CAMBRIDGE ZERO

Light Harvesting
Special Interest Group

Deploying Emerging PV in the Developing World
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Panel

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Discussion Points

- Cost and requirement of the appliance drives most PV decisions. Pay-as-you-go is proving to be a very successful model to make PV affordable, as equipment is used more efficiently. An important lesson is to align the payment plan with when people have money to spend, taking harvest seasons into account. Pay-as-you-go is increasingly used for appliances such as phones and transport, and would be a good way to make energy storage (batteries) affordable.
- Standardisation is in the interest of both producer and consumer. Industry is working hard to achieve international standards.
- Due to the distance between producer and consumer it is hard to repair products. Reliability is thus very important. Pay-as-you-go suppliers are very dedicated to repairing or replacing products to reduce downtime. Training locals is very valuable here.
- Countries like the US and UK are moving towards local production to reduce supply chain issues. In order for this to work, large scale production is essential, so might not be viable for developing countries. Also not currently supported by governments.
- Bottom-up local production does sometimes work where it can add a lot of value, for example in battery production in Bangladesh. For PV, locally produced glass would be essential as it makes up 95% of the module weight.
- What impact can emerging PV (such as perovskite solar cells) have on the developing world? For now, the technology is too unreliable to make a big impact and will be limited to flexible and lightweight panels where this offers a large benefit over traditional (silicon) PV. In time, better performance will lower cost, even compared to traditional PV. Ultimately, it is the technology of the future and will be better suited to local production.
- India has just banned the use of lead in PV, this is very concerning as it can drastically hamper PV rollout. Note that lead is used in solder for traditional PV, but may also be in emerging PV technologies including halide perovskites.

Challenges

- Productive use of excess energy, making sure that available energy is actually used in an efficient way.
- Interoperability between energy sources and appliances from different manufacturers.
- Affordability, cost is still prohibitive for the deployment of PV in many cases.
- Reliability of emerging PV needs to increase dramatically.
- Legislative barriers could slow down the deployment of PV.

Opportunities

- Better collaboration between academia, industry and end-users could lead to innovative solutions to local problems.
- A bottom-up approach could work for emerging PV technologies, as they pay a smaller penalty for smaller-scale production. This would provide a large boost to the local economy through job generation and value addition. Although significant volume will still be needed to benefit from economies of scale.
- Further developing pay-as-you-go infrastructure will help to speed up the implementation of new technologies.
- Fast battery charging for EVs would be a game-changer, especially for solar charging.

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