have threatened me with legal action. So, instead it will be called ***Bartlett's Fartless Beer***. As the name indicates, consumers of this drink produce significantly less gas. As a result, companies in the so-called developed world are going to pay me to supply you with this alcoholic beverage as part of a market-based approach to saving the planet. They can continue to take international flights without feeling guilty, you can get drunk at their expense, and I can get rich by being a Climate Finance Entrepreneur.

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By now you will have checked the date. Yes, it's April 1st. Bartlett's Fartless Beer is a joke.

Carbon offsets are *not* a joke but there are plenty of environmentalists who think they are a scam. Greenpeace thinks offsets are a scam [Ref]. Friends of the Earth think they are 'a dangerous distraction' [Ref], Greta Thunberg thinks they are a 'dangerous climate lie' [Ref] and John Oliver thinks offsetting is one big joke [Ref]. Even within the climate finance industry itself, there is a desperate scramble to demonstrate that their operations are worthwhile [Ref, Ref]. But this hasn't stopped a lot of organisations buying carbon credits to achieve their goals of net zero.

Let's pause for a minute to make sure we all understand what I am talking about:

- A carbon offset is a reduction or removal of emissions of carbon dioxide or other greenhouse gases made in order to compensate for emissions made elsewhere.
- A carbon credit, is a generic term used to assign a value to a reduction, avoidance or capture of GHG emissions achieved by a certified project. It is equivalent to one metric ton of carbon dioxide equivalent.
- Net zero or 'climate neutrality' refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.

If those definitions weren't clear, you might like to read this 'Complete guide to carbon offsetting' at the Guardian website. Still confused? You could download this 80-page primer on the Voluntary Carbon Market. Done? Then let's continue.

Offsetting usually involves organisations and individuals in the developing world doing something good that will magically compensate for the bad stuff going on in the industrialised world. The amount of money that the bad guys are spending on this is growing rapidly. According to some reports, the Voluntary Carbon Market (VCM) was worth $2 billion in 2022, four times its value the previous year, and is expected to reach between $10 billion and $40 billion by 2030 [Ref]. That sounds like a bubble to me, but until it bursts Laos stands to get a chunk of the money. Or rather, foreign-owned companies running offsetting schemes will get a chunk, while Lao people will get handouts such as the cookstoves mentioned in Climate-FAB #2 and the cattle nutrient blocks mentioned in Climate-FAB #14.

What else could people in Laos do to earn money from the Voluntary Carbon Market, or at least participate in 'benefit-sharing'? There are a lot of options! The folks at Ecosystem Marketplace have developed a 'Carbon Offset Project Typology' with 170 types of carbon credit in 8 categories. The typology is summarised in the diagram on the right, while the source document is here.

[You will see that REDD+ is included in the diagram. I won't be commenting on that right now. It's a big topic and deserves a post of its own.]

Projects in Laos can't generate carbon credits - and thereby participate in the VCM - unless they are certified, and that usually requires a market intermediary ie. a carbon finance broker. For the rest of this article, I will focus on an intermediary called South Pole and the Gold Standard certifier. Why? Because a) my employer is using South Pole for the purpose of offsetting, b) South Pole is acting as a broker for several projects that are generating credits in Laos, and c) those projects are certified by Gold Standard.

If you search for 'Laos' at the South Pole website, you will find this: *"South Pole partners with NGO Abundant Water to finance clean drinking water projects in Southeast Asia"* [Link]. That sounds great! What you won't find so easily is their involvement in the Lao hydropower sector. For that information, you need to take a look at the Gold Standard Registry.

The Registry has a list of 17 projects that Gold Standard has certified in Laos [Link]. Of those, 14 are hydropower projects and, of those, 9 projects were put forward by a company called 'Swiss Carbon Assets Ltd' while another 4 are listed under 'Swiss Carbon Value'. These are alternative names for South Pole. If you don't believe me, just take a look at office locations and email addresses at this page.

If you are interested in how these schemes are certified, this file in the repository provides a *very* detailed description of the Local Stakeholder Consultation (LSC) conducted by South Pole for the Nam Nga 2 dam in Oudomxay, right down to the names of the villagers and the phone numbers of government staff.

The connection between hydropower and carbon credits in Laos is well understood and heartily encouraged by the Government, as shown in this speech by the Vice Minister of MEM. It's not so well understood by staff of NGOs like the one I work for, who might be horrified to discovered that their organisation is paying for carbon credits generated by dams in Laos. You might call that 'upsetting'.

Oh, and did I mention that South Pole has also been selling credits for a rubber plantation managed by the Thai Hua company in Bolikhamxay, validated by a German company called TUV SUD and certified by VERRA? I know, it's complicated, but you can find out more here, here and here.

Personally, I would prefer to pay for insetting rather than offsetting. What's the difference? Whereas offsetting involves the purchase of carbon credits from a project that you don't own or operate, insetting involves funding your own carbon avoidance or removal projects, without a transaction in the carbon market [Ref]. So, for example, instead of paying a broker in Switzerland to offset the mileage of my international travel by planting trees and distributing cookstoves in another part of the world, we could be doing it ourselves as part of the projects we are managing. Meanwhile, I'll be getting on my bike to buy locally-grown vegetables at the farmers market.

Maybe I'll write a piece on insetting at a later date. Right now I need a drink. Perhaps I'll open a bottle of Bartlett's Fartless Beer. You are all invited to the Local Stakeholder Consultation!

Climate-FAB #20: "Better educated societies are more resilient"

03 April 2023

This will be the last Climate-FAB post for a few weeks. We are getting close to Lao New Year and it's time for all of us to take a break. Before then, I want to share a few words about why I started this blog. The reason is summed up in the subject line which was one of the conclusions of a 2017 paper by Austrian researchers. In that paper, the authors wrote: "given the consistent evidence on the protective role of education in reducing disaster vulnerability we can conclude that better educated societies are more resilient and hold greater adaptive capacity to climate change. [Ref]"

Those researchers went on to argue that there is an imbalance in the infrastructural and educational responses to climate change by governments and development agencies. I am including a longer extract from their paper at the end of this post, which is worth considering by policy makers and planners.

This blog started last November when I looked at what was happening at COP27 and said 'We need to do better. A LOT better'. That's applies to all of us, including me. I'm not a policy maker, or a forester, or a farmer … but I make choices and take action. And I'm not just talking about my professional life. I buy imported food, drive an SUV in town and will soon be flying back to Europe for a holiday. Bad, bad, BAD! Yes, I'm also a development worker, a consultant, a project manager, but - more than that - I like to think of myself as an educator. Not an academic, but a practitioner engaged in generating and sharing knowledge for development, influenced by critical pedagogy. It's why we started Lao-FAB in 2006 and - a year later - issued the Dongdok Statement on I4D. It's why my current project has a Learning Framework, why we commission studies, organise farmer exchanges, distribute extension materials and produce videos.

Talking of videos, I want to share the link to a video about the Future Farmers Camp that we recently organised in Luang Prabang. As it says in the script …

> *Agriculture is changing in Laos, creating new opportunities and new challenges. If rural youth are to become **Future Farmers**, they need new knowledge and skills to take advantage of these opportunities and overcome these challenges. On the one hand they can benefit by understanding the importance of innovation and entrepreneurship, on the other hand they also need to understand how climate change is affecting agriculture and how they can contribute to improving resilience…. The future of farming in Laos depends on the knowledge, skill and commitment of these young people!*

The Future Farmers Camp is just one of the educational activities organised by the Lao Upland Rural Advisory Service (LURAS). The audience for these camps is different from that of Lao-FAB, but I hope both are contributing - albeit in a very small way - to a society that is better informed about the climate crisis and the action we can take to address the problem.

Please take a look at the video.

Extract from Wolfgang Lutz and Raya Muttarak (2017) ***Forecasting societies' adaptive capacities through a demographic metabolism model***, Nature Climate Change [Ref]

"Despite the theoretical argument and solid empirical evidence showing that ensuring universal education can potentially be a powerful measure for reducing dangerous impacts of climate change on human life, health and basic subsistence, in practice public and internationally driven adaptation efforts have been concentrating on hard structural adaptation measures. Hard adaptation such as reinforcing buildings or constructing dykes and seawalls are often capital-intensive, large, complex, and inflexible technology and infrastructure. On the contrary, a soft adaptation path involves behavioural changes or planning and policy adaptions, empowering of local communities, simple and modular technologies owned by local people as well as natural infrastructure such as ecosystems and forests. Soft adaptation measures hence are less expensive and are relatively more flexible to respond to alterations in climate change projections. While it has been argued that optimal adaptation paths require synergies between hard measures and non-technological adaptation options, being more tangible and visible, hard structures remain prominent in planning measures. Subsequently, analysis of adaptation costs or estimation of adaptive capacity typically only considers economic capacity to install hard structural measures since this is easier to quantify. Instead, empowerment through education in order to enable flexible and informed adaptive decisions in the future should be made a priority in this field".

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Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

DAEC

HELVETAS
LAOS