



# Design Thinking for Green Innovation

Jean-Louis Racine, The World Bank

Parsons School of Design, December 12, 2016

A man in a white lab coat is working on solar panels. He is holding a long, thin metal strip. The background shows a cloudy sky and a building. The text is overlaid on the image.

## The Climate Technology Program

Catalyzing green technology sectors through startups and growing businesses



● CIC countries ● Planned CIC countries

The clean tech revolution in  
developing countries:  
A tale of two product markets



# Clean cookstoves

**1.9** million lives a year

Every **16** seconds

**3** tons of carbon per year





CleanStar's smallholder farming partners benefit from urban cooking fuel market



World's First Sustainable Cooking Fuel Plant



Maputo retail network:  
Company stores + small business resellers





# Reality

- Consumers resistant to change
- Durable cookstoves lead to infrequent purchases
  - Low prices and margins
- Expensive to educate and create awareness
- Limited reach due to poor transportation and communication infrastructure
- Absence of banking makes HR expensive

# Misadventures in invention-led development



M-KOPA SOLAR

A lot more light for less with M-KOPA Solar!

40/-  
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HOME SOLAR SYSTEM

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POWER  
AFRICA



# Solar home systems





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AVAILABLE  
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MWANGAZA MASHINANI

M-KOPA SOLAR  
AVAILABLE  
HERE

M-KOPA SOLAR  
MWANGAZA MASHINANI



MPESA

LTD.

TOP UP  
HERE

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Where will gamechanging  
innovations for developing  
countries come from?

## The Climate Technology Program's challenge statement:

“How might we help startups and growing businesses catalyze new markets for clean technology?”

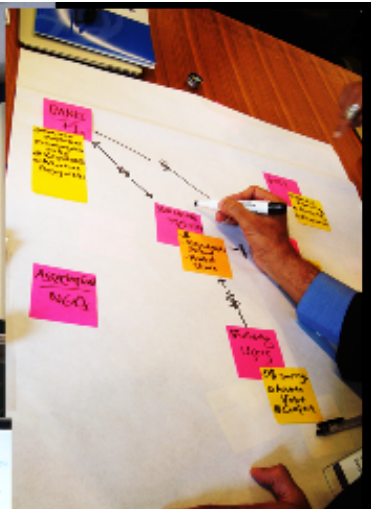


# Why use design?

Because we have no idea what we are doing

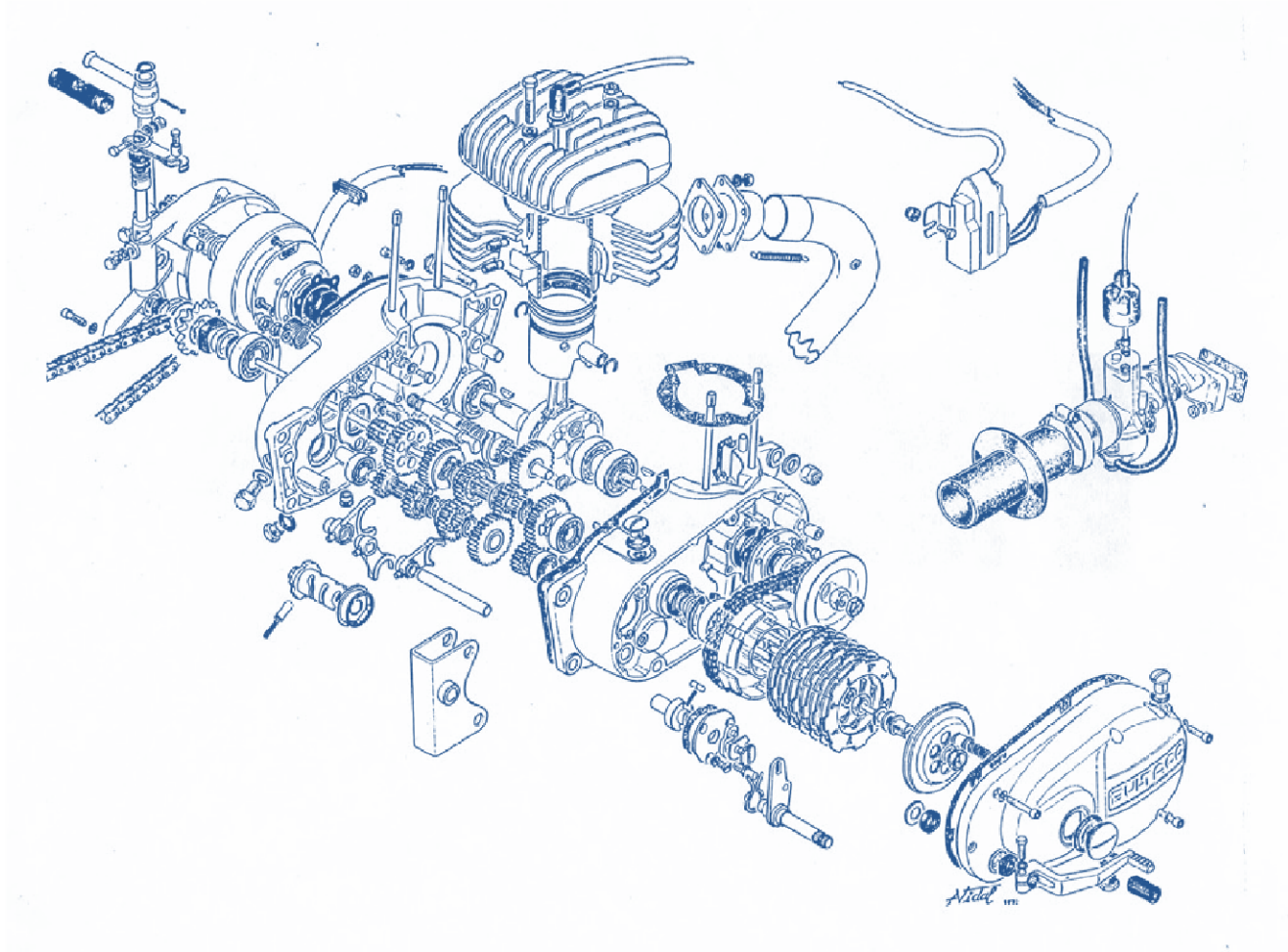
A more technical answer

- Solve complex problems
  - Creativity and iteration
  - Systems thinking
- Create solutions that will actually work (i.e. minimize implementation risk)
  - Human-centered
  - Small bets



# Complex systems







# Co-creation



# Prototyping

# Storyboarding



# Think like an anthropologist: quality not quantity



# INVESTMENT FEATURE STORE

External  of Support





   

Stage of Development



      
 



Social & Enviro Impact/Sl vs  
Traditional Returns

Make a Feature

Experience of Finance

Firm Size

Geography

Firm Type













# Empathy



## “Secretive Autodidact” persona

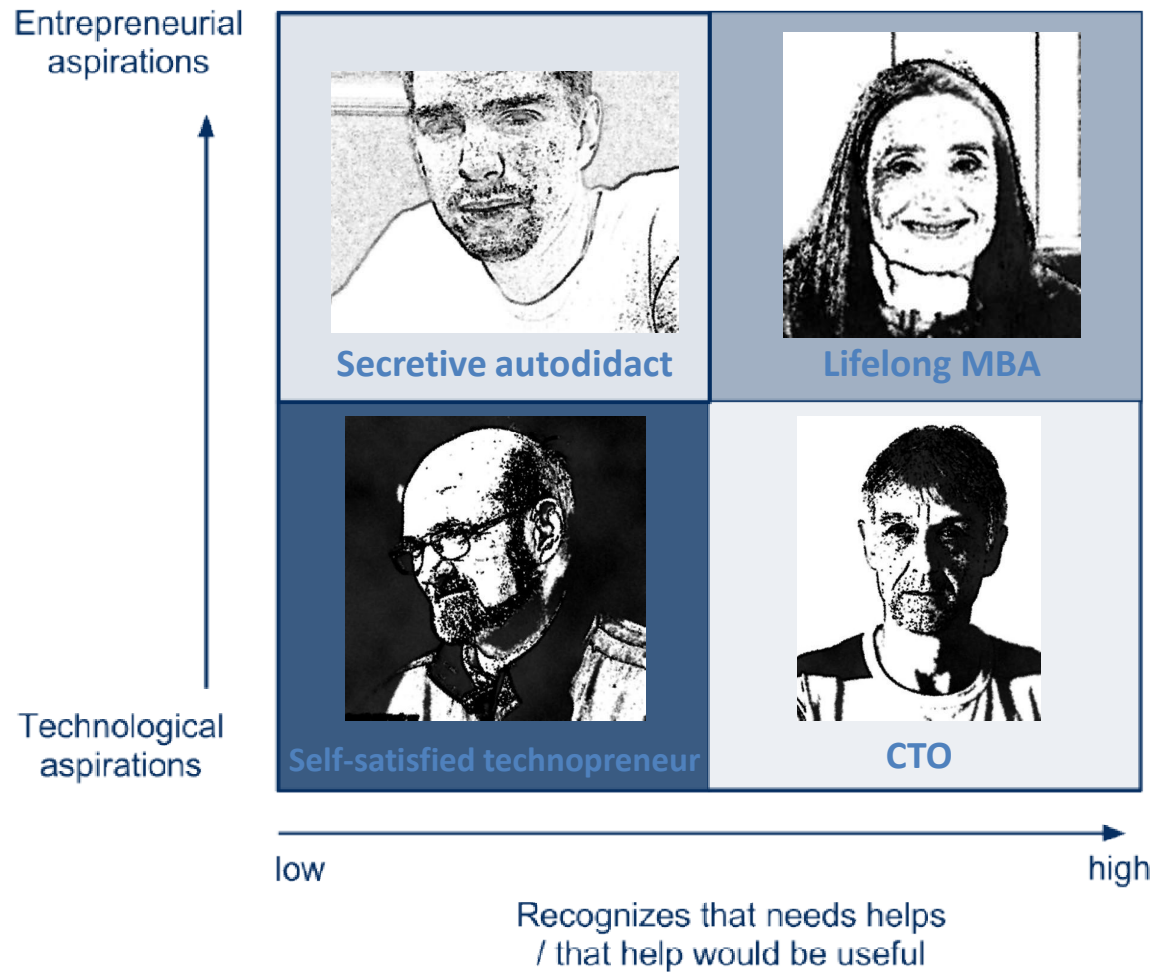
Boris is 28 and single. One year ago, together with a friend he launched a specialized computer-aided-design (CAD) contracting company and now has a few regular clients. He has an undergraduate degree in mechanical engineering from a large university in Kazan and had been working as a CAD designer in an established engineering consultancy company for a few years before quitting to start his own business. Boris works long days trying to deliver high-quality work to clients, and find new clients and does not have much of a chance to enjoy the city’s social scene. He and his co-founder work out of their separate apartments and communicate over the phone or email.

Boris would like his company to transition from designing custom products for clients to creating, designing and marketing its own products. They have already developed a number of concepts for a wide variety of products including one-seater electric vehicles, specialized kitchen appliances and specialized ergonomic components for industrial equipment. Boris knows that his talent, product portfolio and persistence put him at a considerable advantage over competitors in each of these markets. To learn about business, Boris has borrowed business books from an MBA friend of his and is now fairly confident about his business skills.

Boris and his co-founder have not yet decided which market to address first. They have developed a business plan with various scenarios. They are keeping the business plan and much of their product portfolio confidential for now to avoid getting their ideas stolen. In fact that avoid talking about their business to outsiders. They spend long hours strategizing about the best option internally.

Boris putting a lot of effort into raising fund-raising, pursuing angel investors and venture capital funds. He is sure that a few million rubles will put them a definite road to success.

# Entrepreneur archetypes



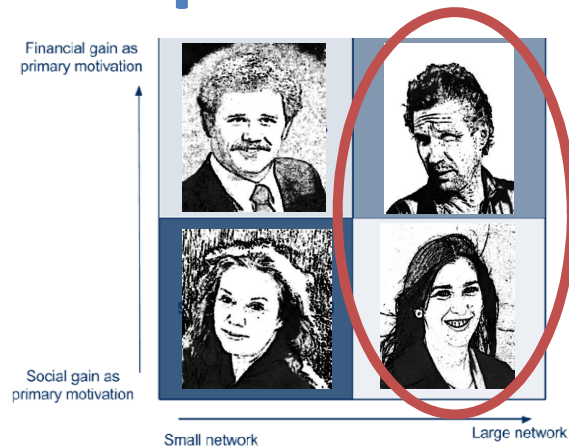
# Entrepreneurs



# Sponsors



# Implementers



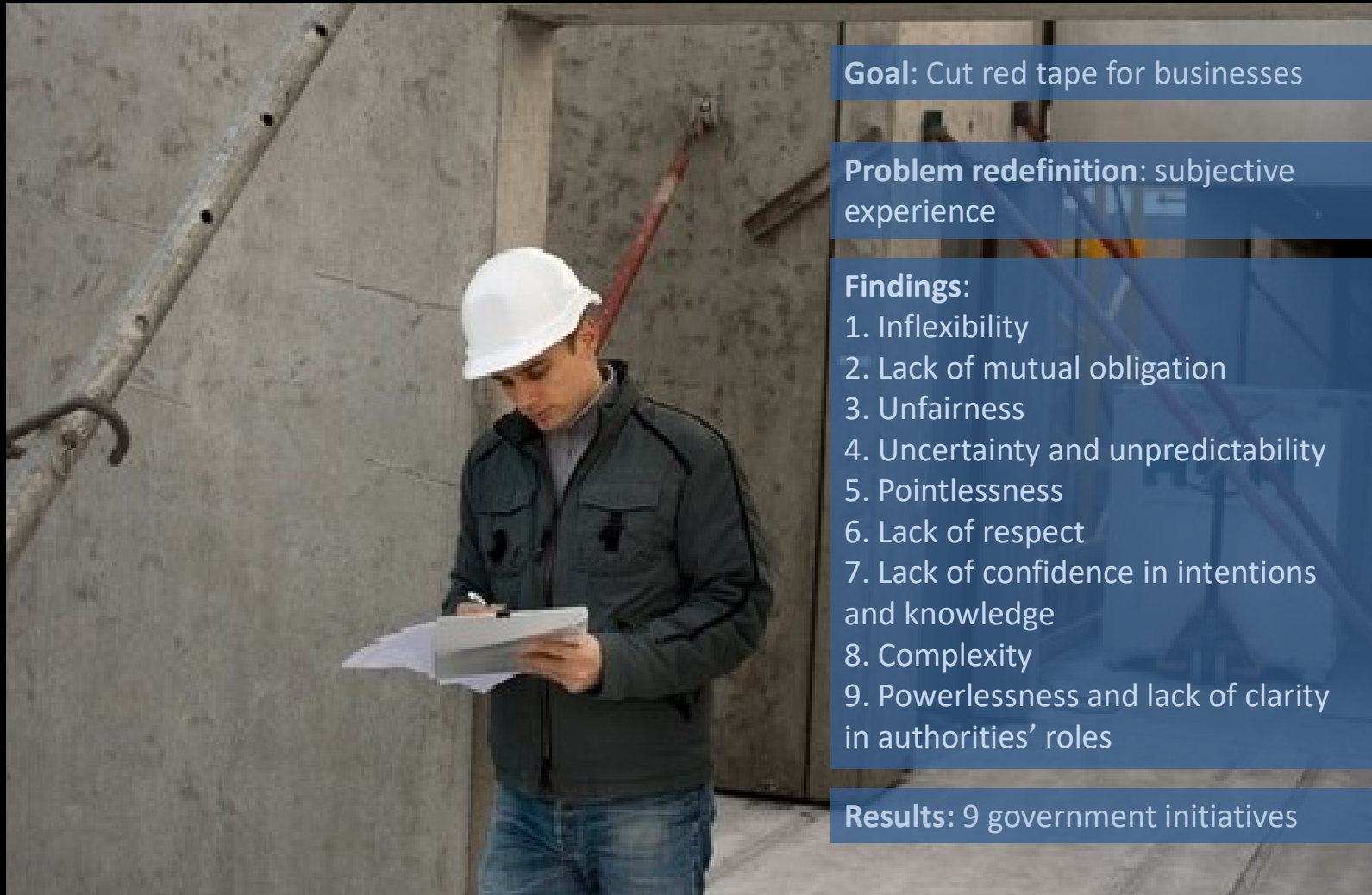
# Experts





# Observation

# Danish “Burden Hunters”



**Goal:** Cut red tape for businesses

**Problem redefinition:** subjective experience

**Findings:**

1. Inflexibility
2. Lack of mutual obligation
3. Unfairness
4. Uncertainty and unpredictability
5. Pointlessness
6. Lack of respect
7. Lack of confidence in intentions and knowledge
8. Complexity
9. Powerlessness and lack of clarity in authorities' roles

**Results:** 9 government initiatives

# Divergence and convergence

# But how do you make sure you are picking the right idea?

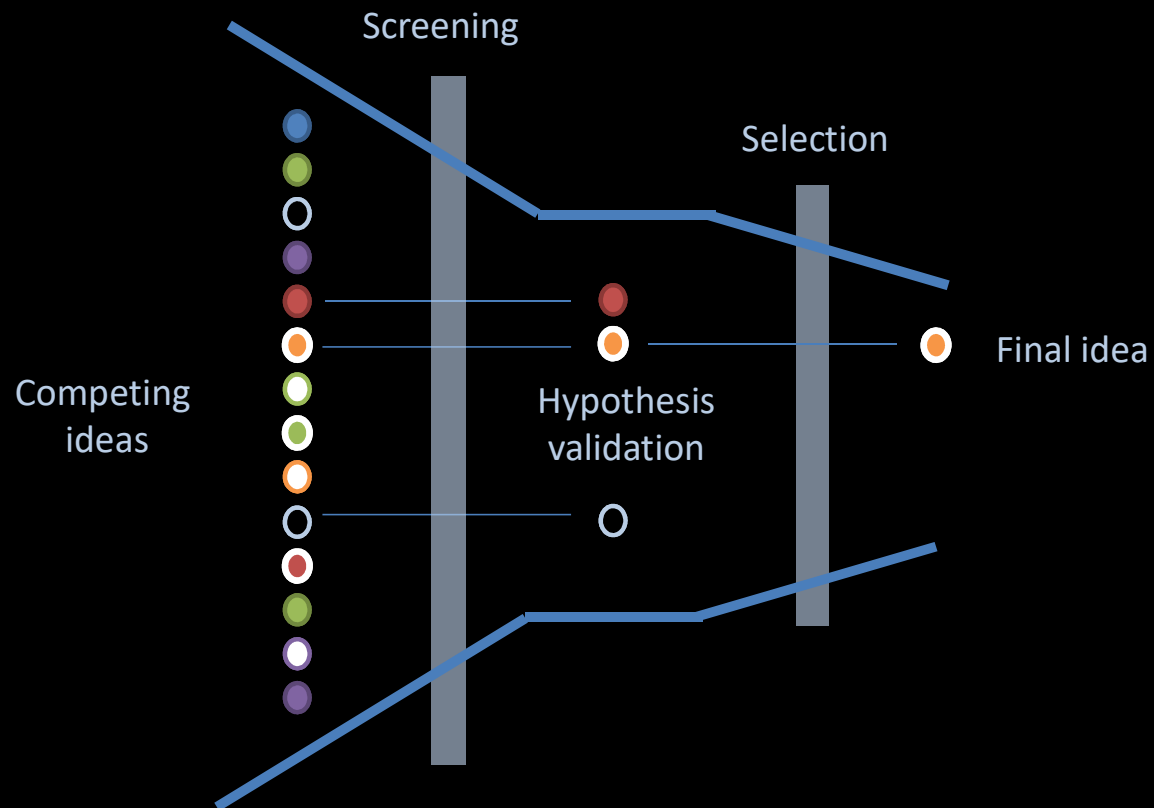


The **confirmation bias** leads people to:

Interpret ambiguous information in line with expectations

Seek information that confirms expectations

# Validate hypotheses



# Managed convergence

Screening Criteria	Benchmark: TexDrive	Concepts					
		1: Tech. Commercialization Service	2: Global Broker	3: Expansive Entrepreneurship Network	4: Full Package Enterprise Development	5: Exclusive Trust Network	6: Design Network
<b>Financial sustainability:</b>	-	-	-	-	-	-	-
....Ability to generate cash flow	0	0.75	0.00	-1.00	0.25	0.50	0.25
....Low need for operational subsidies (i.e. public funding)	0	0.00	0.00	0.00	0.00	0.00	-0.25
<b>Low Implementation risk:</b>	-	-	-	-	-	-	-
....Ability to find implementing partner	0	-0.75	-1.00	-1.00	-1.00	1.00	-0.25
....Ability to enroll ventures	0	0.50	0.00	0.00	1.00	1.00	0.00
....Ability to enroll experts	0	1.00	1.00	-1.00	1.00	1.00	-0.25
....Ability to reach critical scale	0	0.00	-1.00	-1.00	-1.00	0.50	-0.25
<b>Value proposition for ventures</b>	-	-	-	-	-	-	-
....Builds management capacity of ventures	0	0.25	0.00	1.00	1.00	1.00	-0.50
....Provides role models to ventures	0	-1.00	-1.00	0.50	-0.50	0.25	-0.75
....Provides ventures with high-quality connections	0	0.00	0.00	0.00	1.00	1.00	-0.25
....Helps ventures validate ideas (and fail fast / succeed fast)	0	0.50	0.00	0.00	0.00	-0.50	0.00
....Helps ventures become global	0	0.00	0.00	0.00	0.00	0.00	0.00
....Helps ventures understand their needs	0	1.00	1.00	1.00	1.00	-0.50	0.25
....Gives ventures quick access to relevant specialized skills	0	1.00	1.00	0.00	1.00	-0.50	0.50
....Motives are transparent to ventures	0	0.00	1.00	-1.00	0.00	-0.75	0.00
....High perceived value/cost to ventures	0	0.00	0.00	-0.25	0.00	0.75	0.00
<b>Value proposition for sponsors</b>	-	-	-	-	-	-	-
....Gives sponsors exposure to ventures, experts, and others	0	0.00	0.25	1.00	0.00	1.00	0.00
....High perceived value/cost to potential sponsors	0	0.25	0.00	-0.25	0.25	1.00	-0.75
....Gives sponsors greater visibility	0	1.00	1.00	1.00	1.00	1.00	-0.25

**Reduce complexity  
through bite-sized  
thinking**

What shared challenge can we collaborate on?

**INDIVIDUAL PROBLEM STATEMENTS**

What are we trying to achieve?  
Background and context  
What is success?  
Potential challenges

Stakeholders and sources of data  
Scope definition

**DRAFT CHALLENGE STATEMENT**

**CONSOLIDATED PROJECT CHALLENGE STATEMENT**

How can we design, test + document interventions for visible impact on high growth green SGBs in SA using international support + finance in 20 mths? (replicable in other dev. countries)

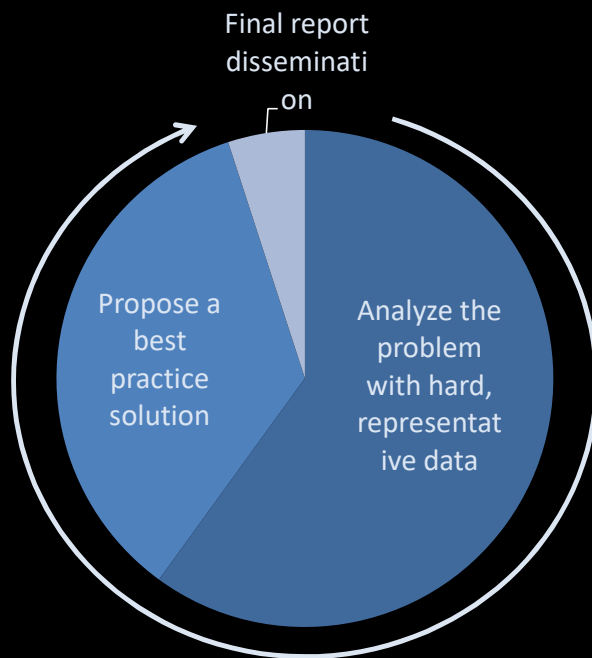
**POLISHED PROJECT CHALLENGE STATEMENT**

How can we design, test and document interventions that are replicable in other developing countries for visible impact on high growth potential green SGBs in South Africa using international support and finance?

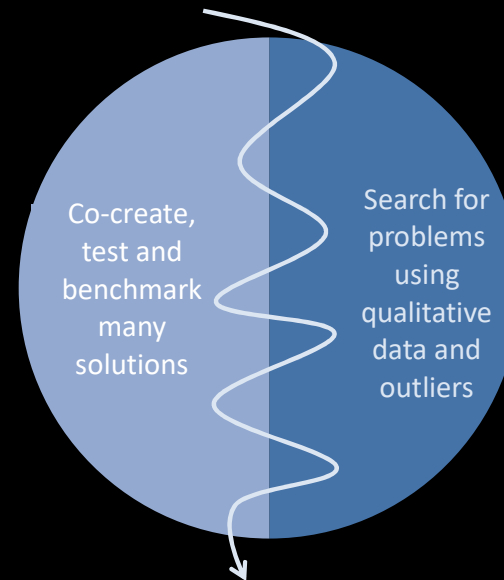


# How would you plan your TA?

## Analytical thinking



## Design thinking



# Design thinking

tool for conceiving **solutions** to  
**complex** problems while  
**minimizing risk**