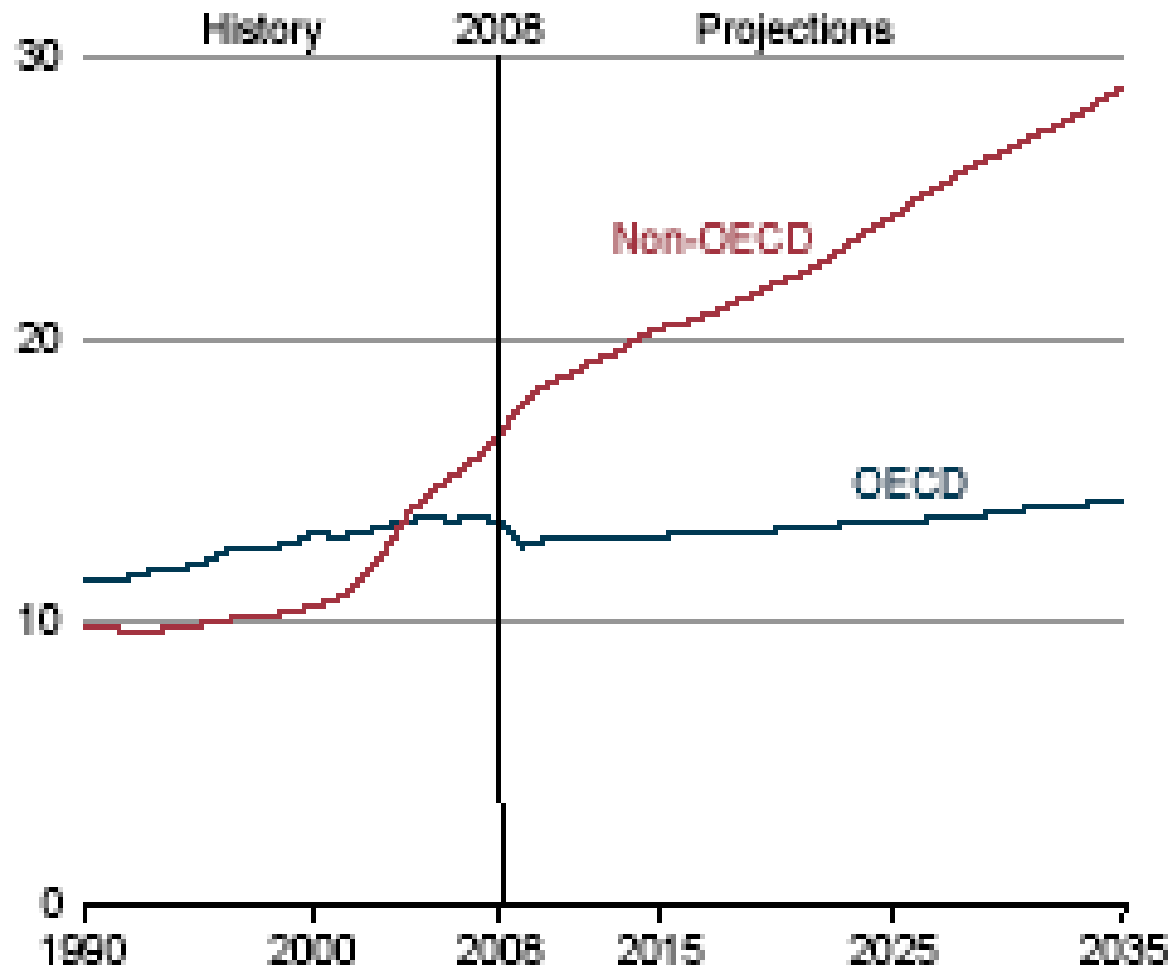


Low Carbon Rural Development in India

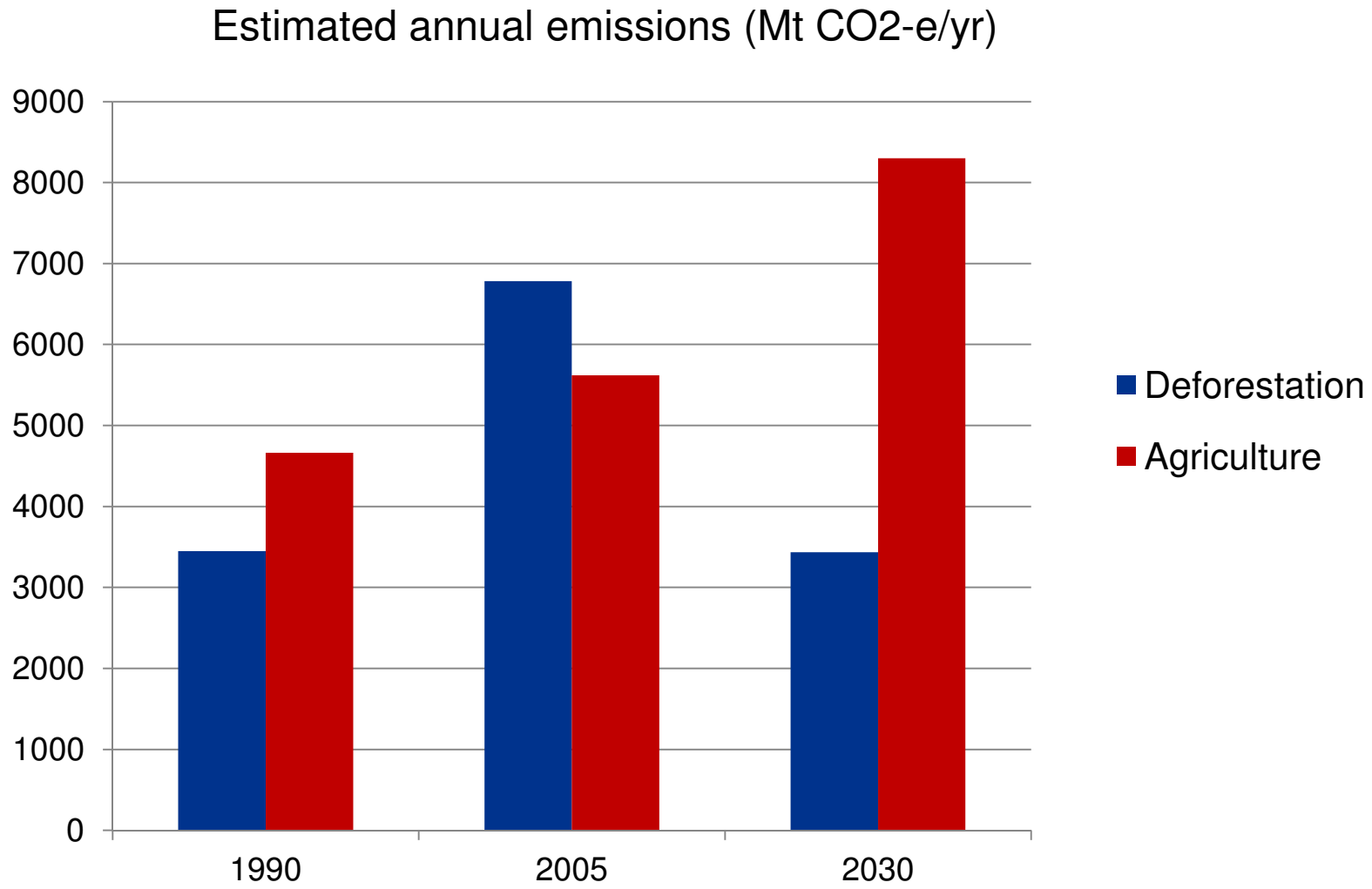
Richie Ahuja
EfD Annual Conference, Cape Town
26th October, 2013



World Energy Related Carbon Dioxide Emissions

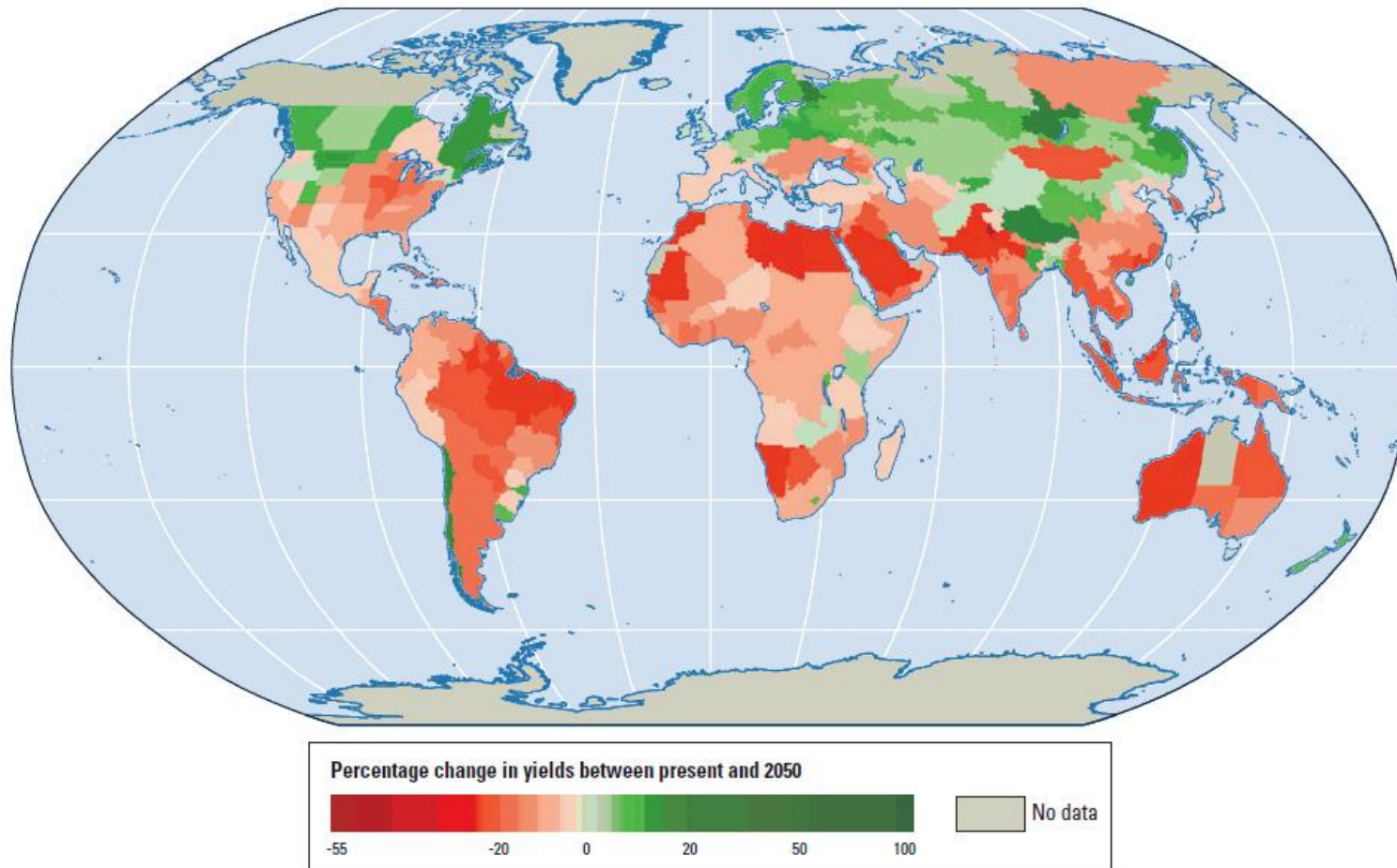


The scale of agriculture emissions



Impact of Climate Change on Yield

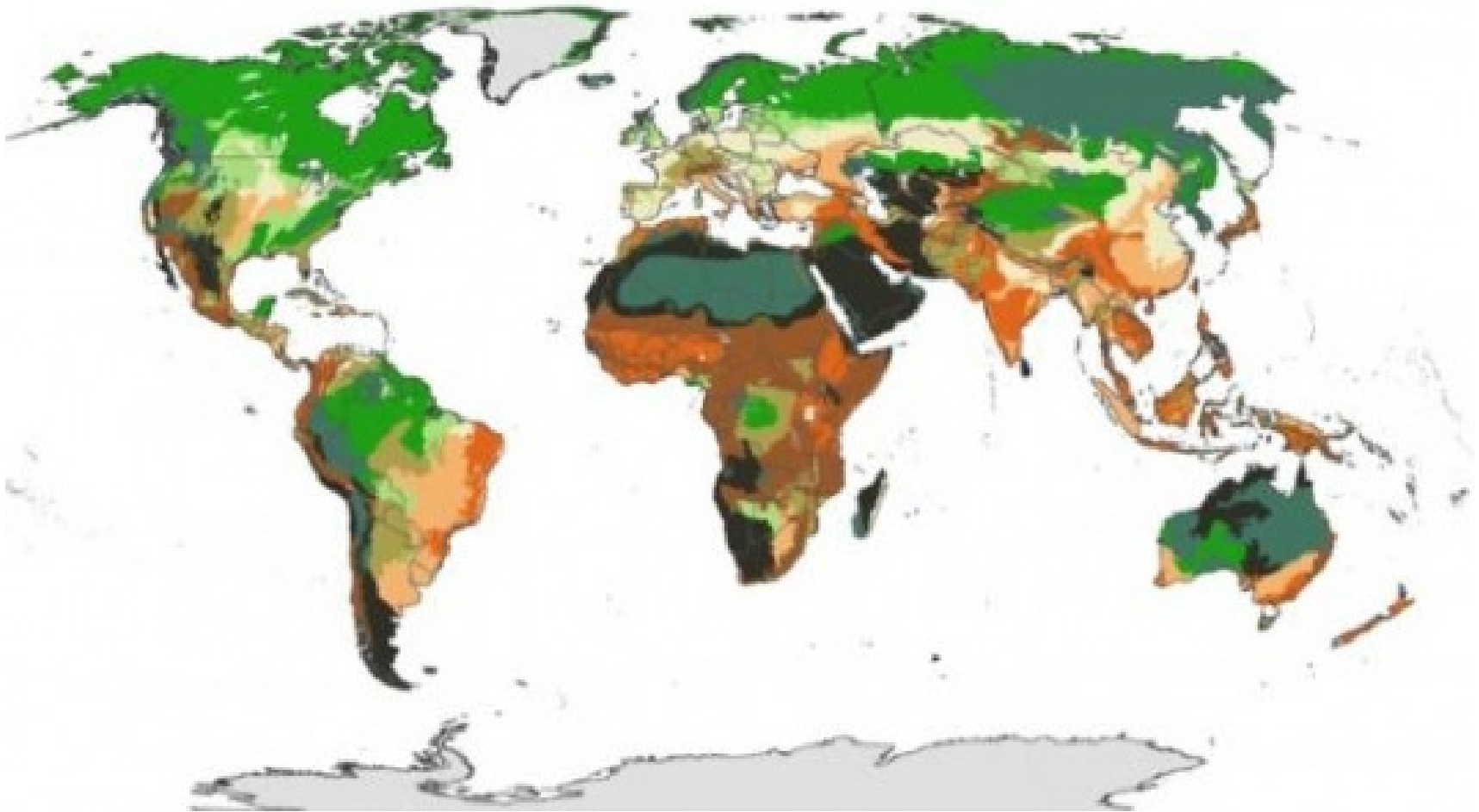
Map 1 Climate change will depress agricultural yields in most countries in 2050, given current agricultural practices and crop varieties



Sources: Müller and others 2009; World Bank 2008c.

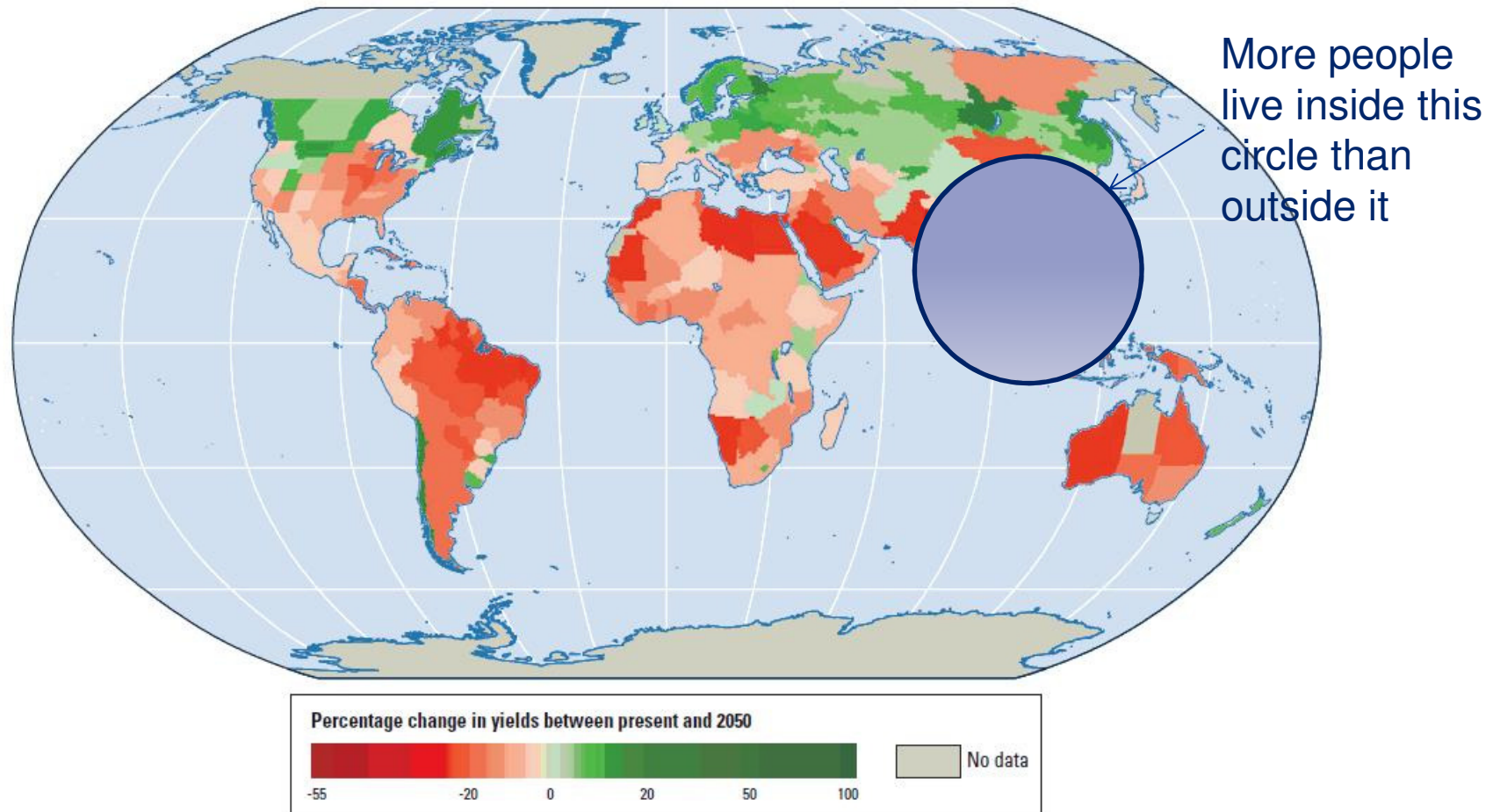
Note: The figure shows the projected percentage change in yields of 11 major crops (wheat, rice, maize, millet, field pea, sugar beet, sweet potato, soybean, groundnut, sunflower, and rapeseed) from 2046 to 2055, compared with 1996–2005. The values are the mean of three emission scenarios across five global climate models, assuming no CO₂ fertilization (a possible boost—of uncertain magnitude—to plant growth and water-use efficiency from higher ambient CO₂ concentrations). Large negative yield impacts are projected in many areas that are highly dependent on agriculture.

Global Vulnerability Map



Impact of Climate Change on Yield

Map 1 Climate change will depress agricultural yields in most countries in 2050, given current agricultural practices and crop varieties

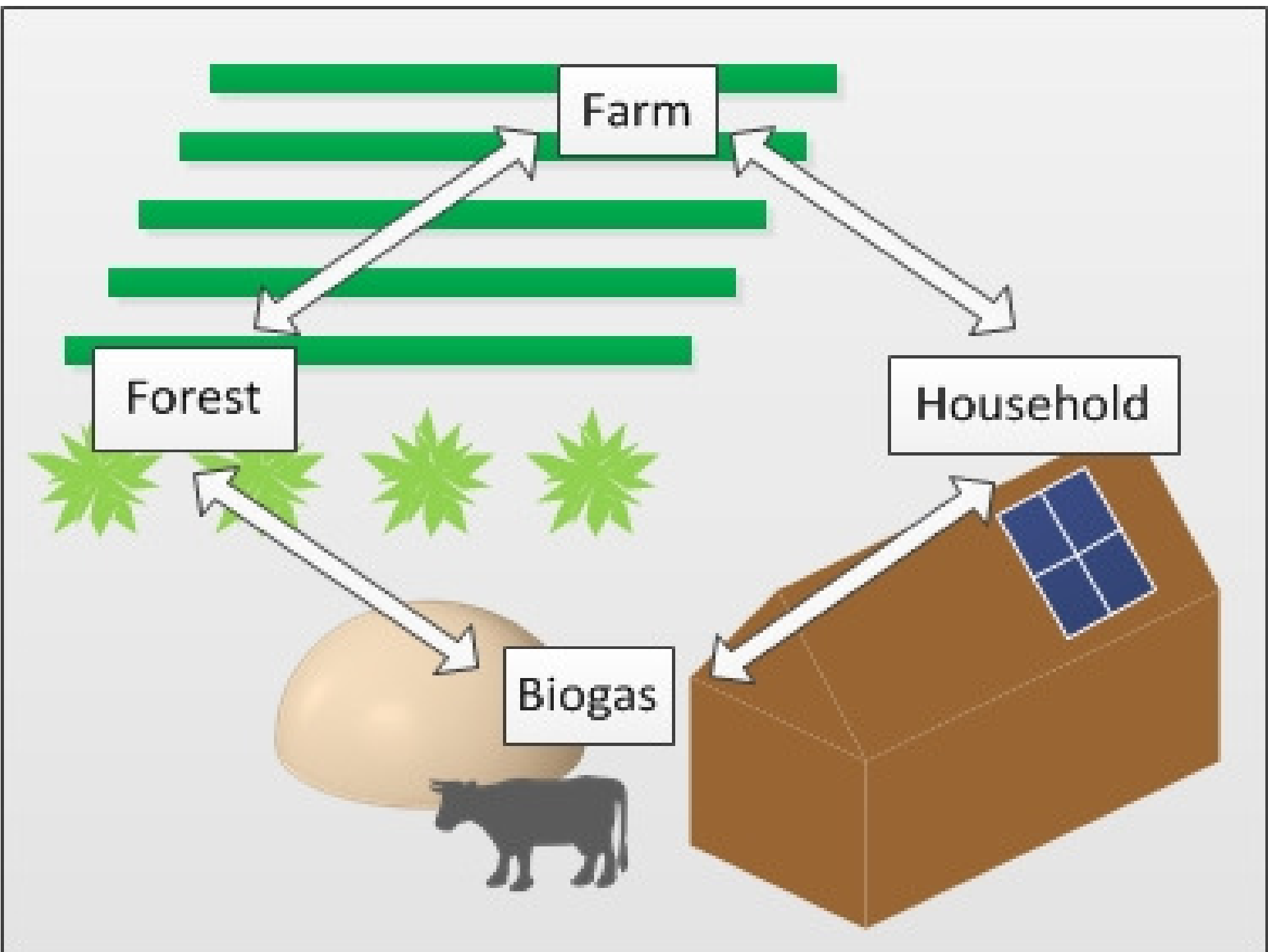


Sources: Müller and others 2009; World Bank 2008c.

Note: The figure shows the projected percentage change in yields of 11 major crops (wheat, rice, maize, millet, field pea, sugar beet, sweet potato, soybean, groundnut, sunflower, and rapeseed) from 2046 to 2055, compared with 1996–2005. The values are the mean of three emission scenarios across five global climate models, assuming no CO₂ fertilization (a possible boost—of uncertain magnitude—to plant growth and water-use efficiency from higher ambient CO₂ concentrations). Large negative yield impacts are projected in many areas that are highly dependent on agriculture.

Implementing Low-Carbon Rural Development







Farming practices that focus on resource use efficiency can deliver: :

- Profitability**
- Food security**
- Environmental gains including mitigation and adaptation**

A household biogas unit serving a family of 5 or 6 members can mitigate 1.5-3 tons per year while:

- Reducing indoor air pollution thus**
- Improving household health**
- Freeing up time used to collect firewood and opening the door for new income generation opportunities**

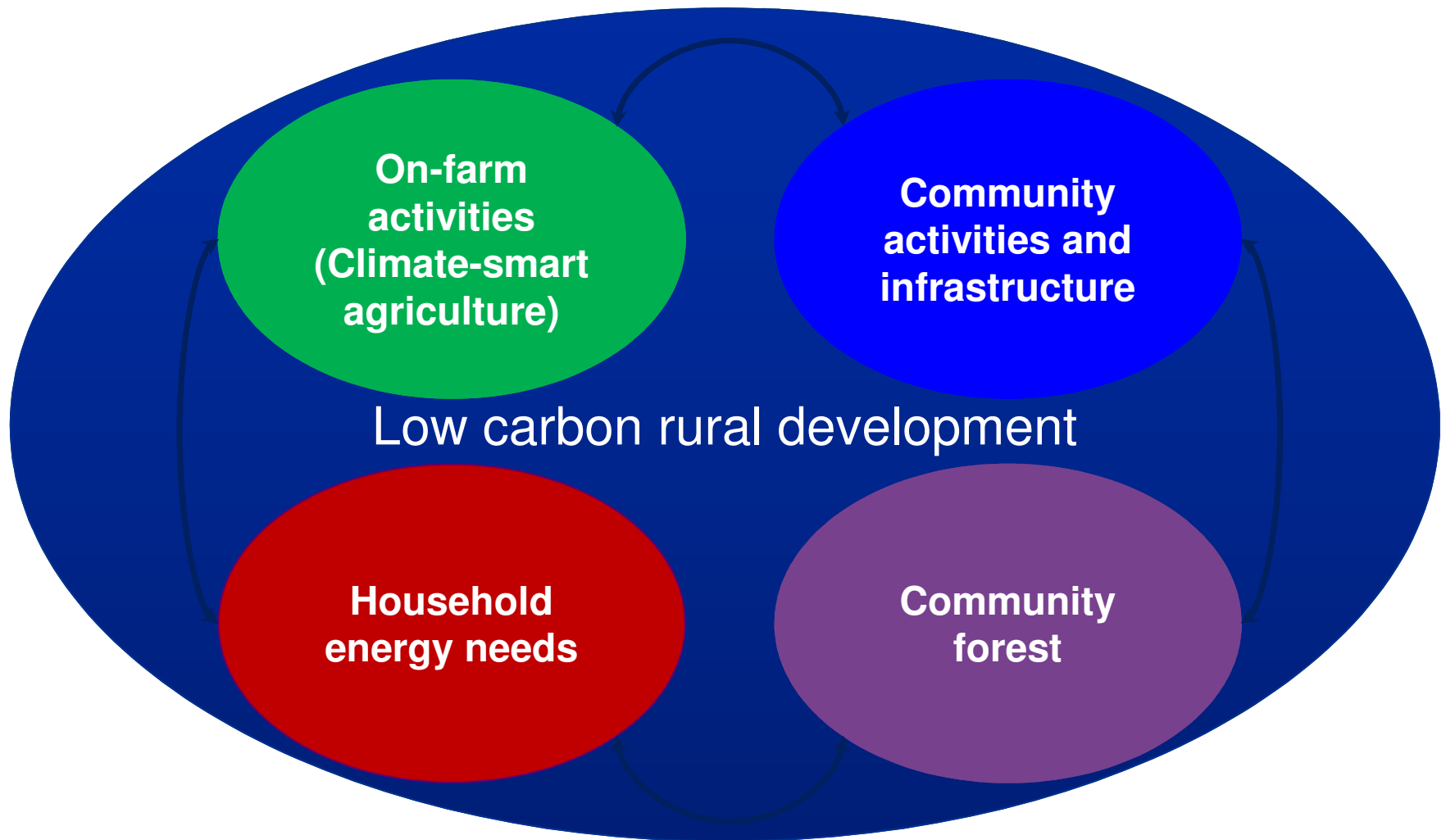


Efficient Cook Stoves



Chulika photo from isquared

Our Approach



Basic ingredients for delivering change

- Good reliable baseline and up to date information
- Institutional capacity (local, national) – boots on the ground that have the capacity to make decisions within frameworks – cannot always *airdrop a solution*
- Solutions should meet local needs while addressing climate change – in this case growth, poverty alleviation, risk management, health, education, etc
 - Solutions – Typically we find that an integrated/holistic approach is better
- Resources – local (household), national (budgetary), debt (micro loans), international (ODA), C markets, etc
- Execution / implementation
- Transparency and accountability
- Communicating success and failures with constituents/parties



Where we work



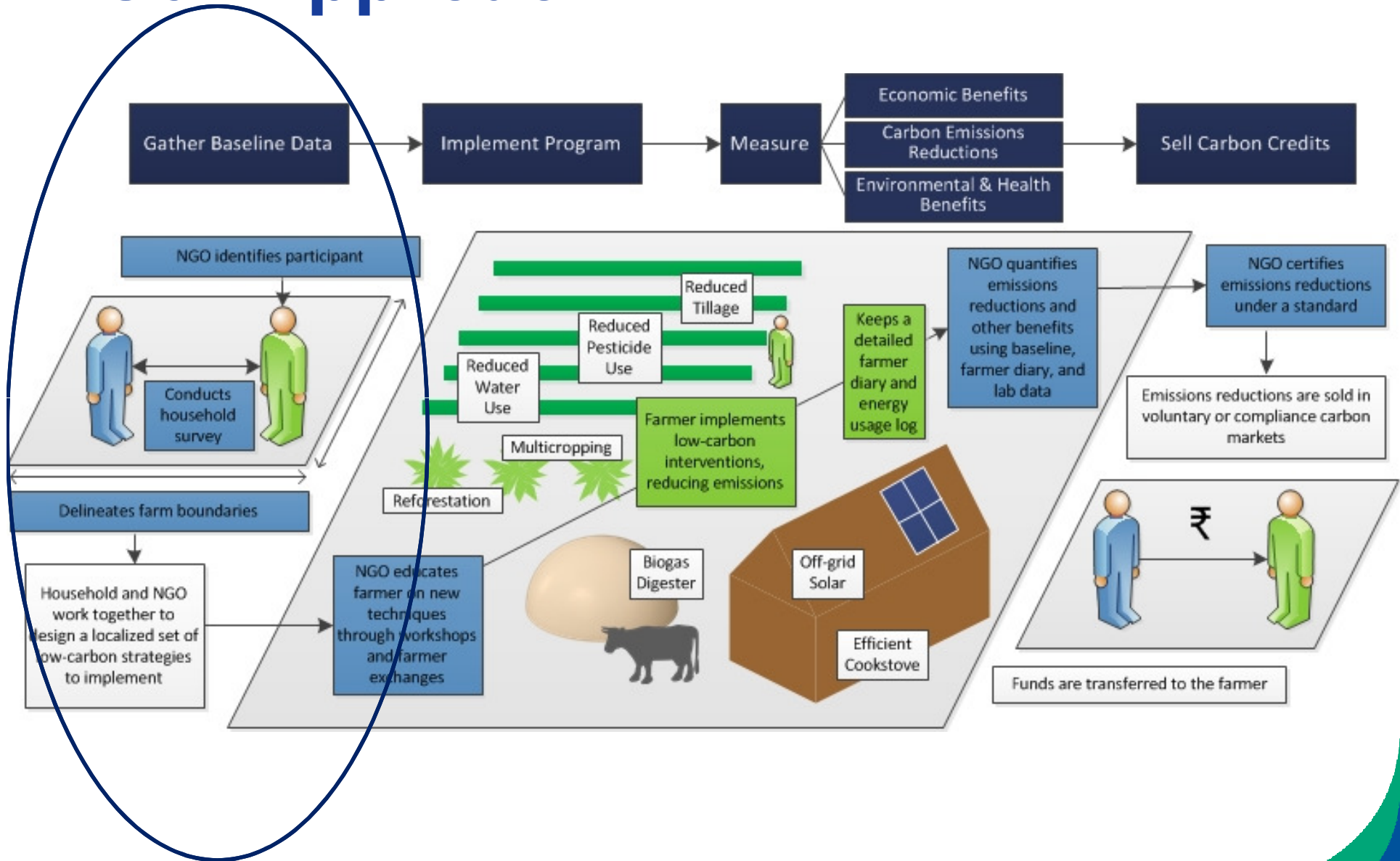
Our Partner Network of NGO's

- Members of "Fair Climate Network"



PWDS
Palmyrah Workers Development Society

Our Approach



Capture Demographic Data

FCN FAMILY SURVEY FORMAT - FAMILY DEMOGRAPHY

District			
Taluk			
Gram Panchayat			
Village			
Head of Household			
Age (Years)			
Sex (M/F)			
Father's Name			
Mother's Name			
Qualification			
Occupation			
Election ID			
Bank A/c			



Capture Demographic Data

Caste/Community		
Annual Income (Rs)		

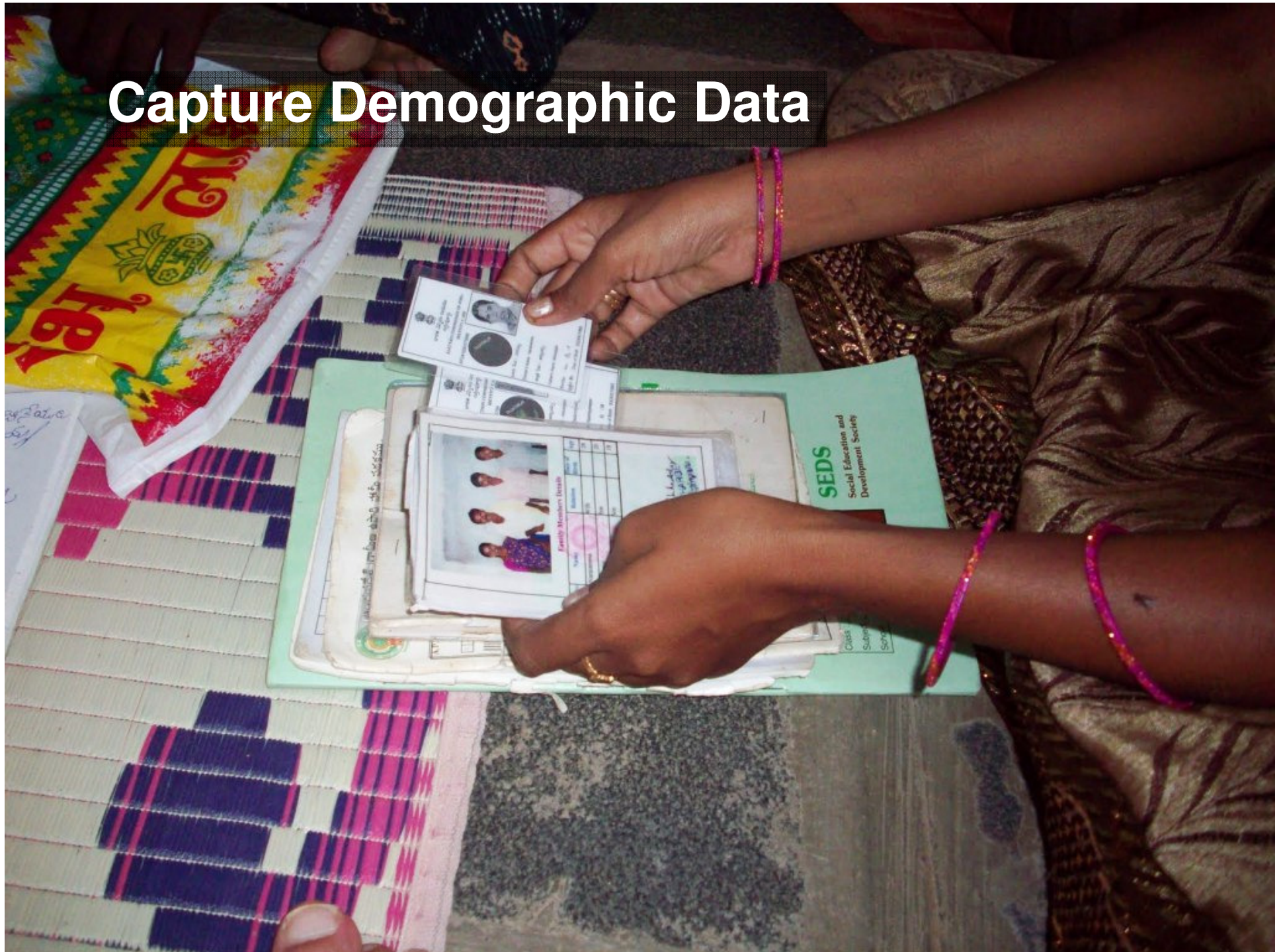
House 1 Type		
Now Electrified? (Yes/No/Disconnected)		
House 1 Length (Feet)		
House 1 Breadth (Feet)		

Space to build Biogas Unit? (Yes/No)	
Distance from Kitchen (Feet)	

House 2 Type		
Now Electrified? (Yes/No/Disconnected)		
House 2 Length (Feet)		
House 2 Breadth (Feet)		



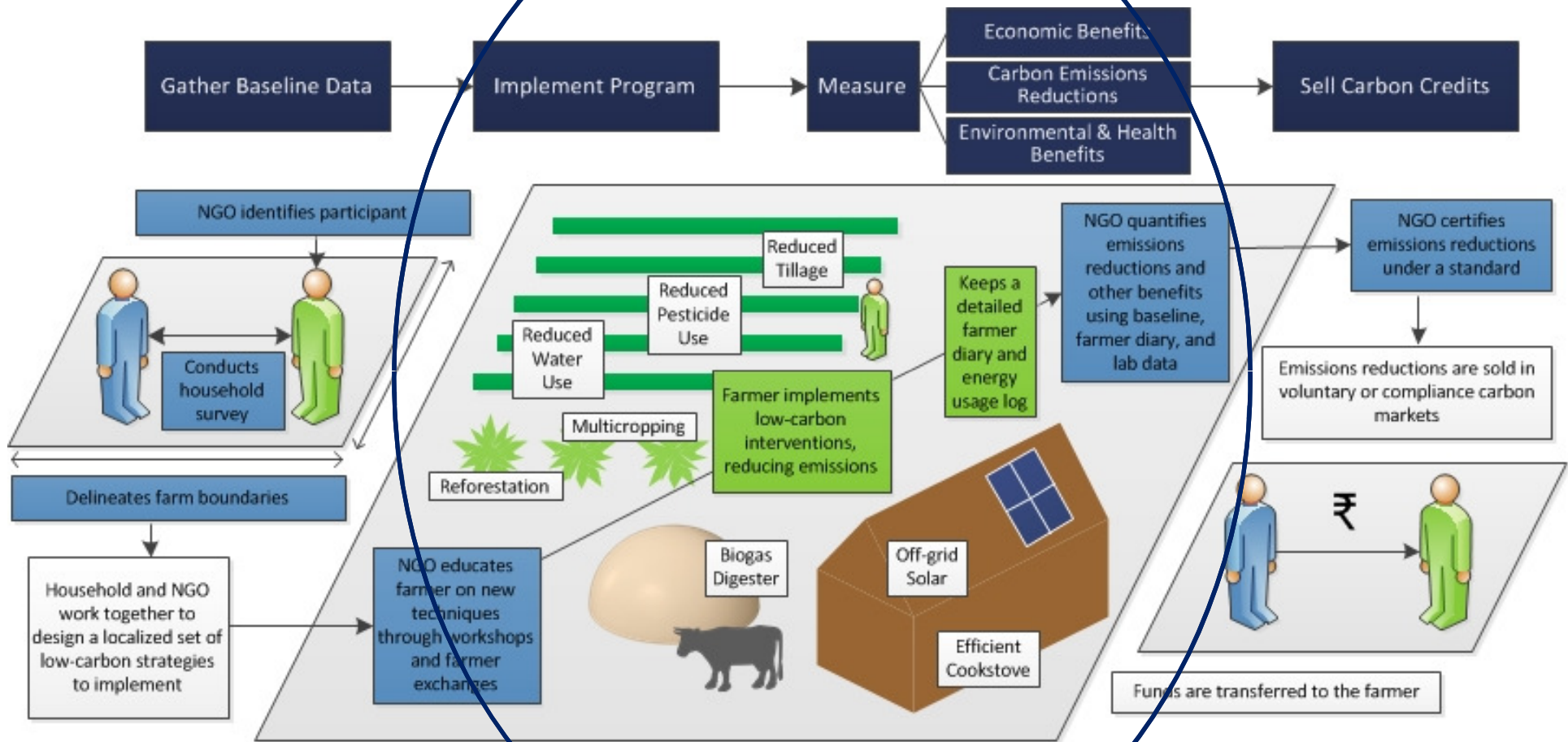
Capture Demographic Data



Delineate Farm Boundaries



Our Approach







Monitoring and Reporting

BIOGAS COM PROJECT OF BCS
DAILY USAGE MONITORING BOOK

Unit ID: 5587
Name: 182.025 Eastwara Reddy Year: 2011

Month: December

Cows/Bufaloes: 3 Sheep/Goats: 0

Date	Not Used	< 2 hrs	2 to 4 hrs	> 4 hrs
1st				
2nd				
3rd				
4th				
5th				
6th				
7th				
8th				
9th				
10th				
11th				
12th				
13th				
14th				
15th				
16th				
17th				
18th				
19th				
20th				
21st				
22nd				
23rd				
24th				
25th				
26th				
27th				
28th				
29th				
30th				
31st				
Month Total				

Area: 17.0
Bldg: 17.0

Monitoring and Reporting

Farmer Diary format – Basic template + Economic data

Basic data field Economic data Date

Land ID		Year	
Calculated area		Season	

1. Crop Details

Date of sowing	Crop	Variety	Seeds (kg)	Labour involved (person days)	Labour expenses	Cost of seed
/ /						
/ /						
/ /						

2. Tillage

Date	Method	Labour involved (person days)	Labour expenses	Any other cost involved
/ /	Tractor/country plough/others			
/ /				
/ /				

3. Weeding

Date	Method	Labour involved (person days)	Labour expenses	Any other cost involved
/ /	Manual/gentle plough/weeder			
/ /				
/ /				

4. Chemical Fertilizers

Date	Name/Type	kg	Labour involved (person days)	Labour expenses	Total expenses on purchase
/ /					

5. Manuring (FYM, Compost, Jeevamrutha, etc.)

Date	Name/Type	kg	Labour involved (person days)	Labour expenses	Expense on purchase/preparation
/ /					
/ /					
/ /					
/ /					

6. Chemical Pesticides, Herbicides, etc.

Date	Name/Type	kg	Labour involved (person days)	Labour expenses	Total expenses on purchase
/ /					
/ /					
/ /					

7. Biological Pest Control

Date	Name/Type	kg/litre	Labour involved (person days)	Labour expenses	Expense on purchase/preparation
/ /					
/ /					
/ /					

8. Harvesting

Date	Crop	kg	Labour involved (person days)	Labour expenses
/ /				

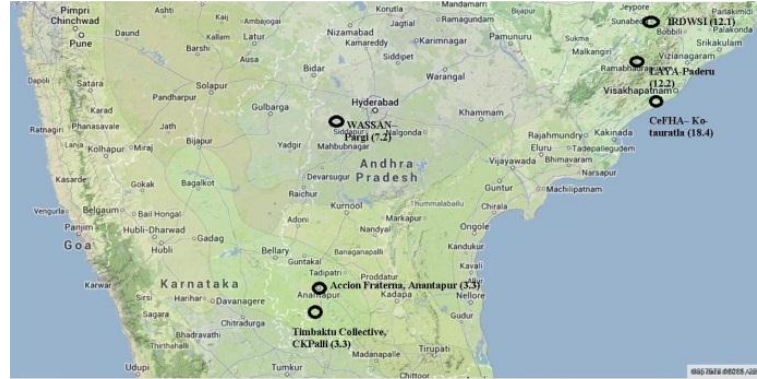
Measuring Emission Reductions



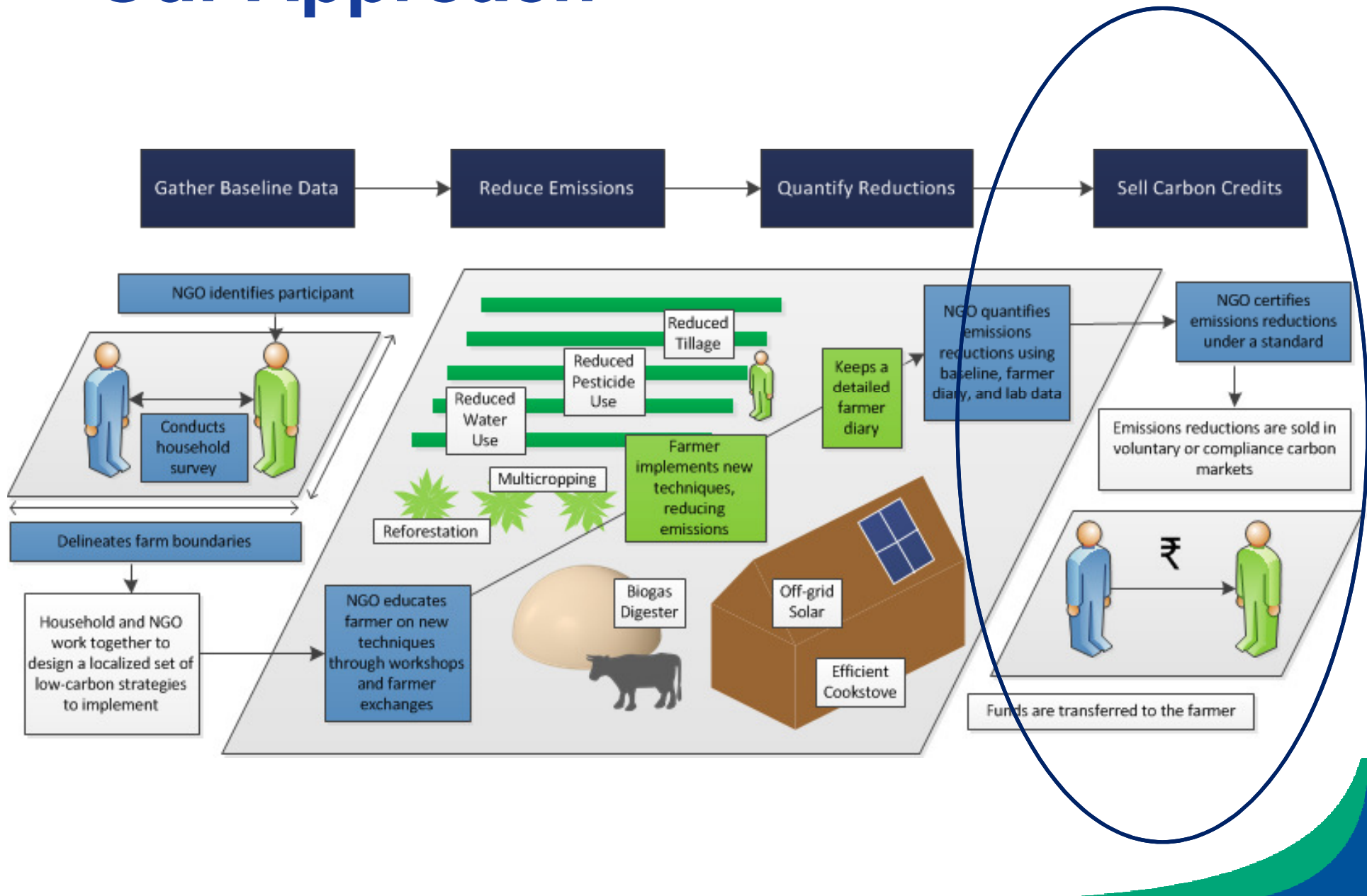
Measuring Emission Reductions



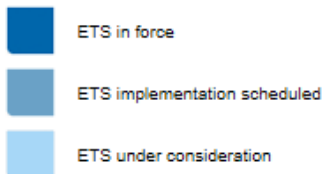
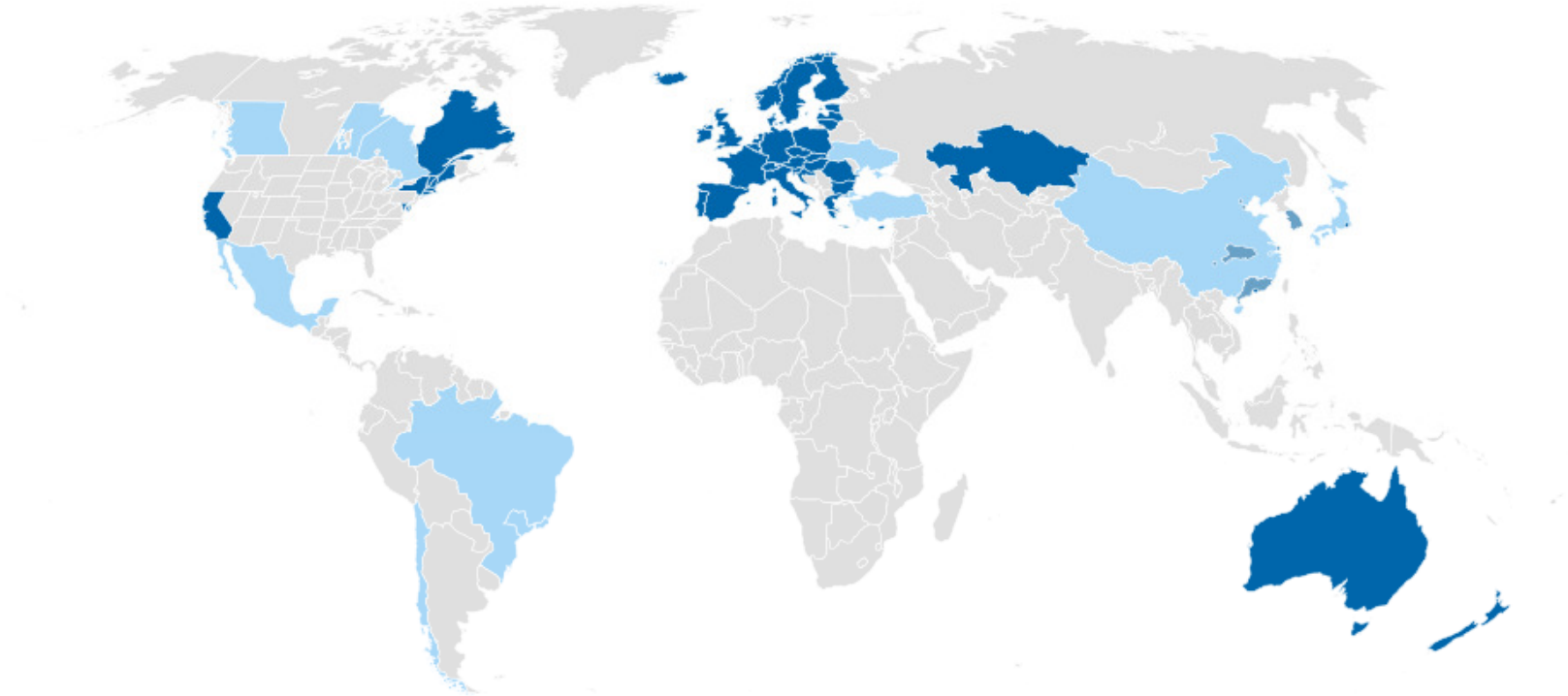
AEZ's and Cropping Systems



Our Approach



ETS in force, scheduled or under consideration



[Contact Us](#)

[Disclaimer](#)



Developed in cooperation with

Source: International Carbon Action Partnership (ICAP)

Measuring Success

- Emission reductions
- Development Impacts
 - Education
 - Economic impact
 - Health impact
 - Gender impact
 - Caste
- Keeping data and hence the conversation alive



Key Points

- Data driven approach to development and Climate Change
- Transparent process
- Interventions have triple win impacts
- Strong monitoring & reporting
- 3rd Party Verification (verifiable emission reductions, development impacts, etc)



What we have learned?

- Created an **open operating** system that can support many applications
- **Embrace complexity** and have an integrated and holistic approach – its good in the long run
- Participatory approaches are more resilient
- It is possible to have a low carbon rural development pathway that meets local needs and aspirations
- More effort is needed to get good farm emissions data
- **Applications** are not permanent (people will move from a better cookstove to biogas, lpg, etc)

BUT the fundamentals of the operating system are important



From projects to policy (sub-national and national approaches)

- A clear development approach that also supports climate mitigation and adaptation has to be articulated
 - DEVELOPMENT is the main agenda
 - Its about Resource use efficiency
 - National and local interest is being served
- Resources - State Budget + Market linkages incl C markets + Debt + Grants + ODA + Equity
- Who has convening power? Which government institution is the right broker?

Have a bottom up and top down approach – leverage both local and govt institutions





Courtesy German Wind Energy Association/© BWE / Thorsten Paulsen

Thank you!

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rahuja@edf.org

