



IUKAN-2015

Towards Building Smarter Utilities

Power, Water and waste water, solid waste, urban mass transport and city gas

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Utilities that can change face of the nation

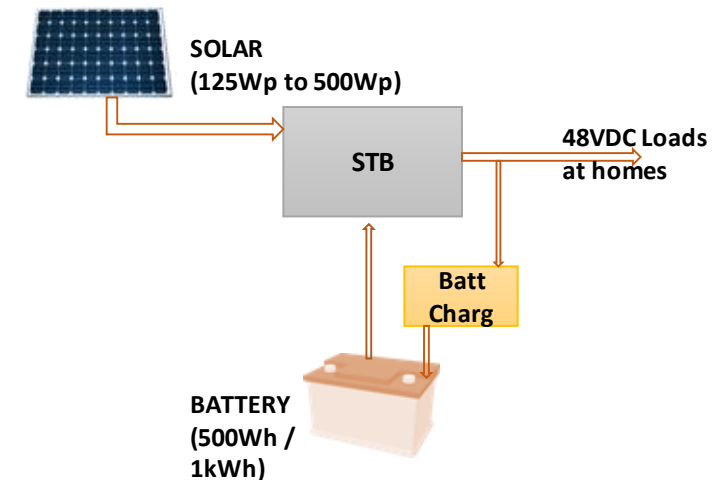
- Power
- Water
- Waste water & Solid Waste
- Urban Mass Transport
- City Gas

Power-I

- Even as we close Supply – Demand Gap
 - A Large section of homes can not afford to pay market rates for power
 - Significantly enhance efficiencies of appliances and power-usage
 - DC home-grid with DC appliances
- UDC project
 - add a DC line to each home on the same distribution grid
 - supply 24 x7 Limited power on DC lines, even though unlimited AC line may be cut-off
 - Encourage use of solar-DC for higher consumption
 - Towns like Sasaram and Deri-on-son in Bihar and Lakhimpur in Assam becoming the first set of towns in the world to get additional DC line at homes
 - 105,000 homes being provided DC lights, fans and cell-phone charger

Power-II

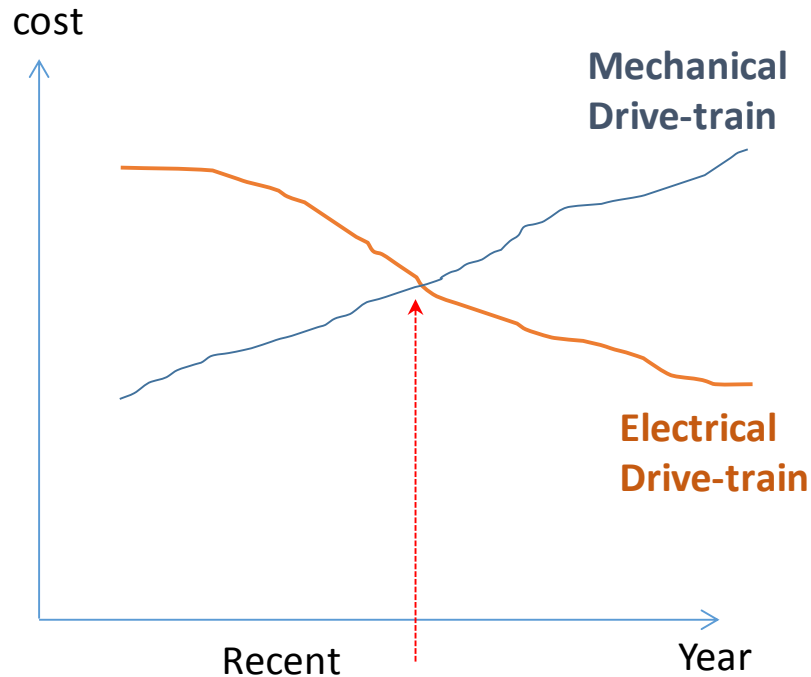
- A large number of homes still off-grid
 - Costs a lot to connect them to grid: Capital Costs, Maintenance Costs, line-losses, collection costs
- Can Solar-DC power light, fans, TVs and electronics
 - Avoid AC-DC and DC-AC converters:
 - 35% efficiency gain over solar-AC
 - Use only DC appliances
 - almost 50% efficiency gains over AC appliances
- Being deployed in 4000 off-grid homes
 - In Jodhpur Rajasthan



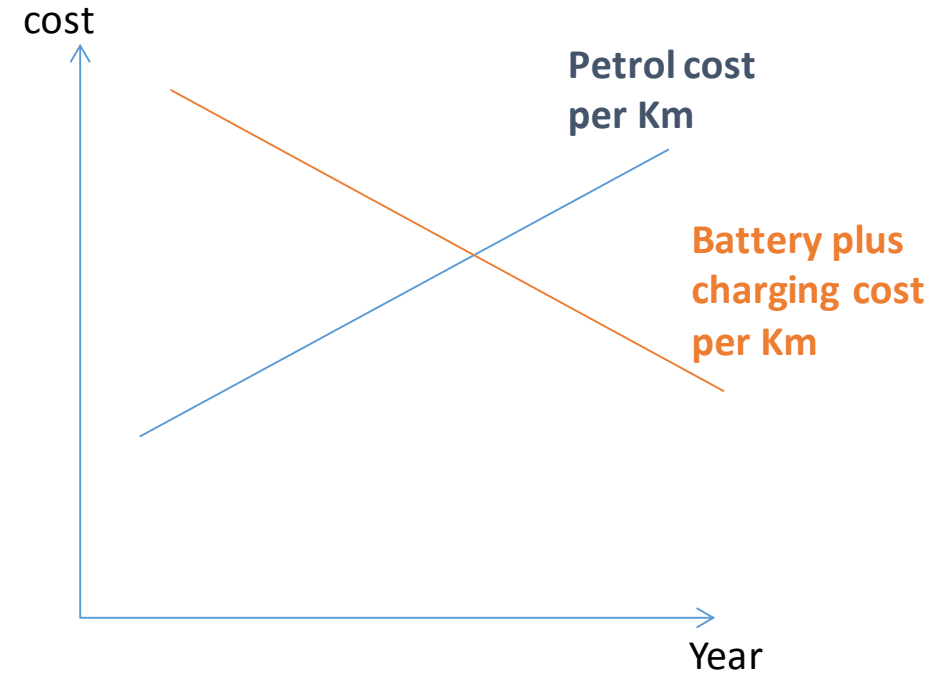
Urban Transport

- India has no OIL
- Heavy Pollution in cities
- High Congestion
- **Answer: Metro, Electric Buses and Electric Vehicles**
 - City of Hangzhou, China
 - All two-wheelers have to be electric
 - Cars which are non-electric have lots of restrictions
 - All new Buses are Electric

Are We ready: Economics of Drivetrains And Fuel



- Mechanical Drivetrain (IC Engine) cost increasing due to inflation
- EDT cost decreasing - R&D, Moore's law and software



Cost of battery per km decreasing

- Increasing cycle-life, decreasing production costs
- Expected to accelerate



Water and Waste Water

SAC-PM Report (2014) recognising water as one of the most precious resource in India, which could lead tomorrow to water-wars

- Technology Interventions in the Water Sector
 - Implementation, Grand Challenges and R&D in
 - Large River Basins
 - Water Bodies and Ground Water Recharge
 - Water in Agriculture
 - Reuse and Recycle of Waste Water
 - Water Distribution and Drinking Water



Conference Addresses

- Challenges that India has to overcome
 - Technology, Policy and Business has to work hand-in hand to overcome the challenges