



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Inducing Behavior Change and Overcoming Financing Barriers

The “Earn While You Cook” Approach



Renewable Energy for Rural Areas (RERA)

Programme, Nepal

Christian Liedtke, Chief Technical Advisor, GIZ



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

RERA Overview

- **Partnership:**

- RERA is a bilateral technical support programme by the Government of Nepal (GoN) and the German Federal Ministry for Economic Cooperation and Development (BMZ)
- RERA is jointly implemented by the Alternative Energy Promotion Centre (AEPC), Government of Nepal, and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.



- **Objective:**

- To improve the energy situation for rural households with no, or limited access to modern energy services, with a geographical focus on Province 1 and 7





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

RERA Approach



4 Components:

1. **Facilitating the Transformation the AEPC – Federal Agency for Decentralized RE**
2. **Capacitating Provincial and Local Governments to provide energy services**
3. **Developing Sustainable Markets**
 - Sustainable business models for energy services and products
 - Improve access to finance
4. **Empowering Women and Disadvantage Groups**
 - safeguard that women and disadvantaged groups are equally benefitting from RETs





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

„Earn While you Cook (EYC)“ – Approach

Developed by

- Sujatha Srinivasan, Founder of **Carbon Natives Initiative (TM)** – promoter of EYC-Approach

Technology: TLUD – gasifier stove

- Produces charcoal while cooking
- 2 years warranty on combustion parts, and life-time of 7 years

Income generation through cooking:

- HH sell charcoal produced while cooking
- A value chain is created around charcoal and vendors purchase charcoal





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

„Earn While you Cook“ – Approach (2)

Innovative Carbon Financing at 2 stages:

1. Reduction of fuel-use (standard approach for improved cookstoves)
2. „Green Charcoal“:
 - Conventional charcoal requires an average 6 kg of wood to produce 1 kg of charcoal
 - TLUD produces charcoal as a by-product when cooking, so no additional wood is needed (20% of wood is converted into charcoal)
 - Thus 1kg of TLUD charcoal saves 6 kg of wood - corresponding to approx. 7 kg of CO₂





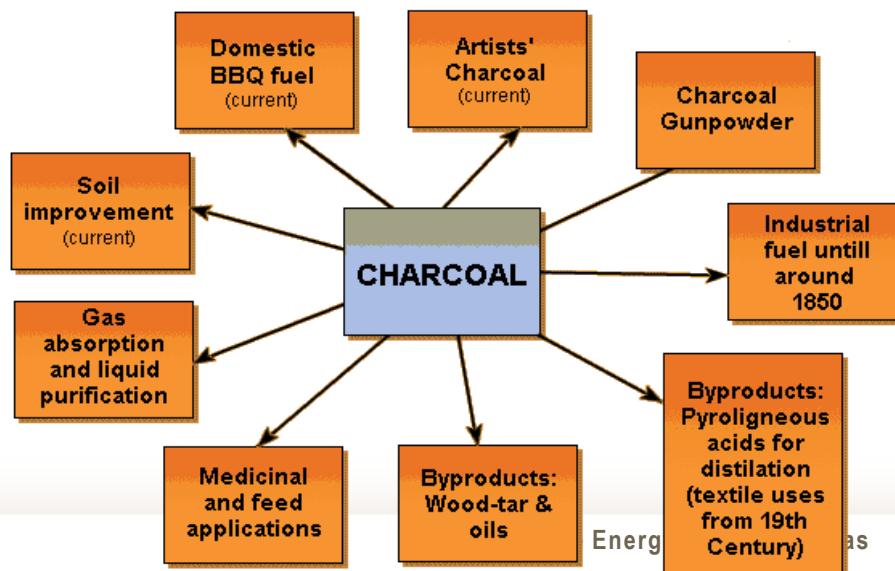
Implemented by
giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

„Earn While you Cook“ – Approach (3)

The Charcoal Value Chain - 2 Approaches:

1. Selling charcoal to existing off-takers
 - Industrial consumers (e.g. foundries, tea-plantation) or commercial consumers (e.g. restaurants, fertilizer)
 2. Building entrepreneurship around charcoal processing
- Best prices of charcoal for value added products

**52 known
uses of
Charcoal**





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



Benefits (1)

1. Access to finance and affordability issue is solved:

- Break even for HH for investment in stove within 6-15 months (depending on financing/incentive structure of the individual project)
- Credit finance easily possible because the stove generates income to repay the loan



2. Behavior change challenge solved

- Introduction of stove and approach is accompanied with training of cooks
- Income from cooking is key-motivator to change behavior





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Benefits (2)

3. Women empowerment and reduction of drudgery

- Women become charcoal entrepreneurs
- Women save about 10 hrs per week (less collection of wood and faster cooking with TLUD)



4. Climate change mitigation and forest protection

- Use of wood-fuel is reduced by 50%



5. Health improvement

- TLUD stove emits 40% less emissions and soot



6. Creation of Microenterprises for charcoal processing

- new economic activity in rural areas





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

„Earn While you Cook“ – Successes from India (1)

Location: Sundarbarns, West Bengal, India

Scale: 25,000 cookstoves = 25,000 HH reached

Financial model:

- Cost of stove: EUR 36 (INR2800)
- Charcoal produced per HH: 20 kg/month = Income of EUR 2.5/month
- Payback = 15 months (without grant or carbon financing)
- Price of stove is mostly reduced due to carbon financing, or grant support (e.g. WB: the stove is subsidized by 75%)



Largest
dissemination of
gasifier in the
world

First Cookstove-
residue buyback
system

First model
where women
earn while the
cook



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Micro-enterprises





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



India's first **Earn while you cook** micro-enterprise.

Help educate and uplift a community (in Manimutharu) by buying detox personal care products made from sustainably produced activated charcoal.





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH





Implemented by

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

„Earn While you Cook“ – Impacts in India

	Impact per HH	Impact for 25,000 HHs
Wood saved	208 kg/month or 2.5t/year (50% less than traditional stove)	5,200t/month or 62,500t/year
CO2 reduced	4.3t/year (incl. Green Charcoal)	107,500t/year
Charcoal produced	20kg/month	500t/month
Income	EUR 2.5 / month	EUR 62,500 / month
Entrepreneurship created	30 microenterprises per 1000 stoves	700 microenterprises
Time saved	40 hrs / month	1 million hrs / month





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Implementing „Earn while you cook“ in Nepal

RERA cooperated with Jeevan Bikas Samaj (JBS):



Jeevan Bikas Samaj
Poverty Free Nepal

- JBS is a Cooperative and Micro Finance Institution in East of Nepal
- 190,000 Of HHs are member of cooperative
- JBS reaches about 874,000 People (about 4.6 persons per HH in Nepal)

JBS will implement a pilot of 500 stoves/HH:

- Avajoka Cookstove has been tested by Renewable Energy Testing Station having thermal efficiency of 34.06 % and the import tax has been waived
- JBS will import stove and provides loans to its members for purchase of TLUD – No subsidies
- Stove will cost about USD 60 (NPR 6,500) for HH
- Ticket-size of loan: USD 60 (NPR 6,500) – 18 % interest rate
- Break-even in 16 months / repayment of loan in 12 months





Expected Impacts of Pilot in Nepal

Impact	Per Household	Per 500 Households
Fuelwood saved per month	120 kg	60 tons
CO ₂ reduction per month (without Green Charcoal)	200 kg	100 tons
Charcoal generated per month	15 kg	7.5 tons
Income per HH per month (NPR 20 per kg)	USD 3.7 (NPR 400)	USD 1855 (NPR 200,000)





Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Thank You!

GLZ: Christian Liedtke

Christian.Liedtke@giz.de

Carbon Natives: Sujatha Srinivasan

sujatha.srini@gmail.com



Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Additional Slides

52 uses of Biochar

Animal Farming

1. Silage agent

2. Feed Additive/
Supplement

3. Litter additive

4. Slurry
Treatment

5. Manure
composting

6. Water treatment
in fish farming

Soil conditioner

7. Carbon fertilizer

8. Compost

9. Substitute for
peat in potting soil

10. Plant
protection

11. Compensatory
fertilizer for trace
element

Building sector

12. Insulation

13. Air
decontamination

14. Decontaminatio
n of earth
foundations

15. Humidity
regulation

16.. Protection
against
electromagnetic
radiation

Decontamination

17. Soil additive for
soil remediation

18. Soil substrate

19. A barrier
preventing pesticides
getting into surface
water

20. Treating pond and
lake water

Biogas production

21. Biomass
additive

22. Biogas slurry
treatment

Waste water

23. Active carbon
filter

24. Pre rising
additive

Waste water

25. Soil substrate
for organic plant
beds

26. Composting
toilet

Drinking water

27. Micro filters

28. Macro filters in
developing
countries

01/06/20

8

Renewable Energy for Rural Areas

Other uses

Exhaust filters (29.
Controlling emissions, 30.
Room air filters)

Industrial materials(31.
Carbon fibres, 32. plastics)

Electronics (33.
Semiconductors, 34.
batteries)

Metallurgy(35. Metal
reduction)

Cosmetics (36. Soaps, 37.
Skin cream, 38. therapeutic
bath additives)

Paint and coloring (39. Food
colorants, 40. Industrial
paints)

Energy production (41.
Pellets, 42. Substitute for
lignite)

Medicines (43. detoxification,
44. carrier for active
pharmaceutical ingredients)

Textiles

45. Fabric
additive for
functional
underwear

46. Thermal
insulation for
functional
clothing

47. Deodorant
for shoe soles

Wellness

48. Filling for
mattresses

49. Filling for
pillows

50. Shield
against
electromagnetic
radiation

Biodiversity

51. Microbe

52. Earth worm