EFFICIENCY FOR ACCESS

UK ENGINEERS WITHOUT BORDERS

Scalability: How to access the right market

Funded by:

UKaid from the British people

IKEA Foundation

energy saving trust

Assessment Criteria

Innovation

How does your design compare and improve on solutions that are currently available to your target end-user?

Judges will want to see that you have understood and understood [illegible] are targeting, and [illegible] informed design [illegible] currently available

- What is the po[illegible] energy efficienc[illegible] Consider how y[illegible] used per service provided) and what the baseline is for comparison.
- What is the potential of your design to reduce production costs compared to existing alternatives? Consider materials used, price of components and cost of assembly.
- What is the potential of your design to improve usability compared to existing alternatives? Consider its ease of use, reliability and safety.

Sustainability

How does your design contribute to a positive impact on the environment?

Judges will want to see that you have understood [illegible]

greenhouse gas emissions reduction compared to other technologies that exist in the market? Consider the sustainability of your business model (including manufacturing, distribution and operating) and its scalability.

- How does your design contribute to the Sustainable Development Goals (SDG), in particular SDG7 – Affordable and clean energy? How well have you demonstrated you understood the potential connections with the other 17 SDGs and its associated targets? Consider how the different areas of this assessment framework are contributing to this.

Social impact

What difference does your design make to people's lives?

Judges will want to see how you have researched the [illegible]nefit. They [illegible]sign will [illegible]ered [illegible]eir needs?

- What is the likely potential of the design to improve quality of people's lives? How does your design improve the desirability of your target end-user? Consider what their livelihood was before and the improvement your design will bring to them.
- How well has your design considered the Sustainable Development Goals' commitment to 'Leave no one behind'? In particular, consider gender equality and disability inclusion.

Scalability

How feasible is it that your design could get to market at scale?

Judges will want to see that you have considered the business case. Including considering the market opportunity, including market size, for your solution, and demonstrated how people will be able to access and afford this.

- How well have you considered the potential market for your product? Consider the target customer, size of market and customer value proposition.
- How well have you considered how people will be able to access and afford your product? Consider affordability, potential customer payment models and existing financial models.
- How well has your business model considered affordability, payment models, existing supply chains, manufacturing, distribution channels, local partners and services associated? Consider the pricing and costs strategies to make your business model commercially viable.

- How well have you considered the potential market for your product? Consider the target customer, size of market and customer value proposition.

Agenda

- Introductions
- Guest Speakers
  - **Alfredo Baño Leal**
  - **Tushar Devidayal**
  - **Oscar Aitchison**
- Q&A
- Survey and Closing

Meet our speakers

- **Alfredo Baño Leal –** Asian Development Bank

- **Tushar Devidayal –** Devidayal Solar Solutions

- **Oscar Aitchison –** Okra Solar

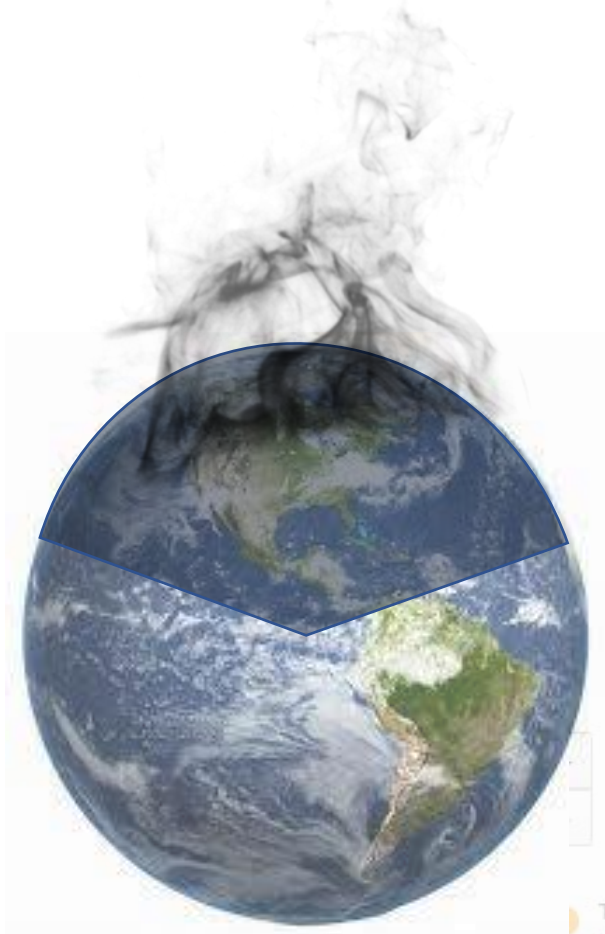
Alfredo Baño Leal – Asian Development Bank

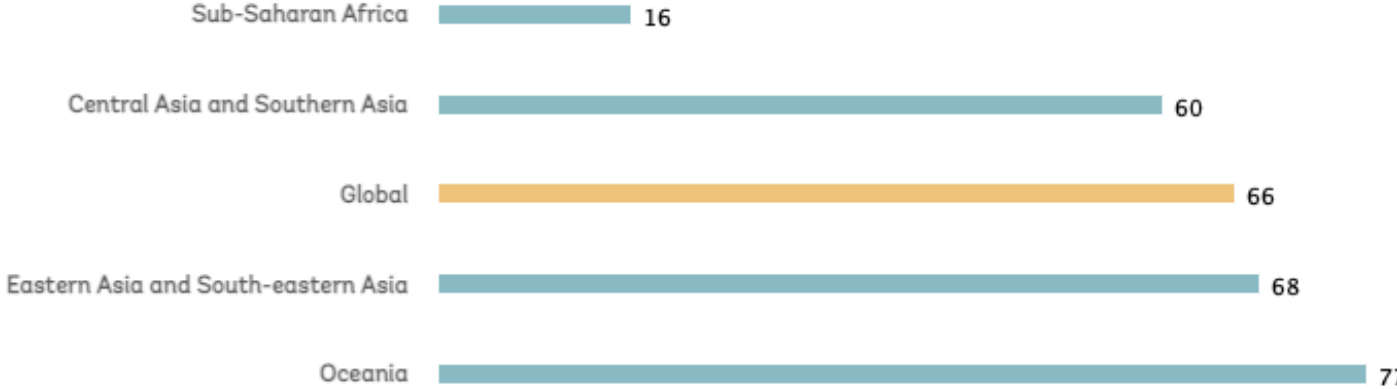
13 minutes

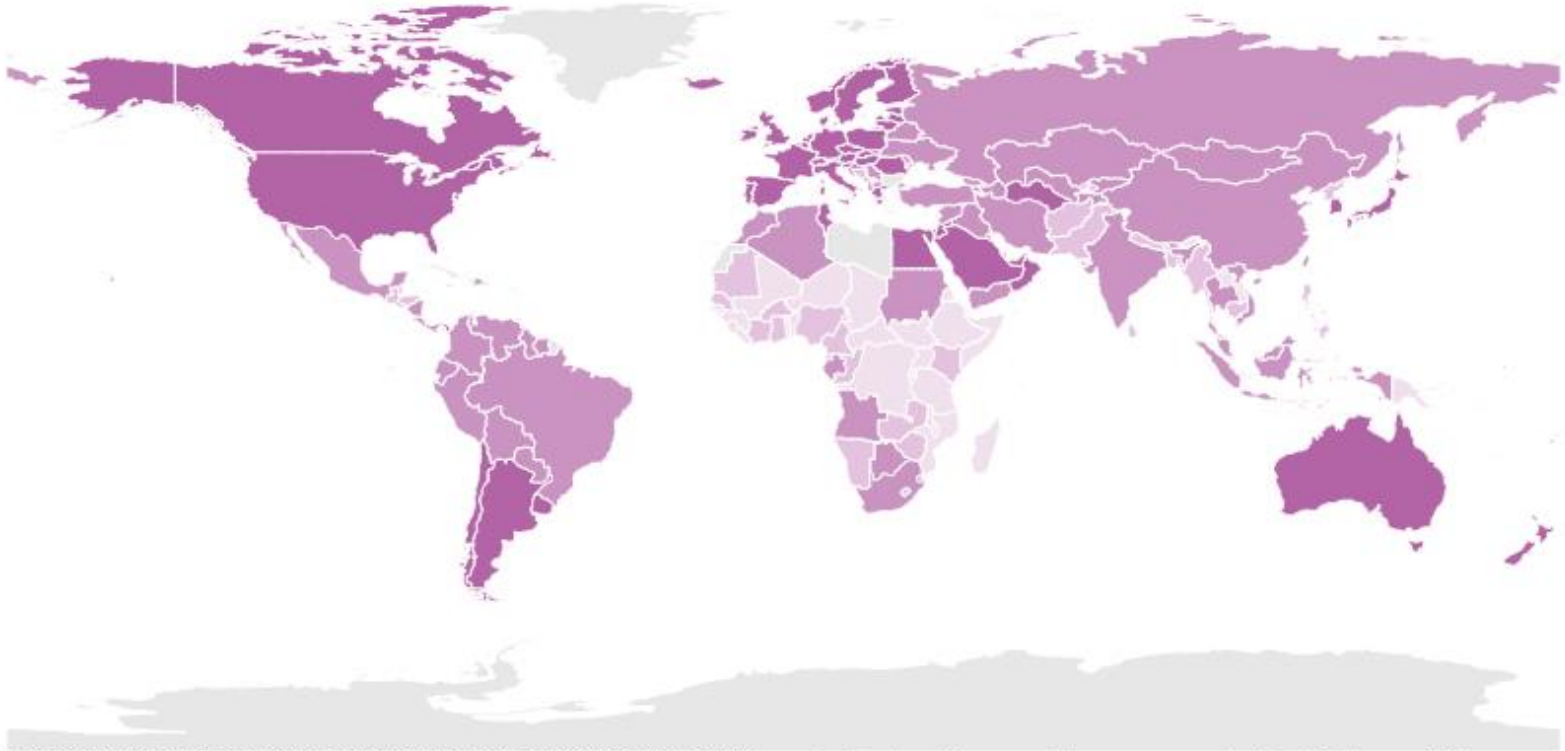
Alfredo Baño Leal

19 October 2021

The Challenge







The boundaries, colors, denominations and any other information shown on this map do not imply, on the part of the World Bank Group, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

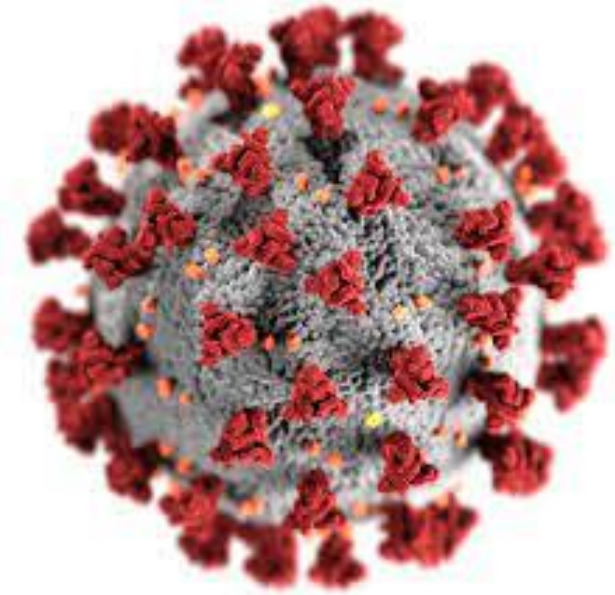
Indicator: Clean cooking access rate for Total area (%)

100 | 99 - 50 | 49 - 10 | <10

Unit: %

World Health Organization. Population estimates based on UN population data.

Why Clean Cooking?



4.9 million deaths

WHO reported as of 18 Oct 2021

No easy task

How to approach this?

- Technology
- Alternatives
- Cost/functionality

Acceptable?

What?

Who?

- Income levels
- Cultural issues
- Understanding of benefits

Affordable?

- Urban/rural
- Off-grid
- Supply chains

Available?

Where?

How?

- Manufacturing
- Distribution
- Promotion

Viable?


Good luck!

Tushar Devidayal – Devidayal Solar Solutions

13 minutes

Devidayal Solar Solutions®

Scalability: How to access the right market

Who We Are

Company Overview

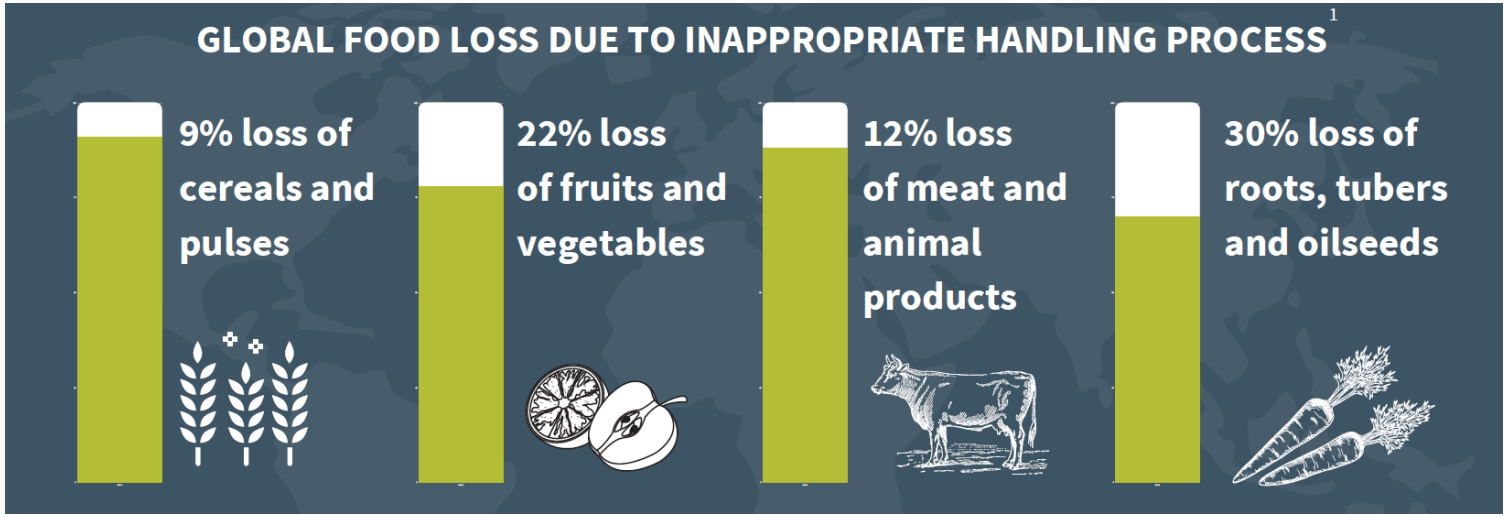
Devidayal Solar Solutions focuses on the design, manufacture, sale and distribution of productive use off-grid solar DC appliances for income generation and enhancement. Our flagship product is a solar DC refrigerator:

- Based in India
- Solar refrigeration and cooling solutions to solve cold-chain related issues
- Focus on retailers, agriculture, dairy, fishing

Solar DC Refrigerator 100 Ltr

The Problem

Spoilage & wastage due to limited access to cooling



- **Unreliable energy access limits the use of appliances**: In India, the reliability of grid-based electricity remains a challenge. Based on the data reported by the Government of India, more than 99% of the rural households are connected to the grid, but only 22% have access to reliable service.

- Lack of affordable small scale DRE based cold storage solution limiting adoption: **Due to a lack of cold storage in rural areas, farmers have to sell all of their produce at throwaway prices**, this proves to be a huge blow to their margins.

The Asia Food Challenge report, 2019, *PwC, Rabobank, Temasek*
In India, reliability of electricity supply varies greatly between states, from 4 hours in Garhwa to 16 hours in Ranchi.
Source: ***https://www.powerforall.org/resources/fact-sheets/fact-sheet-providingreliable-and-affordable-electricity***

Framework

1. **Challenge**
2. **Intervention**
3. **Impact**

Solar Cold Chain – Project 1

Ghummar Mahila producer company, Pali Rajasthan

Overview:

Non timber forest produce. Fruit picking.

Challenge:

- No cold storage
- No cold chain / transportation

Intervention:

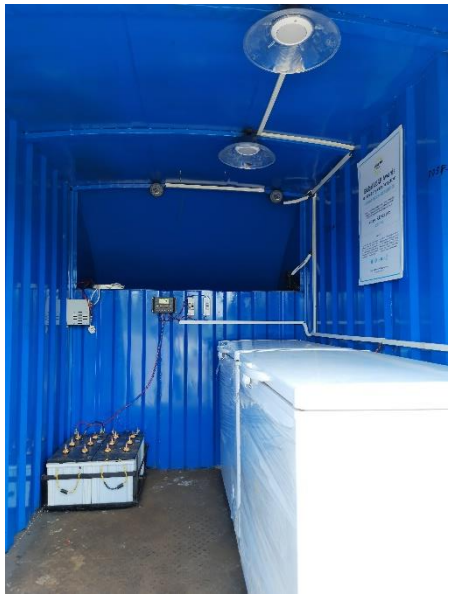
Total 8 Solar refrigerators were installed; 2 at a vehicle for transportation and 6 on ground for storage.

Impact:

- Higher volume
- Better price
- Increase jobs / livelihoods

PC: Ghummar Mahila Company

PC: Ghummar Mahila Company



Solar Mobile Cold Chain – Project 2

Top view of the Van with Solar Panels attached

Challenge: Intermittent electricity, food spoilage

Intervention: Devidayal Solar Solutions installed 2 Solar DC refrigerators at food trucks of MAVIM

Impact:

1. After the intervention, the group of women are now able to sell cold drinks, water and can store the leftovers overnight, it has drastically reduced their food spoilage.
2. They are not dependent on grid electricity and don't have to pay the bills which has is also resulted in savings for the women entrepreneurs.
3. This has resulted in increase in their revenues and appointing more women for the food truck.

YouTube Video Link: https://youtu.be/3CGzreLFnCU

Solar Cold Chain – Project 3

PC: Jovaki Agro Foods Pvt. Ltd


PC: Jovaki Agro Foods Pvt.

Jovaki Agro Foods Pvt. Ltd. Udaipur, Rajasthan

Overview: Non timber forest produce. Fruit picking.

Challenge: Spoilage, “browning of fruit”, lower price

Intervention: Total 6 Solar refrigerators were installed on ground for the storage of fruit pulp in October 2020.

Impact:

- Last year they produced 3 MT Jamun pulp whereas it has increased to more than 10 MT in this season.
- They are pulping 600 Kg per day
- More than 600 women are involved in plucking the fruit and delivering it to the company’s collection center.
- Around 160 women are involved in the whole process of production of fruit pulp.

Thank You

Devidayal Solar Solutions Pvt. Ltd.
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Nariman Point, Mumbai 400021, India

Tushar Devidayal | Founder & CEO
E: tushar@ddsolar.in | www.ddsolar.in

Oscar Aitchison – Okra Solar

13 minutes

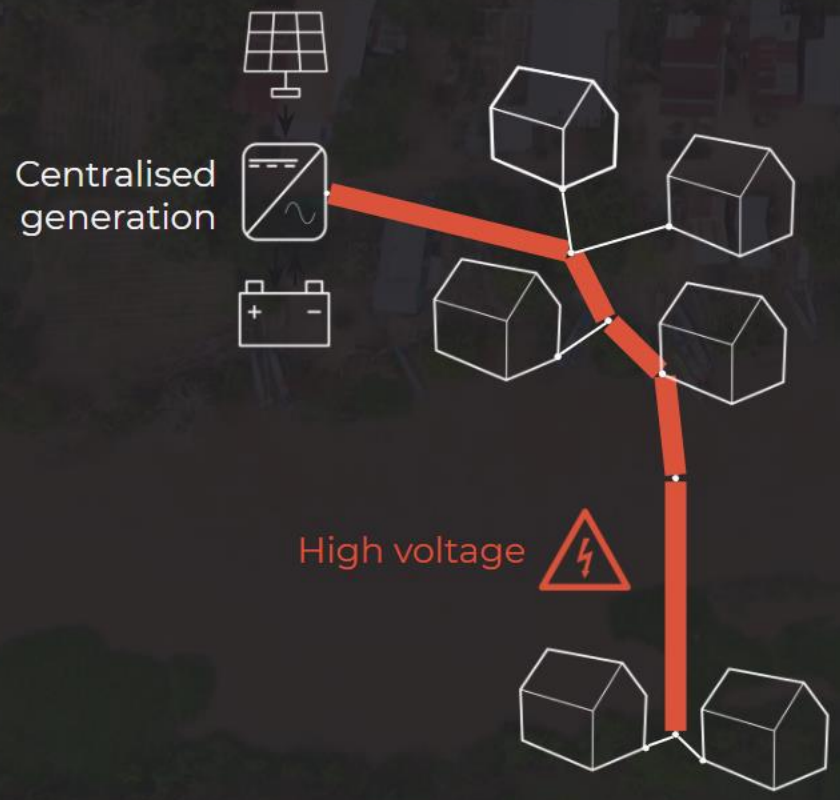
OKRa

Oscar Aitchison
oscar@okrasolar.com

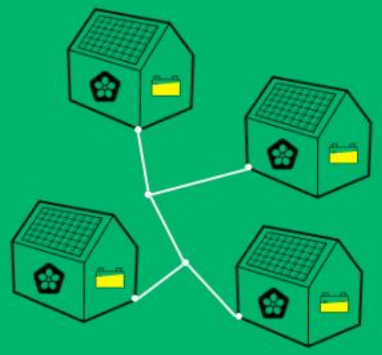
Hardware & Software for **Last-Mile Energy Access**

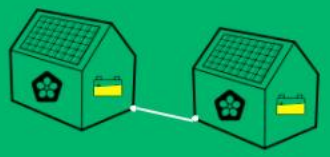
What is a Mesh grid?

Mini Grids



OKRA Mesh Grids

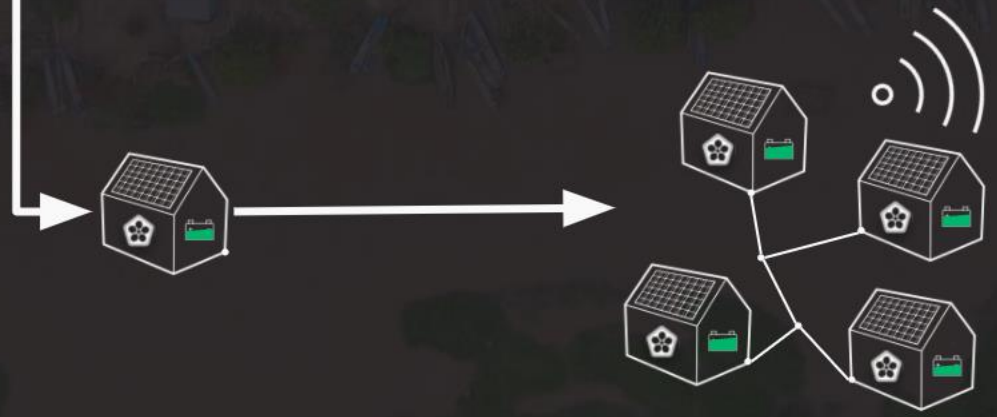




- **flexible**
- **-75%** of **transmission & distribution costs**
  Due to node-node distribution
  1/10 conductor size Vs centralised
- **-35%** of **operations & maintenance costs**
  Due to IoT, low voltage & local maintenance agents

HOW IT WORKS

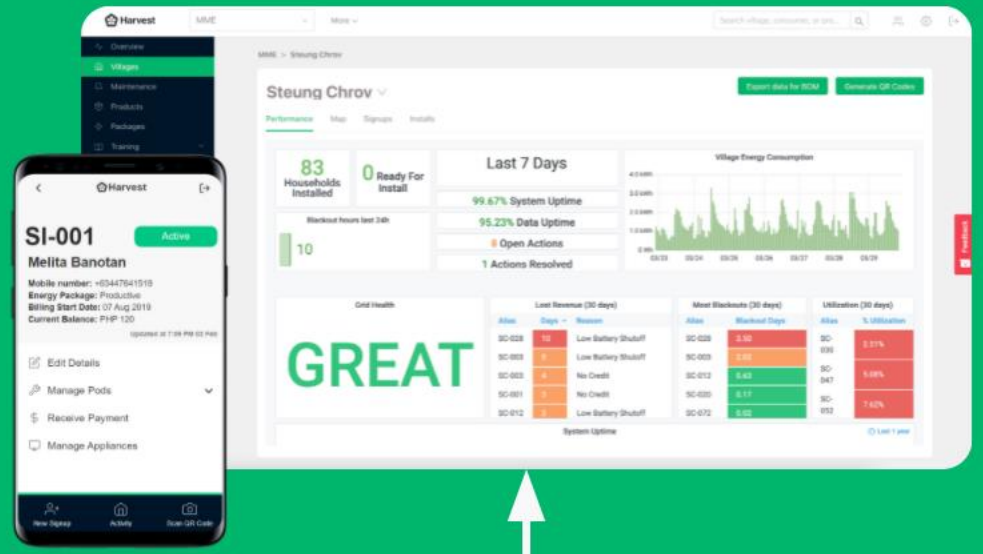
Okra Pod + Solar PV + Batteries



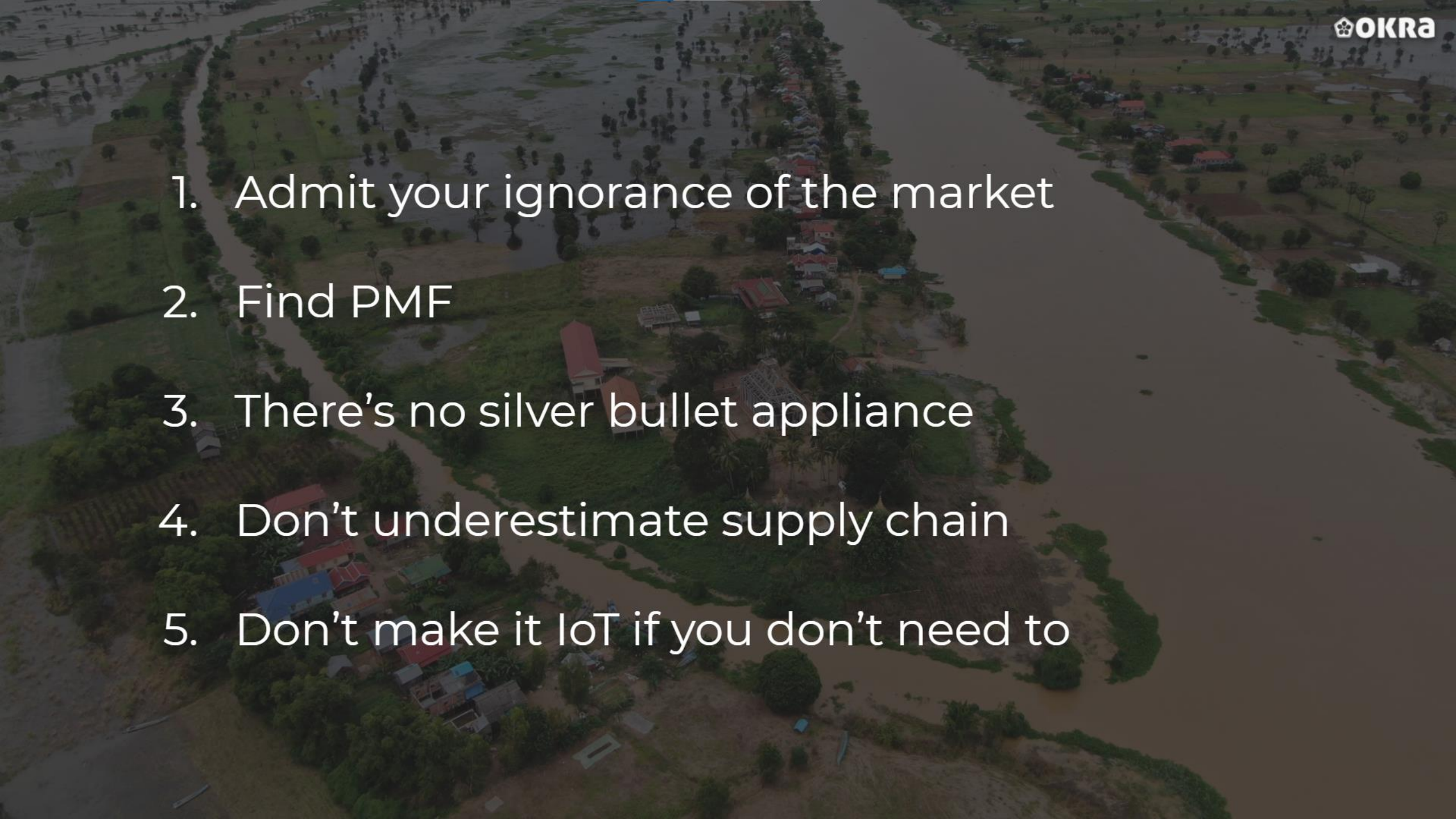
Plug & play standalone systems

Interconnected systems **share power**

Okra Harvest SAAS



Mobile billing, remote monitoring &, asset management



1. Admit your ignorance of the market
2. Find PMF
3. There’s no silver bullet appliance
4. Don’t underestimate supply chain
5. Don’t make it IoT if you don’t need to

Admit Ignorance (and correct it)

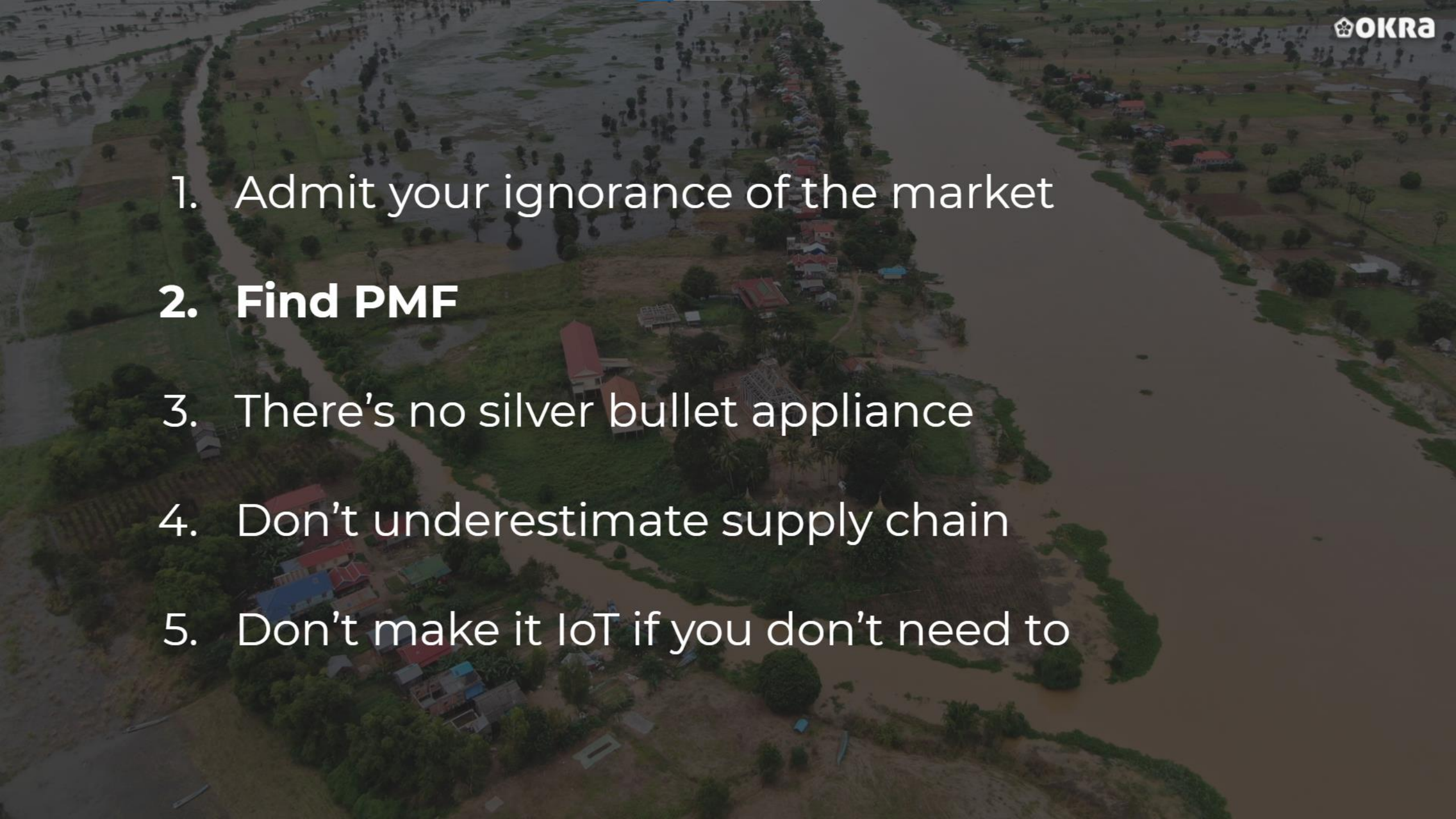
Admit Ignorance (and correct it)

Varied direct experiences ← best

Direct feedback loop from end users

Macro data

First principles ← worst



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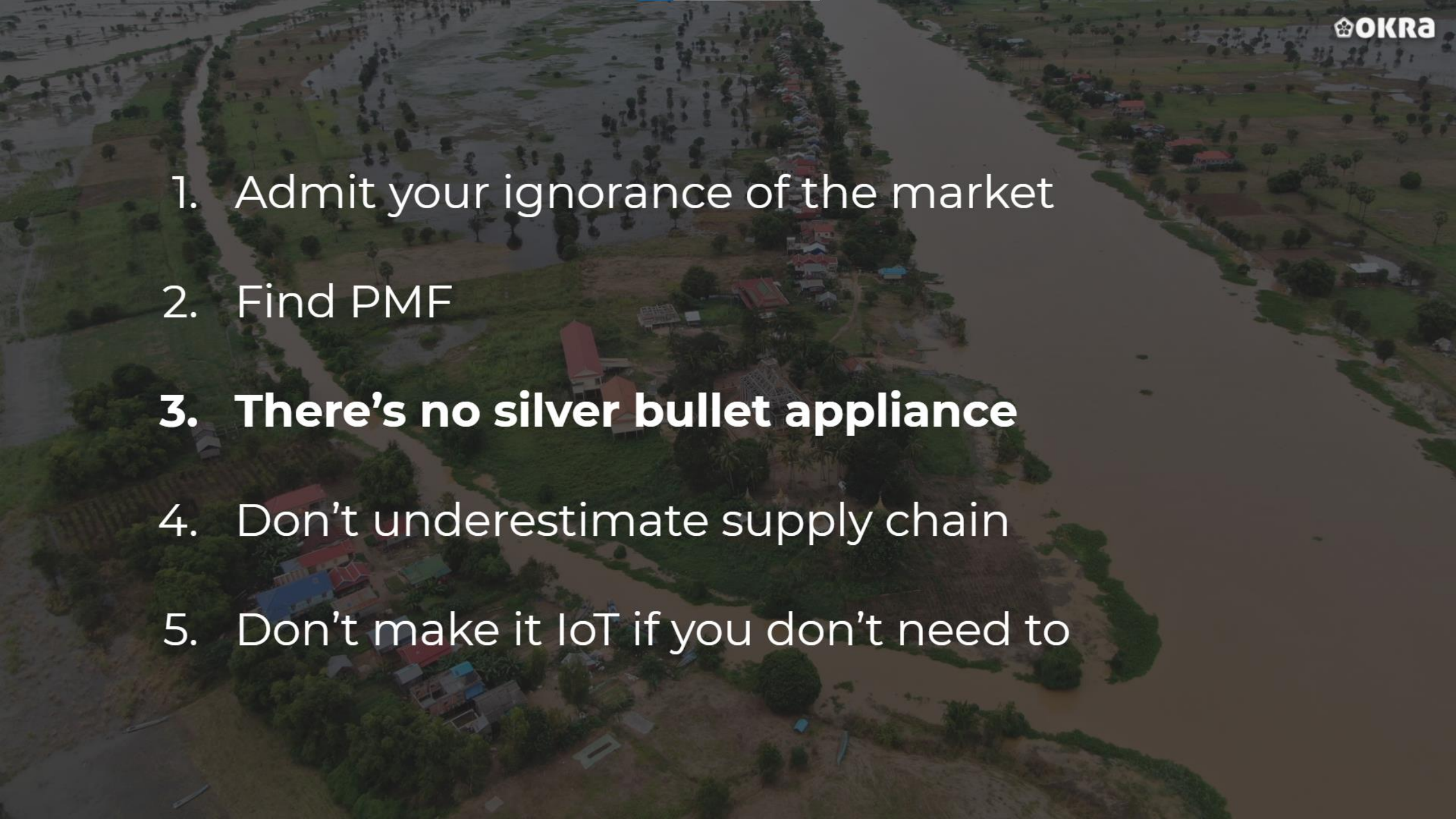

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Sugar Cane Juicer

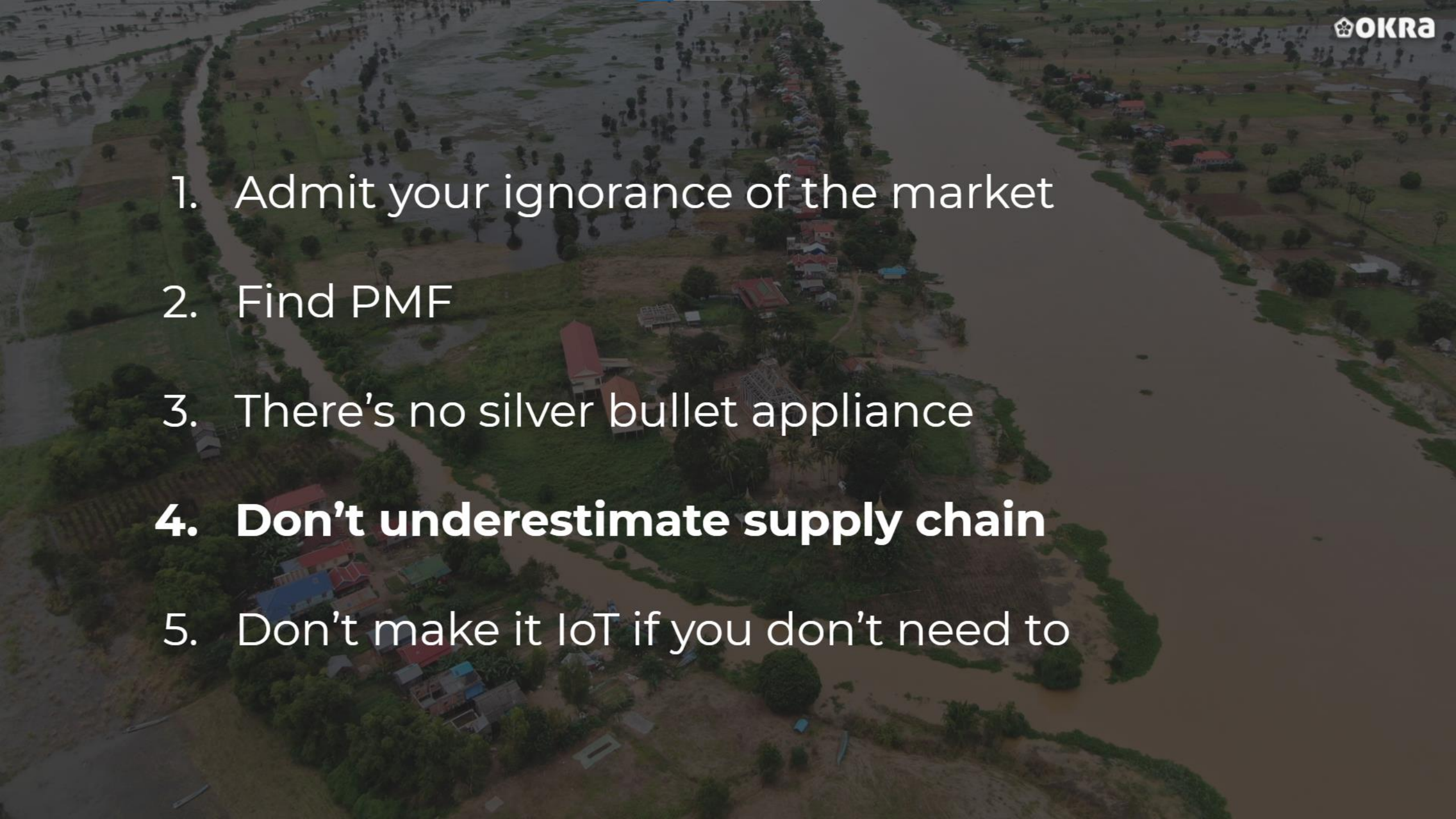
5mins @600W

makes 1.5L juice

50c profit per L

3L per day

$45/month profit for 10mins/day



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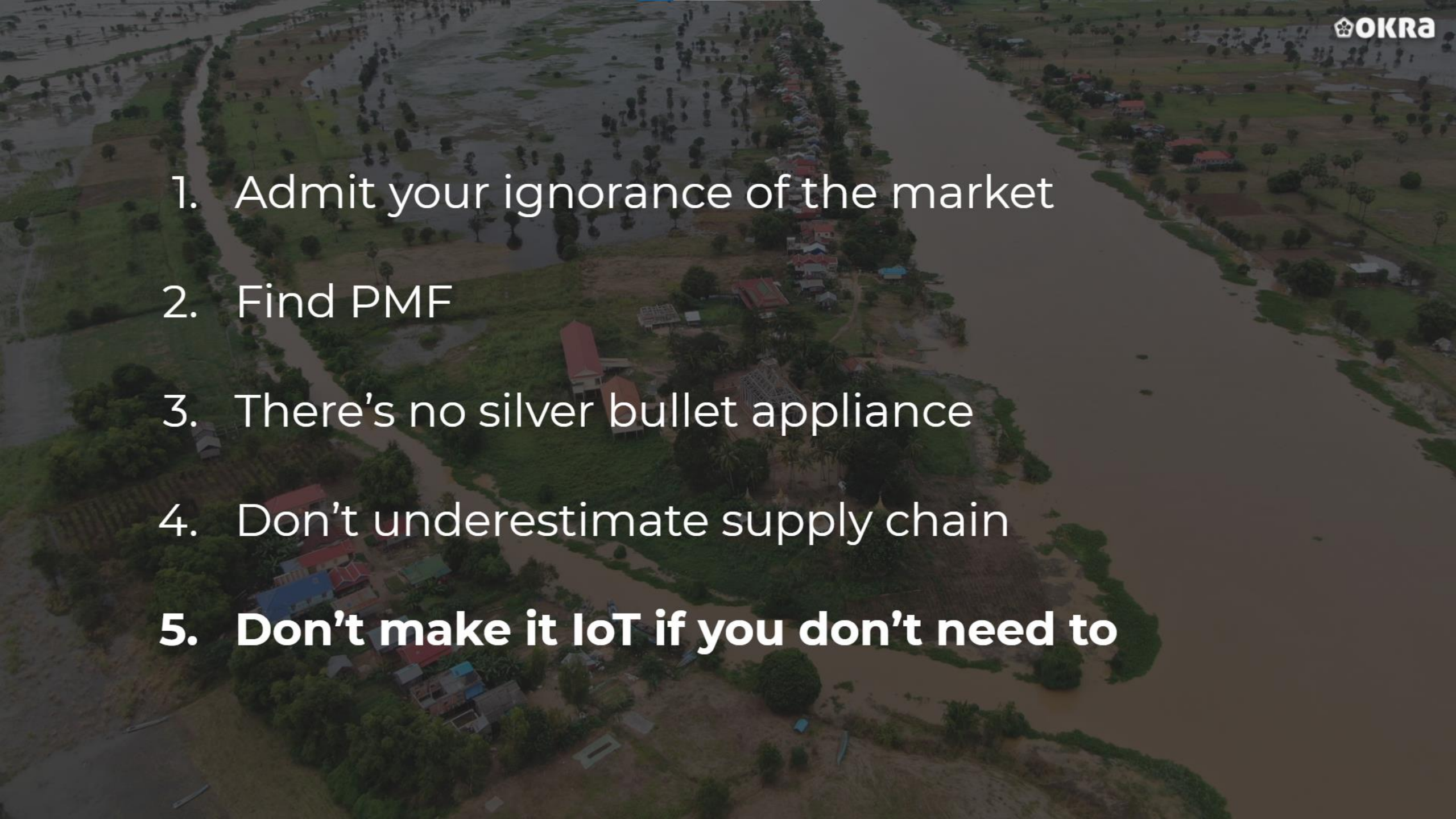

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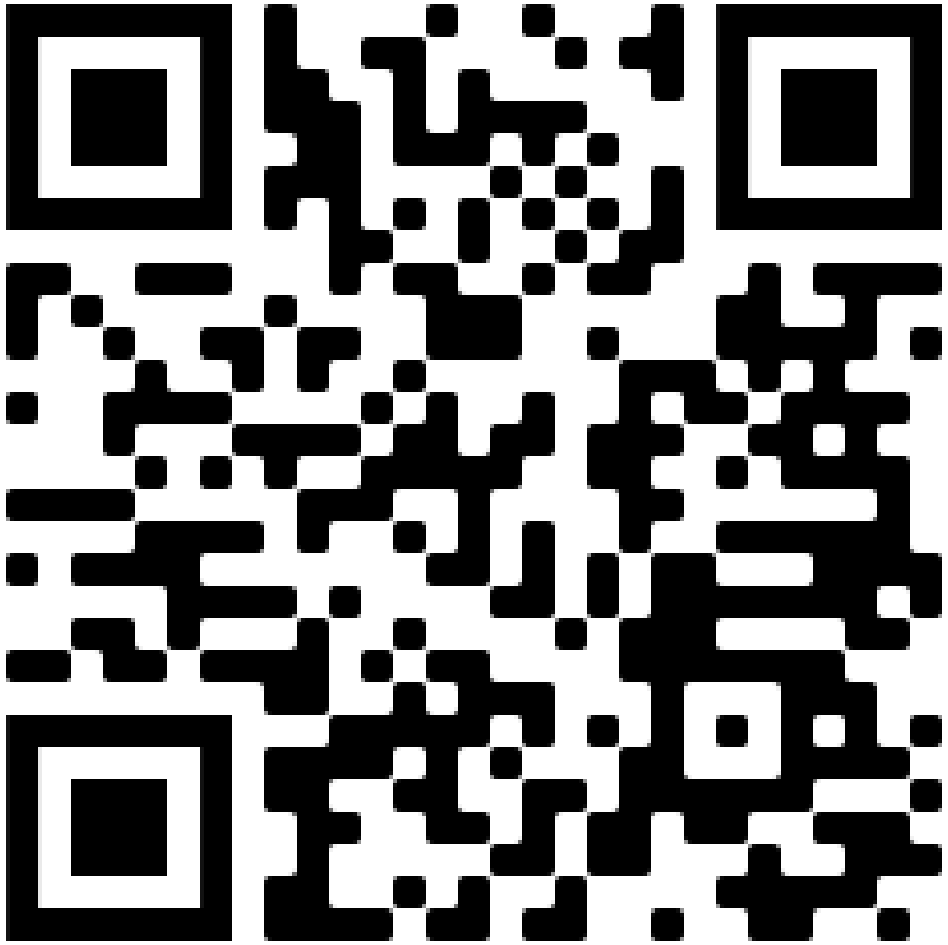
Q&A

Short feedback survey

Bit.ly/EforADCFeedbackSurvey2021-22

Newsletter sign up:



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