Opportunities & Challenges for Solar Cricket Incubators in Cambodia



SWITCH to Solar

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In recent years, Cambodia's electricity sector has been through outstanding improvements fuelled by the government's success in rapidly expanding access to grid electricity up to 81% of households at the end of 2020. Nonetheless, in light of the relatively high electricity costs, remoteness of farmers and overall low mechanisation of the agriculture sector, solar technologies for productive use have the potential to improve agri-fishery MSMEs competitiveness on the market while reducing their operational costs. This summary provides a short overview of the opportunities and challenges for the adoption of solar cricket incubators in Cambodia.

Starting by looking at the use of cricket farming technologies at large…

As opposed to other technologies for productive use which can be used across value chains, such as water pumps, dryers or cold storage, cricket incubators are specific to one value chain: the cricket value chain. More specifically, cricket incubators are used for cricket farming, a rather recent practice in Cambodia, as opposed to cricket catching, the traditional method for cricket supply.

Recently, smallholder farmers have started making use of cricket incubators to produce crickets. This new activity is seen as a promising way both to diversify their sources of income as well as for self-consumption.

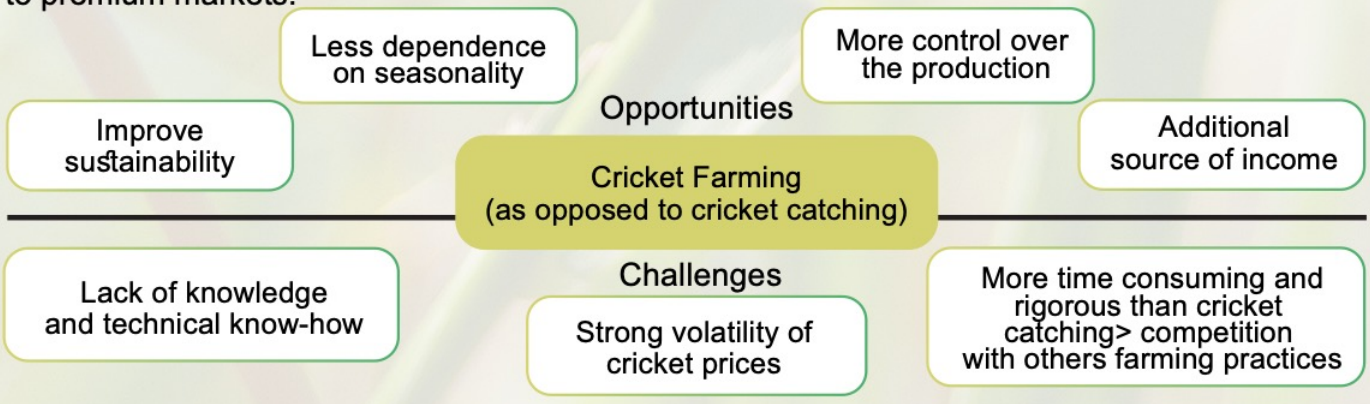
For this reason, the technology holds many benefits that can positively influence its uptake:

- Improve sustainability: cricket catching has caused the recent decline of wild cricket population due to over harvesting. In the face of the rising demand, cricket farming appears as a more sustainable way to supply crickets.
- More control over the production: while cricket catching is highly seasonal, cricket farming gives way for much more control over the production and much less dependance on seasons.
- Additional source of income: investing in cricket farming as a side-activity is a good way for small-holder farmers to create an additional income stream.

Yet, as this activity is relatively new, there are challenges that need to be considered as they might constrain the adoption of the technology:

- Lack of knowledge: farmers lack experience of rearing and breeding techniques. Most of them are experiencing based on trial-and-error and know-how they get from Thailand but mortality rates stay high.
- Volatility of cricket prices: cricket prices are highly volatile and vary depending on location, season and product quality. The informality and opacity of the market makes it hard for farmer to secure regular revenues.
- Needs rigorous care: As opposed to cricket catching which is a rather hand-free method, cricket farming requires a rigorous and daily care.

Overall, investing in cricket farming technologies has potential for all types of farmers -cricket catchers wishing to switch to cricket farming and cricket farmers wishing to develop their production. Aggregators are also an interesting stakeholder that can help with the uptake of the technology as they experiment with cricket contract farming to produce added-value products that they sell to premium markets.

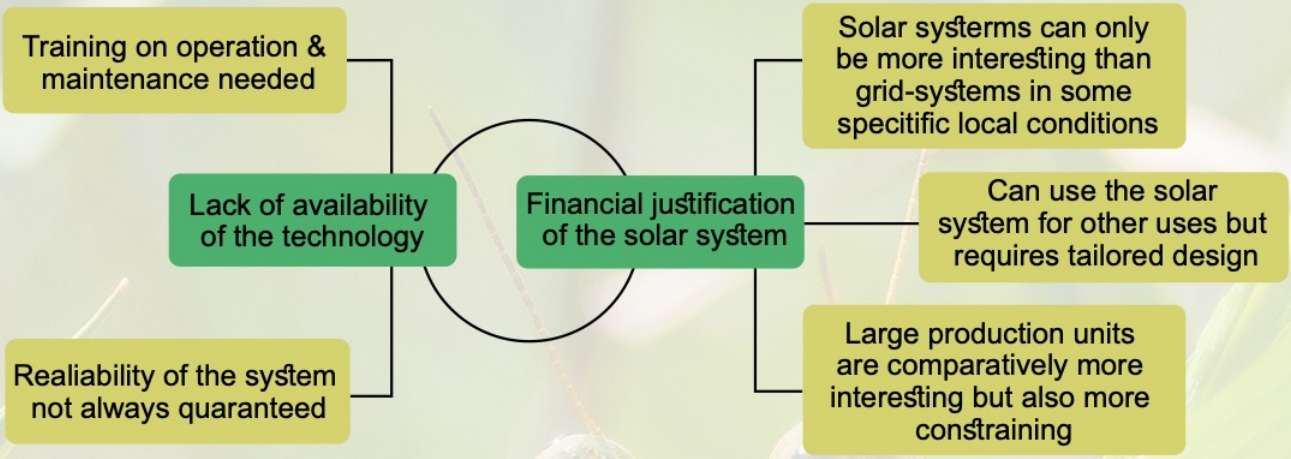




Technical considerations

As cricket farming is recent in Cambodia, so are Solar Cricket Incubators. There is not yet a supplier delivering plug-and-play solar cricket incubator solutions. All available solutions are do-it-yourself and highly customised.

Current cricket production practices, through farming or wild catch, associated to the own limittions of solar cricket incubators reveal 2 main technical constraints to the adoption of the technology: this lack of availability of the technology, and the difficult financial justification of the solar system



Capacity	Traditional (usually homemade)	Electric	Solar
50Kg	$800	$500	$600
100Kg	N/A	N/A	$1000

The upfront cost of the technology is indeed a constraint: solar cricket incubators are rather expensive technologies. Yet, it is interesting to note that since cricket incubators in geneal are very recent in Cambodia, solar cricket incubators are surprisingly not much more expensive than their non-solar powered equivalents. Economic analyses reveal that solar cricket incubators are very interesting economically, especially for new-comers starting cricket farming as a new activity.

This confirms the high market opportunity for small-holder farmers: investing in a solar powered cricket incubator can be a fast way to increase a household's income. Adding solar to an already existing cricket incubator can also be viable, though less financially interesting. Still, if the payback periods of solar cricket incubators are very interesting, end-user financing mechanisms are still important to facilitate the uptake of solar cricket incubators by stakeholders with smaller investment capacity.

Recommendations – How to be successful in distributing Solar Cricket Incubators?

Cricket farming represents a great opportunity for income diversification for smallholder farmers. Investing in solar cricket incubators can be interesting for a newcomer starting in cricket farming, for a cricket catcher wishing to switch to cricket farming and for a cricket farmer wishing to power their production with solar. Yet, there are challenges to overcome to be able to develop such a solar powered solution at scale. Here are a few recommen-dations to increase the adoption of solar cricket incubators in Cambodia



- As production cycles are very quick for cricket, the local cricket market is extremely sensitive to production increases and prices can collapse equally quickly. In order to improve the resilience of end-users to cricket price volatility and increase the economic benefits of using the technology, it is key for end-users to produce added-value products (e.g. cricket powder or fish feed) and secure routes to new markets, and ideally to pre-mium export markets. Partnering with aggregators can help create the supply chain for such premium products.

- Improving the local offer of solar cricket incubators can be beneficial to improve the uptake of the technology in Cambodia, as there aren't any established solar cricket incubators suppliers in Cambodia yet.

- It is important for end-users to optimise the use of the technology. The provision of trainings on cricket farming is thus key to ensure the added-value of the technology and ease its uptake.

- The distribution of cricket incubators will not necessarily be a challenge: as long as farmers see the income-generating potential that producing cricket can represent, they will want to buy the technology. Yet, as the prac-tice if fairly recent, the knowledge on the poten-tial and benefits of solar cricket incubators and cricket farming at large stays limited. Launching awareness campaign online through digital marketing would be an efficient way to increase the knowledge on the benefits of the technology and ease the distribution.

- It is also important to introduce end-user financing mechanisms to mitigate the upfront costs of the solutionssuch as payment terms based on the cricket production cycles.



SWITCH to Solar
For a Thriving Agri-Fisheries Market



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