

**Stove Finance**  
**Thematic Breakout Session**  
**ETHOS 2019**

Facilitated by Paul S. Anderson, PhD

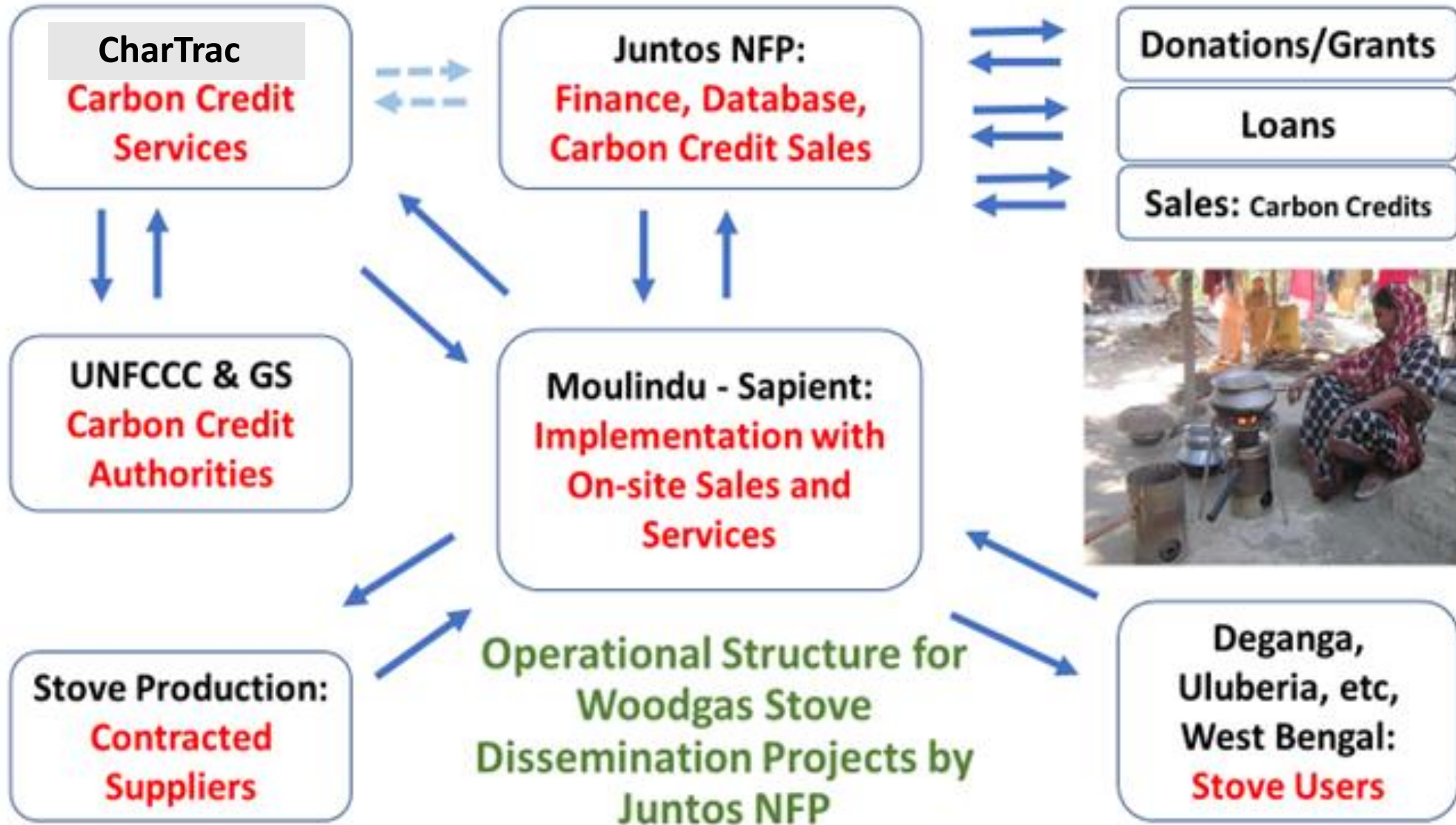
# Arrangements for the Session

- **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.drtilud.com/deganga2016](http://www.drtilud.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



# **Quick Introduction about Using Blockchain with Char-making TLUD Stoves**

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

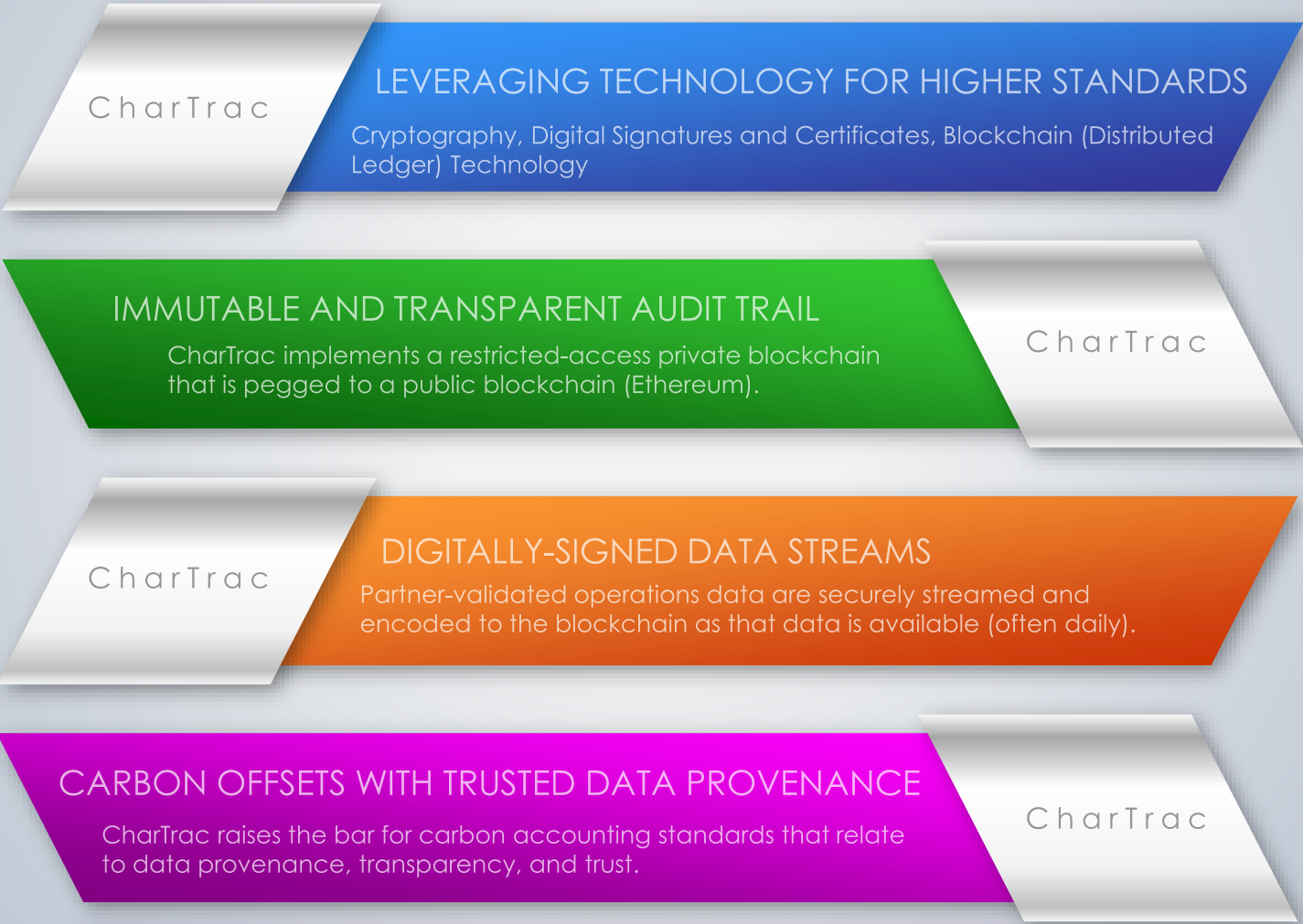
**[www.CharTrac.com](http://www.CharTrac.com)**

ETHOS Conference - 2019

# CharTrac™

by Juntos NFP

## Higher Standards for Transparency and Trust in Carbon Accounting



# 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 CO<sub>2</sub>e 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](mailto:psanders@ilstu.edu)

(Investment partners are welcome. Please contact Dr. Anderson)

## Field Implementation

Moulindu Banerjee (Sapient Infotech) — [sapientinfo1970@gmail.com](mailto: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](mailto: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)



**TLUD Stove Distribution Contract**

Residential Only

This Space Reserved for Office Use  
H500R01S007

- Project Identifier: **Hingaljanj 500**
- Stove Type: **Champion TLUD-ND**
- Stove ID: J 6 (Example: J123)
- Field Assistant (Reg. ID): 3 Name: Jakir Hossain  
First Name Middle Last Name
- Quantity: **1 (One)** Check one box:  First TLUD  Additional TLUD  Replacement TLUD  
Replaced Stove ID: \_\_\_\_\_
- Date of Distribution / Installation: (Day) 02 / (Month) 07 / (Year) 2018
- Stove Beneficiary / Recipient: (Name of primary contact person regarding this stove.)  
H. la Bilal Ch- H. M. M.  
First Name Middle Name (if Any) Last Name (Family Name) (Any Alternative Name)
- Residence size: The number of persons daily consuming meals prepared with this cookstove: 03

**Location Information**

HLG Bottala Potps. Hingaljanj \_\_\_\_\_  
9. Region 10. Village 11. Address 12. Phone (Optional)

13. GPS coordinates: Latitude: 22.29.31 Longitude: 88.58.2

**Terms**

14. I herewith confirm receipt of a TLUD stove, and I confirm having used wood as a cooking fuel to date. I am willing to use the TLUD stove and to participate in monitoring and verification by Sapient and Juntos. All data collected are used only within a carbon credit project, and all personally identifying data and household identifying data are held in strict confidence.

15. I have been informed that I receive the TLUD stove at a significantly reduced price and therefore I cede all entitlements resulting from reduced greenhouse gas emissions to Sapient and Juntos.

16. I will not sell the stove. If the stove is transferred to another address or to another owner, or if the stove is stolen, destroyed, or otherwise not used anymore, I shall inform a Sapient field assistant.

17. I agree with the above-mentioned conditions of the distribution.

18. Beneficiary Signature (Indicates Agreement to Terms) 19. Field Assistant Signature (Salesperson)  
\_\_\_\_\_ Jakir Hossain

**Additional Information**

20. Other stoves in this residence (types and usage):

**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.

CHARCOAL FA DAILY SHEET - HLA 500  
OCTOBER - 2018

FA NAME	16	17	18	19	20	21	TOTAL	FA SIGNATURE
YOUNUS MONDAL	277	281	279	293	290	279	1499	<u>Younus Mondal</u>
SALAUDDIN MONDAL	275	282	288	283	277	292	1697	<u>Salaudin Mondal</u>
<b>TOTAL</b>	552	563	567	576	567	571	3196	

# 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.

Hingalganj 500 Stove Distribution Contract Data												Data Collection Workbook Form DCW-1000, Rev. 1.2		
Project Identifier: Hingalganj 500			Stove Type: Champion TLUD-ND			Destination Type: Residential			Stoves Placed per Contract: 1					
Enter Contract Data														
Office Use Code	Stove ID	Field Assistant				Placement Type	Replaced Stove ID	Date of Placement (Distribution)	Beneficiary / Stove Recipient				Residence Size	Region
		ID	First Name	Middle Name	Last Name				First Name	Middle Name	Last Name	Alternative Name		
H500R08S358	J52	5	Azhar	Uddin	Mondal	First TLUD		16/08/2018	[Redacted]				4	HLG
H500R08S359	J71	5	Azhar	Uddin	Mondal	First TLUD		01/09/2018	[Redacted]				4	HLG
H500R08S360	J114	5	Azhar	Uddin	Mondal	First TLUD		22/08/2018	[Redacted]				4	HLG
H500R08S361	J153	5	Azhar	Uddin	Mondal	First TLUD		02/09/2018	[Redacted]				4	HLG
H500R08S362	J54	5	Azhar	Uddin	Mondal	First TLUD		18/08/2018	[Redacted]				4	HLG
H500R08S363	J352	2	Ayub	Ali	Mondal	First TLUD		29/08/2018	[Redacted]				4	HLG
H500R08S364	J338	2	Ayub	Ali	Mondal	First TLUD		03/08/2018	[Redacted]				6	HLG
H500R08S365	J330	2	Ayub	Ali	Mondal	First TLUD		31/08/2018	[Redacted]				4	HLG
H500R08S366	J275	2	Ayub	Ali	Mondal	First TLUD		24/08/2018	[Redacted]				6	HLG
H500R08S367	J343	2	Ayub	Ali	Mondal	First TLUD		19/08/2018	[Redacted]				3	HLG
H500R08S368	J294	2	Ayub	Ali	Mondal	First TLUD		31/08/2018	[Redacted]				4	HLG
H500R08S369	J348	2	Ayub	Ali	Mondal	First TLUD		21/08/2018	[Redacted]				5	HLG
H500R08S370	J476	3	Jakir		Hossain	First TLUD		02/09/2018	[Redacted]				5	HLG
H500R08S371	J401	3	Jakir		Hossain	First TLUD		24/08/2018	[Redacted]				4	HLG
H500R08S372	J433	3	Jakir		Hossain	First TLUD		28/08/2018	[Redacted]				4	HLG
H500R08S373	J455	3	Jakir		Hossain	First TLUD		18/08/2018	[Redacted]				5	HLG

# 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.

Copyright © 2018 Juntos NFP. All rights reserved.												
Total Stoves Placed (Target):		500										
Region	Village	Address	Phone	GPS Latitude			GPS Longitude			Beneficiary Signature	Field Assistant Signature	Other Stoves (Types and Usage)
				Degrees	Minutes	Thousandths of a Minute	Degrees	Minutes	Thousandths of a Minute			
HLG	Sandalar Bil	:Kanchonpur, PS:Hingalg		22	26	0.0	88	58	0.7	Thumb/Fingerprint	Handwritten	
HLG	Sandalar Bil	:Kanchonpur, PS:Hingalg		22	26	0.2	88	58	0.7	Handwritten	Handwritten	
HLG	Sandalar Bil	:Kanchonpur, PS:Hingalg		22	29	0.2	88	58	0.7	Handwritten	Handwritten	
HLG	Sandalar Bil	:Kanchonpur, PS:Hingalg		22	26	0.7	88	58	0.5	Handwritten	Handwritten	
HLG	Sandalar Bil	:Kanchonpur, PS:Hingalg		22	26	0.9	88	58	0.4	Handwritten	Handwritten	
HLG	Bankra	PO:Bankra, PS: Hingalgan		22	26	0.4	88	59	2.6	Thumb/Fingerprint	Handwritten	
HLG	3 no. Sandalar B	:Kanchonpur, PS: Hingalg		22	27	0.4	88	58	6.7	Thumb/Fingerprint	Handwritten	
HLG	3 no. Sandalar B	:Kanchonpur, PS: Hingalg		22	27	0.3	88	58	5.4	Thumb/Fingerprint	Handwritten	
HLG	3 no. Sandalar B	:Kanchonpur, PS: Hingalg		22	27	0.4	88	58	5.4	Handwritten	Handwritten	
HLG	3 no. Sandalar B	:Kanchonpur, PS: Hingalg		22	27	0.5	88	58	5.2	Thumb/Fingerprint	Handwritten	
HLG	3 no. Sandalar B	:Kanchonpur, PS: Hingalg		22	27	0.4	88	58	5.3	Handwritten	Handwritten	
HLG	3 no. Sandalar B	:Kanchonpur, PS: Hingalg		22	27	0.4	88	58	5.3	Thumb/Fingerprint	Handwritten	
HLG	Sahapur	PO+PS :Hingalganj		22	27	0.4	88	59	0.9	Thumb/Fingerprint	Handwritten	
HLG	Sahapur	PO+PS :Hingalganj		22	27	0.4	88	59	0.3	Handwritten	Handwritten	
HLG	Sahapur	PO+PS :Hingalganj		22	27	0.6	88	59	0.3	Handwritten	Handwritten	
HLG	Sahapur	PO+PS :Hingalganj		22	27	0.6	88	59	0.3	Handwritten	Handwritten	
HLG	Katakhali	O:Borunhat, PS:Hingalg		22	30	0.1	88	57	0.0	Thumb/Fingerprint	Handwritten	