Stove Finance
Thematic Breakout Session
ETHOS 2019

Facilitated by Paul S. Anderson, PhD
Arrangements for the Session

• One hour

• Four main divisions of about 15 minutes each:
  • Overview -- Assessment of what is to be presented
  • Mini-presentations --
  • Guided discussion --
  • Open discussion --

• Topics to include:
  • Carbon offsets
  • Charcoal buyback
  • Biochar (financial aspects)
  • Blockchain
  • Fuel sales & Fuel issues
  • Subsidized stoves
Juntos Energy Solutions NFP

- Champion TLUD stoves in West Bengal India
  - 35,000 HH with ~100% usage, some > 5 years (Deganga project by atmosfair)
    - Read: [www.drtlud.com/deganga2016](http://www.drtlud.com/deganga2016) report on the pilot with 11,000 stoves
  - 500 HH started in September 2018 (Hingalganj project by Juntos NFP)
Business model for TLUD stove project expansion

CharTrac
Carbon Credit Services

UNFCCC & GS
Carbon Credit Authorities

Juntos NFP:
Finance, Database, Carbon Credit Sales

Moulindu - Sapient:
Implementation with On-site Sales and Services

Operational Structure for Woodgas Stove Dissemination Projects by Juntos NFP

CharTrac

Donations/Grants

Loans

Sales: Carbon Credits

Deganga, Uluberia, etc, West Bengal:
Stove Users

Stove Production:
Contracted Suppliers
Quick Introduction about Using Blockchain with Char-making TLUD Stoves

The CharTrac™ System is for Higher Standards for Transparency and Trust in Carbon Accounting

www.CharTrac.com

ETHOS Conference - 2019
Higher Standards for Transparency and Trust in Carbon Accounting

LEVERAGING TECHNOLOGY FOR HIGHER STANDARDS
Cryptography, Digital Signatures and Certificates, Blockchain (Distributed Ledger) Technology

IMMUTABLE AND TRANSPARENT AUDIT TRAIL
CharTrac implements a restricted-access private blockchain that is pegged to a public blockchain (Ethereum).

DIGITALLY-SIGNED DATA STREAMS
Partner-validated operations data are securely streamed and encoded to the blockchain as that data is available (often daily).

CARBON OFFSETS WITH TRUSTED DATA PROVENANCE
CharTrac raises the bar for carbon accounting standards that relate to data provenance, transparency, and trust.
CharTrac™

Higher Standards for Transparency and Trust in Carbon Accounting

CharTrac builds data provenance for carbon offsets by securely and immutably documenting stakeholders, processes, assets, measurements, and transactions that define, create, or influence data of origin and historical record for project-enabled reductions of CO2e from otherwise normal processes (such as cooking or incense stick production).

At the implementation level, CharTrac is a blockchain-enabled system that securely records project parameters and digitally encoded assets from Juntos NFP and its implementation partners, and captures streams of digitally-signed operations data from in-field operations partners.

A key component of the system is the private blockchain (restricted access), which is pegged to a public blockchain (Ethereum). It is important to note that CharTrac’s blockchain (a distributed ledger technology) is not utilized for tokenizing and tracking carbon credits (offsets) as crypto tokens for market trade. Instead, the CharTrac blockchain is used to solve data provenance and accounting issues related to carbon offsets.

By capturing streams of digitally-signed data that quantify time-interval charcoal yields, weekly bulk charcoal transfers to incense makers, and other measurable components, the CharTrac system provides an immutable and transparent audit trail (data provenance) for every carbon offset generated by Juntos NFP projects.
CharTrac™ Principals

Ownership and Coordination
Juntos Energy Solutions NFP
Paul S. Anderson, PhD (Executive Director) — psanders@ilstu.edu
(Investment partners are welcome. Please contact Dr. Anderson)

Field Implementation
Moulindu Banerjee (Sapient Infotech) — sapientinfo1970@gmail.com
(Implementors with other projects are welcome. Please contact Dr. Anderson)

Technical Design, Development and Administration
James S. Schoner (Software Engineer / BitMaxim) — jss@bitmaxim.com
(Technical associates are welcome. Please contact Dr. Anderson)

(Investors and technical associates for FURTHER blockchain applications are welcome.)
Please contact Dr. Anderson)
Example sheets of manually sourced data for contracts and charcoal collection. Data are entered into workbooks for uploading to the CharTrac System. The workbooks are digitally signed by authorized field implementation associates at the time of submission.
CharTrac™ Data Entry Workbook (Example from India (left side))

— Workbook allows offline data entry by remote implementation partners.
— Digitally signed and submitted online via the CharTrac.com website.
CharTrac™ Data Entry Workbook (Example from India (right side))

— Workbook allows offline data entry by remote implementation partners.
— Digitally signed and submitted online via the CharTrac.com website.

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