Can a poor country skip a stage?

Why a text message beats a bus trip, what mobile money supplied that poor families lacked, a solar kit against a power line, and what no new tool can skip.

1 Leapfrogging

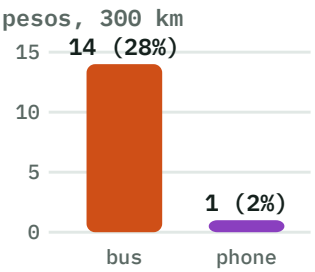
the idea

- **Leapfrogging** = skipping a stage richer countries went through (a bank branch in every village, a power line to every house) → straight to a newer tool (phone, solar kit)
- Works ⇔ the new tool does the old stage's **job** · fails ⇔ the old stage was a **thing a place needs** (road, water, court, teacher)

2 Bus or phone

cost of distance

- Send 50 pesos, 300 km · bus `300 ÷ 30 + 4` (day's pay) = **14** → `14 ÷ 50` = **28%** · phone fee **1** → **2%**
- Bus cost grows with every km · phone fee flat → nobody travels, a message costs the same near or far
- Practice · send 100: bus `d ÷ 20 + 2` vs phone 4 → equal at **40 km** (shorter: bus cheaper) · 200 km: **12%** vs 4%



3 Mobile money

M-Pesa · evidence

- **M-Pesa** · Kenya, March 2007, phone company **Safaricom** · send and keep money by text · **agents** = ordinary shops: cash ⇄ phone money
- Supplies what Lessons 5-6 found missing → a **safe place to save** + relatives send help fast = **partial insurance** after a shock
- **Tavneet Suri & William Jack**, economists, *Science* 2016 · same households 2008-2014, nearer vs farther from an agent (careful comparison, not a trial) → ≈ **194,000** households = **2%** out of poverty (`194,000 × 50 ≈ 10 million` households) · bigger gains for women-headed households
- **World Bank** (1944) Global Findex 2021 · Kenya: ≈ **79 in 100** adults with an account (bank or mobile money)

4 Grid or solar

cost per home

- Village 100 homes · line **200,000** → `÷ 100 = 2,000` a home · kit (1 room + phone) **100** → 20× cheaper · a kit ≠ a factory
- **IRENA** (International Renewable Energy Agency) · solar modules ≈ **−90%**, 2010-2019 → 100 → 10 · **IEA** (International Energy Agency, 1974) · ≈ **730 million** without electricity, 2024, ≈ 8 in 10 in sub-Saharan Africa (south of the Sahara)
- Practice · **payback time** = price ÷ monthly saving · kerosene (lamp oil) 7 + charging 3 = 10/month · kit 120 → `120 ÷ 10 = 12` months · 3 years `36 × 10 − 120 = 240` better off · pay-as-you-go: 10/month, no savings needed
- Practice · line 150,000 ÷ 50 homes = **3,000** = 20 × a 150 kit · but fridge, pump, workshop → need the grid
- Practice · lamp trial (toy): homework 30 → lamp **60** vs control **40** → effect `60 − 40 = 20` min · 10 came anyway · lottery → groups alike

5 The limits

no verdict

Can leapfrog (moves money, light, information)	Needs the old stage (no shortcut)
pay a relative by phone · solar light · crop price by text · forecast · school fees · test results	harvest to market → road · contract → court (L8) · reading → teacher (L7) · clean water → well · cement → road · land claim → court

- One view: phones and solar first → cheap, fast, millions now ⟷ other view: roads, schools, courts still decide who prospers → first · evidence shows what each does, not which to choose

Watch out: "phones replace roads and courts" × → a phone moves money and information, not goods or rules · 2% of households = real but partial, not the end of poverty · Suri & Jack = comparison, not a randomized trial · trial effect = treatment (got it) − control (did not), not the rise from "before"