MARKET DEVELOPMENT & SUSTAINABLE SANITATION SUPPLY STRENGTHENING IN BIHAR, INDIA

Bihar

- 30% have improved sanitation
- 89% pop. live in rural areas; 68% poorest quintile
- 12% of children <5 with diarrhea
- Govt subsidy for sanitation

The Problem

- Insufficient attention paid to consumers
- Fragmented private supply chain
- Ineffective subsidy
- Poor access to credit (for households and biz)

- Minimal attention to maintenance

3SI Plan: Supply & Demand

Market-based solutions to sanitation that:

- makes investment attractive to *households*
- makes investment attractive to *private sector*

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Implementation

Phase 1

Phase 2

Phase 3 (analyze)

Year 1:

-Landscaping

-Model development

Year 2:

-Pilot model(s)

-Evaluate

-Select

Years 3-5:

-Scale up (8 districts)

-Demand creation

Response 1: Leverage is fundamental

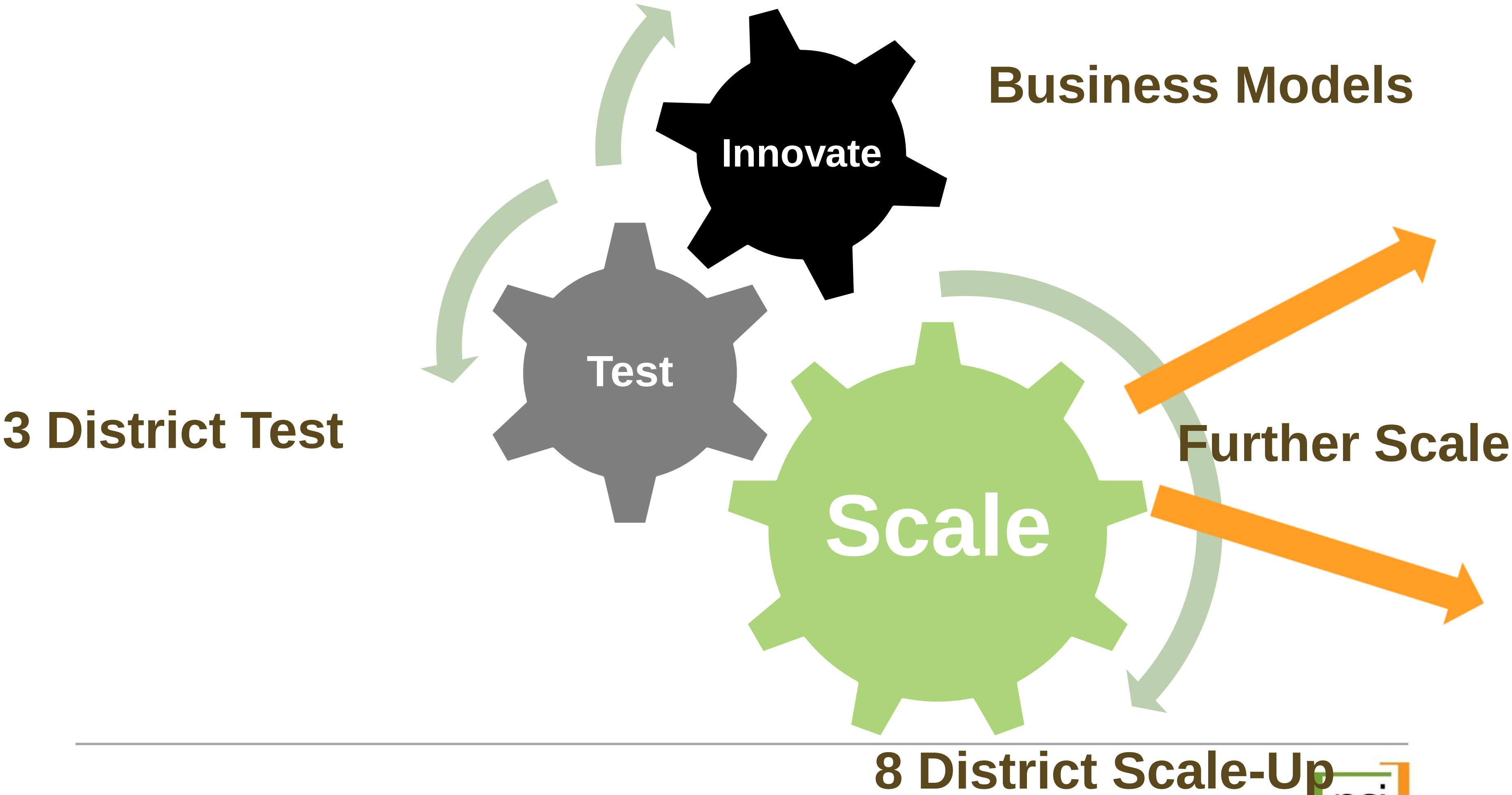
- Three “Delivery Platforms” to Leverage

Government: **Significant resources available through NBA + NREGA. Discover effective and efficient ways to use those.**

Private Sector: **Expand service delivery--availability, accessibility, affordability (+desirability).**

Communities: **Informed consumers drive demand for services, accountability of providers.**

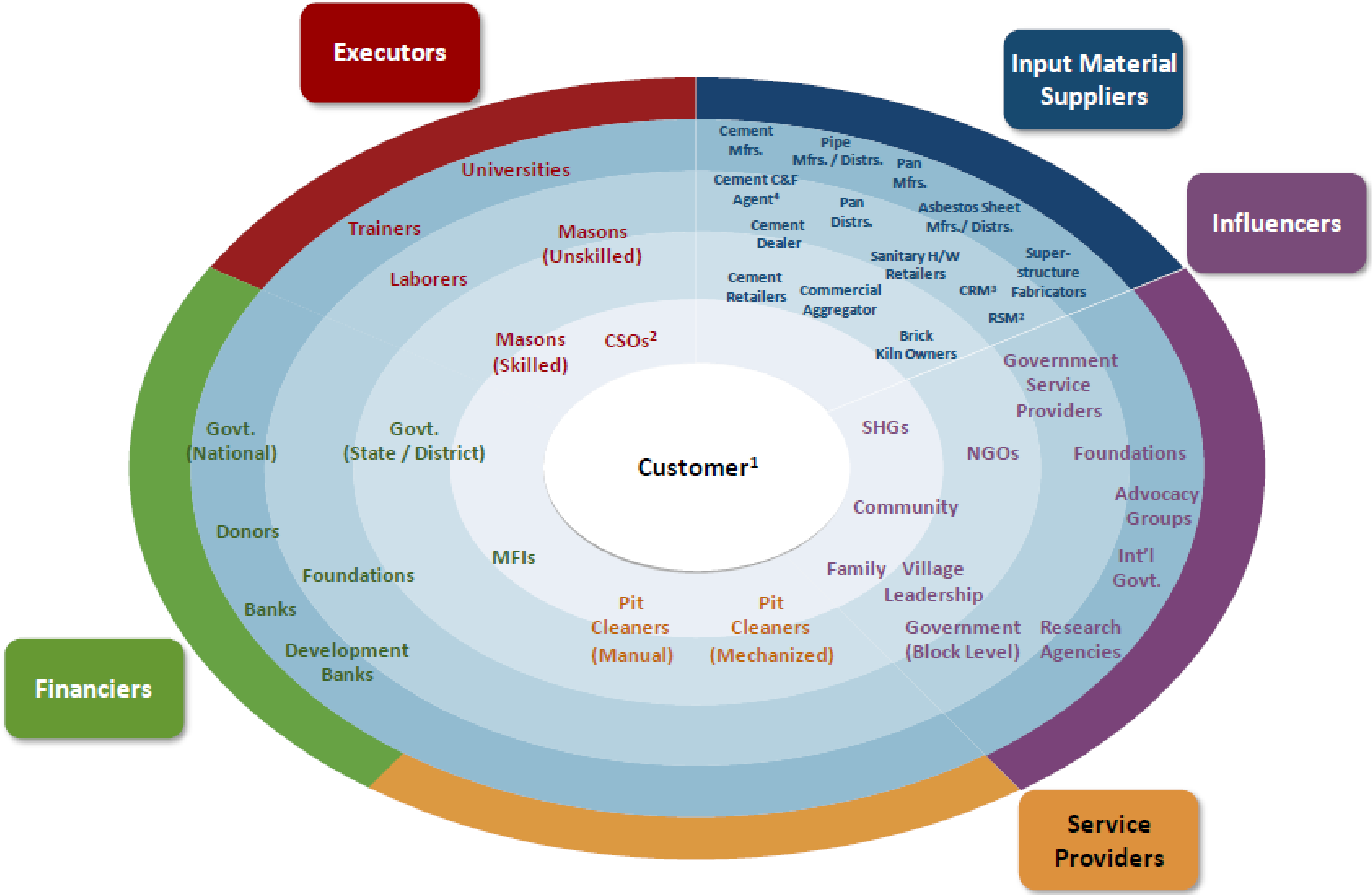
Response 2: Innovation vs. Scale



Formative research steps

- Sanitation Landscape
- Understanding Customer Behavior and Preferences
- Value Chain Analysis
- Analogous Sustainable Models

A Bihar Sanitation Landscape | Sanitation Ecosystem



[1] Customers include APL, BPL (red), BPL (yellow) and Mahadalit households; [2] Rural Sanitary Marts; [3] Cement Ring Manufacturers; [4] Cement Carrying & Forwarding Agent

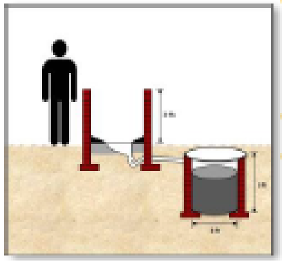
Note: Closeness to centre indicates level of influence on customer, with entities in closer circles having greater influence

A Bihar Sanitation Landscape | Product Options

Toilets observed in rural Bihar tend to be clustered in two cost segments: below INR 8,000 or over INR 20,000 (USD 160-400)

TSC Toilet (CSO)

***Cost:* INR 2,000-3,000** *(USD 40-60)*



- **Pit:** 3 ft. deep, 1.5 ft. radius; honeycomb structure; low quality bricks
- **Pan:** Rural pan
- **Superstructure:** 3 ft. height; walls made of lower grade brick and cement, cloth/ jute for door

No Observed Toilets

Cost: INR 8,000-20,000 *(USD 160-400)*

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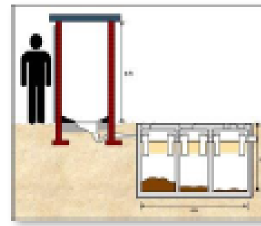
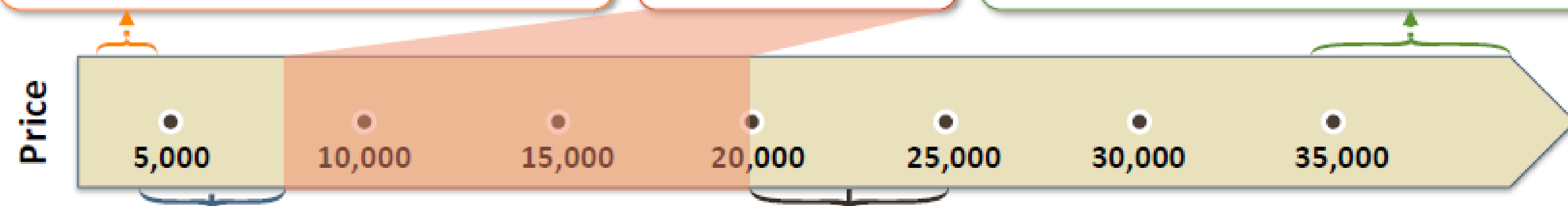
Septic Tank Toilet

***Cost:* INR 35,000-60,000** *(USD 700-1,200)*

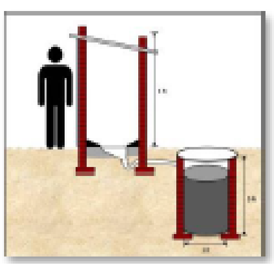


- **Pit:** Septic tank with 3 chambers; inside plastering; ~6ft. (L) x 5ft. (B) x 9 ft. (D)
- **Pan:** Urban Pan
- **Superstructure:** High quality superstructure with cement roof, wooden door, and plastering inside & outside



Private Toilet (Leach Pit)

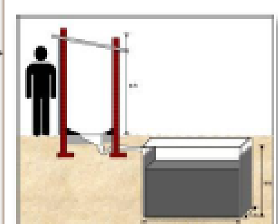
***Cost:* INR 4,000-8,000** *(USD 80-160)*



- **Pit:** 3 ft. deep, 1.5 ft. radius; lined with high quality bricks
- **Pan:** Rural pan
- **Superstructure:** Variable
  - Low quality: Same as TSC Toilet (CSO)
  - High quality: 6 ft. height; brick walls, asbestos roof

Rectangular Leach Pit Toilet

***Cost:* INR 20,000-25,000** *(USD 400-500)*



- **Pit:** Rectangular leach pit; no plastering on inside; ~ 6ft. (L) x 5ft. (B) x 9 ft. (D)
- **Pan:** Urban Pan
- **Superstructure:** 6 ft. height; brick walls, asbestos roof and tin door

Note: Exchange Rate: USD 1 = INR 50; Source: Primary Research; Monitor Deloitte Analysis

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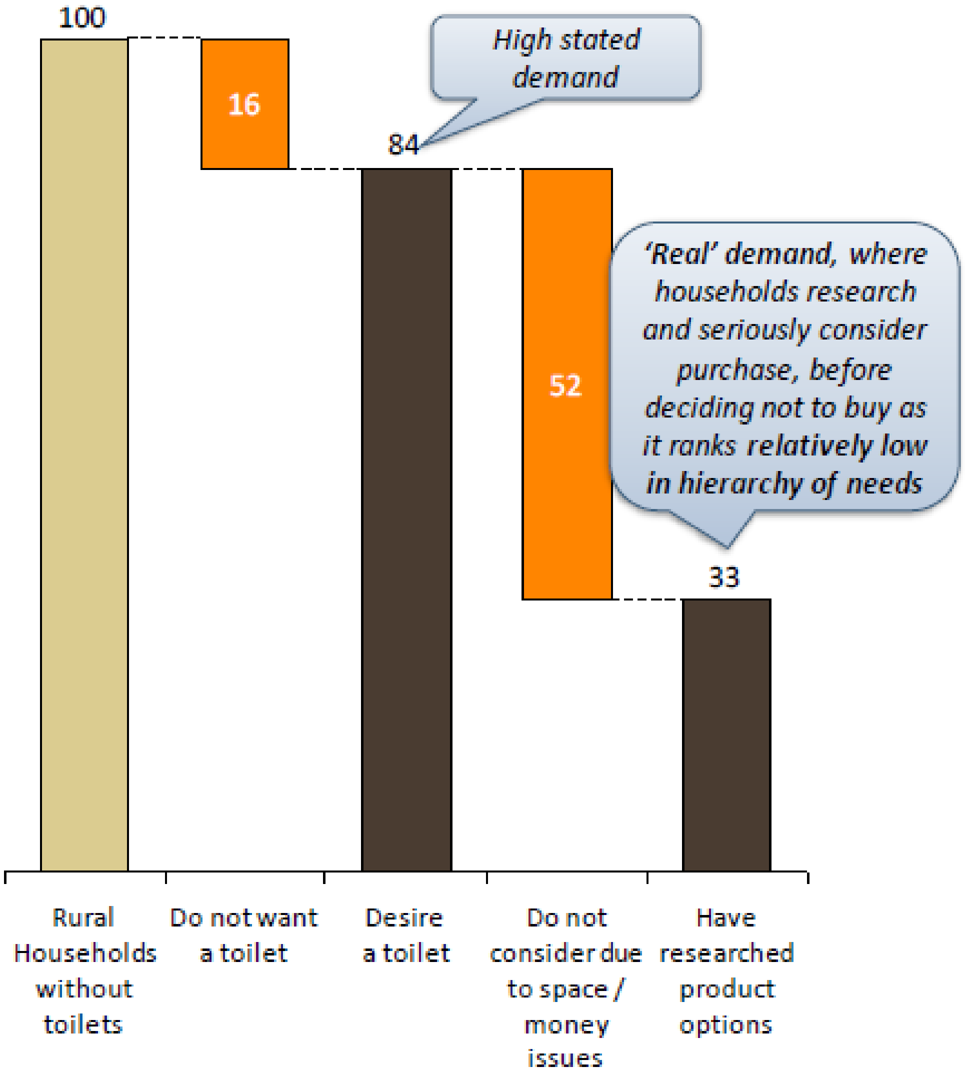
C Customer Behavior | Key Lessons [1/2]

Demand exists – ~84% of households indicate that they want a toilet; 33% have actually researched potential product options before deciding not to purchase due to affordability issues

Demand for Toilets in Rural Areas (%)



Why do Customers Want a Toilet?

Safety (49%)

Especially of female family members

- *"It is difficult for women to go outside for defecation [there is danger of assault]."*
- *"There is a fear of animal and snake bites when you go outside."*

Conven-ience (45%)

Especially in the rainy season, and during odd hours / illnesses

- *"Going outside requires at least half an hour. It would be easier if the toilet were in the house."*
- *"Going outside becomes difficult at odd hours or when someone falls ill."*

Privacy (24%)

Need for privacy / modesty of women

- *"Women get no privacy when they go outside for defecation, and have to travel very far."*

Health is not an important driver for wanting a toilet; only 1% indicated health as an important motivator

Source: Primary Research, Monitor Deloitte Analysis

Segmentation Map | Overview

<table>
<tr><th colspan="2">SEC (New)</th><th colspan="2">A / B / C / D [1]</th><th colspan="2">E1</th><th rowspan="3">E2</th><th colspan="3">E3</th></tr>
<tr><th colspan="2">Prior Use</th><th rowspan="2">No</th><th rowspan="2">Yes</th><th rowspan="2">Yes</th><th rowspan="2">No</th><th rowspan="2">Yes</th><th colspan="2">No</th></tr>
<tr><th colspan="2">Family Type</th><th>Nuclear</th><th>Joint</th></tr>
<tr><th>Flood Propensity [2]</th><th>Distance from District Centre (km)</th><td colspan="8"></td></tr>
<tr><td rowspan="2">Low</td><td>45+</td><td rowspan="4">A</td><td rowspan="4" colspan="2">C</td><td rowspan="4">D</td><td colspan="3">E</td><td rowspan="5">J</td></tr>
<tr><td>0 to 45</td><td colspan="3" rowspan="2">F</td></tr>
<tr><td rowspan="2">Medium</td><td>0 to 20</td></tr>
<tr><td>20+</td><td colspan="3">G</td></tr>
<tr><td rowspan="2">High</td><td>0 to 45</td><td colspan="4">B</td><td colspan="3">H</td></tr>
<tr><td>45+</td><td colspan="2">X</td><td colspan="2">B</td><td colspan="4">I</td></tr>
</table>

[1] Includes SECs A1, A2, A3, B1, B2, C1, C2, D1, D2; [2] Defined by no. of years in which respondent's block was flooded, over 2001-2010 (Low: 0-2; Medium: 3-5; High: 6+)

Note: Details of segmentation approach can be found in the "Segmentation Background & Approach" section of the Appendix

C Customer Behavior | Ability to Purchase a Toilet

Across segments, 6-8% of households will be able to purchase a toilet without financing / subsidy, while 10-12% may need financing, and an additional 40-45% may be able to purchase if given part-subsidy

	✓	✓ $	✓ $ ₹	₹ ₹	
Easy to Convert	6-8%[1]	10-12%[2]	40-45%[3]	35-40%[4]	*Hard to Convert*

✓ *Can afford a toilet*
$ *May need financing to purchase toilet*
₹ *May need part-subsidy to purchase toilet*
₹ ₹ *May need full subsidy to purchase toilet*

Ram Prasad, Samastipur

✓

- **50 years old**, and owns a ceiling fan, a TV, and two bighas of farmland
- His **brother lives in Patna city**
- Sees value in a toilet, but **would not pay INR 50,000** for it – would rather buy a 2-wheeler if he saved that much money

Manoj Ravidas, Patna

✓ $

- **30 years old**; works as a **skilled worker in Ludhiana**; also owns some farmland in his village
- **Strong exposure to toilets** and their benefits, in Ludhiana
- Considered building a toilet, but **can't afford** at present; would like a **low-interest loan**

Satyendra Rai, Patna

✓ $ ₹

- **21 years old**; helper in a local shop; no electricity connection
- Wants a toilet, as his mother faces **privacy issues** in open defecation (OD)
- Would like a **part-subsidized toilet**; wouldn't mind borrowing and investing additional funds to ensure quality

Uday Kumar, East Champaran

₹ ₹

- **50 years old**; both he and his sons are **unskilled laborers**
- Cannot find sufficient number of jobs every month – **barely able to cover living expenses**
- Feels concerned for **privacy** of his wife, daughter-in-law, in OD
  - However, **cannot afford to spend on a toilet**

Note: Percentages on arrow denote percentage of households across rural areas of 8 innovation districts, that fall in each affordability group; pen sketches of typical customers in each affordability group are illustrative
[1] Relatively affluent households, owning at least one asset from among TV, fridge, PC / laptop, 2 / 4 wheeler / tractor; [2] Other households in affluent SECs (A/B/C/D), or households in SEC E1 with relatively regular incomes (e.g. salaried, traders, shopkeepers, skilled workers); [3] Households that own at least one asset from among mobile phone, ceiling fan, landholding > 1 bigha; [4] Households from segments I and J, and remaining population from other segments

Source: Primary Research, Monitor Deloitte Analysis

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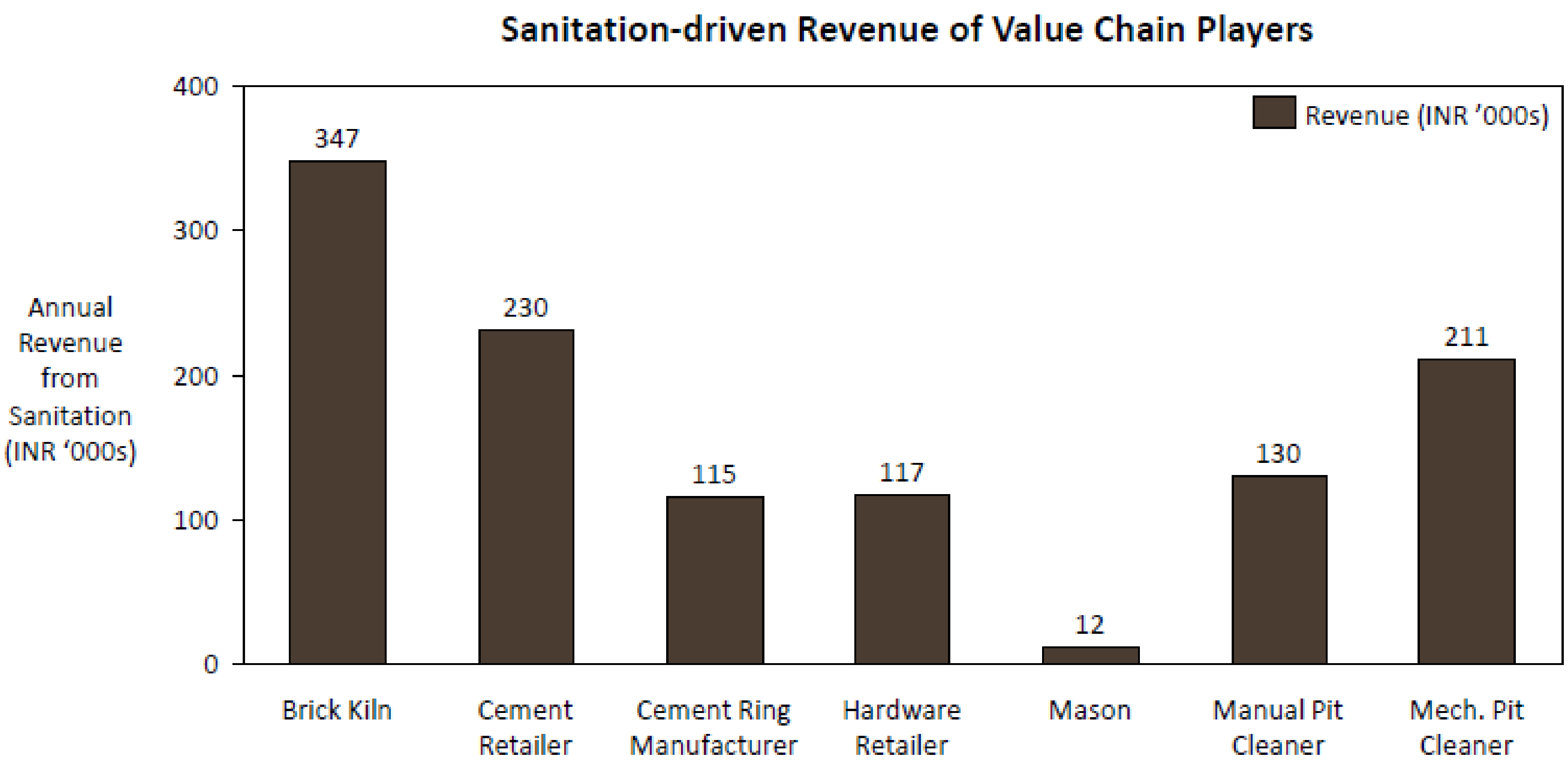
Value Chain | Player Economics

Sanitation forms a small part of overall business for almost all input suppliers; substantial variation in profit margins and revenue across the value chain

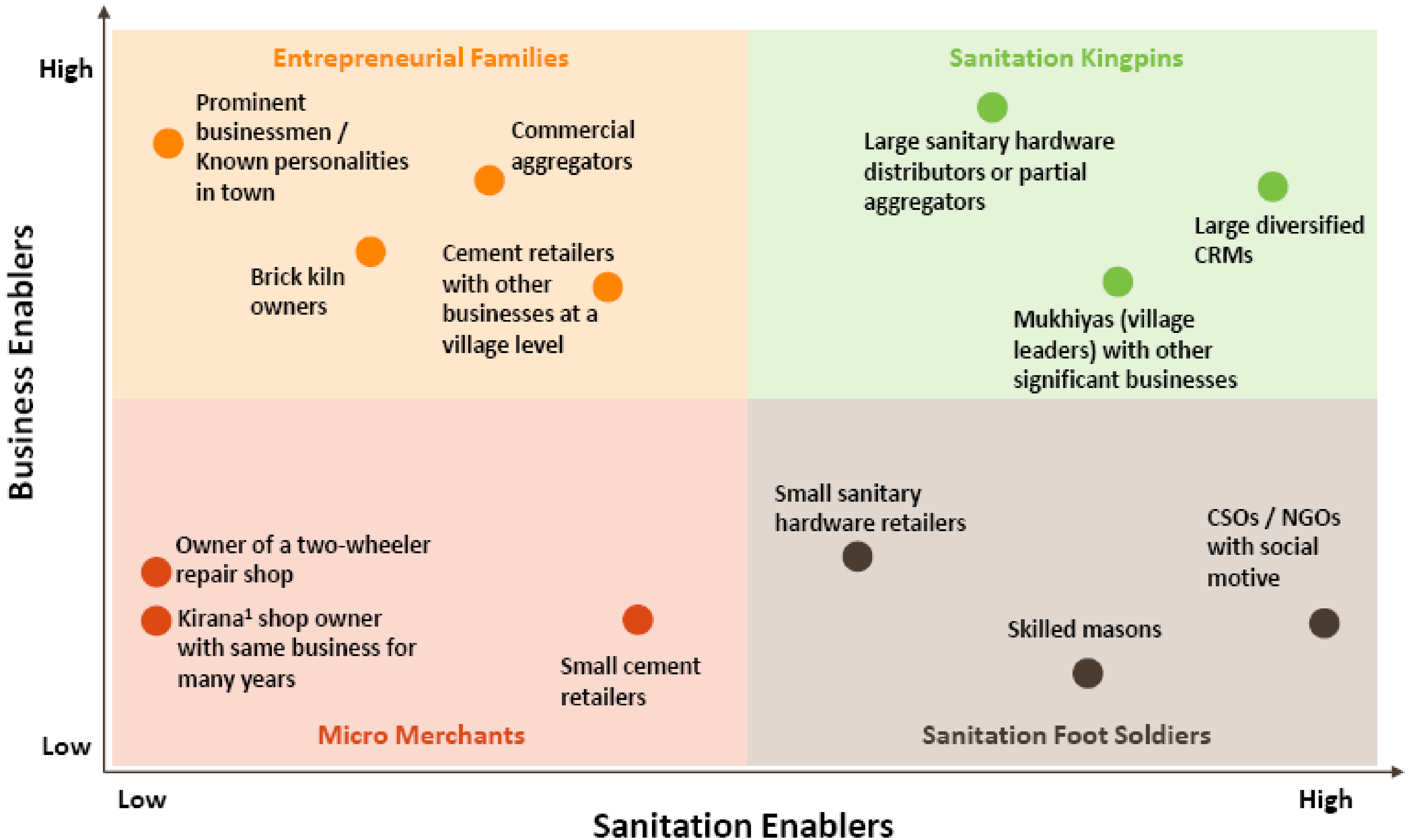


	Brick Kiln	Cement Retailer	Cement Ring Manufacturer	Hardware Retailer	Mason	Manual Pit Cleaner	Mech. Pit Cleaner
% of Revenue from Sanitation	*3%*	*3%*	*~100%*	*3%*	*10%*	*100%*	*100%*
Profit Margin from Sanitation	*33%*	*2%*	*22%*	*7%*	-	-	-

Note: Sanitary Hardware Retailer margins and volumes are only for rural pans; Revenues for Masons, Pit Cleaners (both Mechanized and Manual) are annual wages
Source: Primary Research, Monitor Analysis

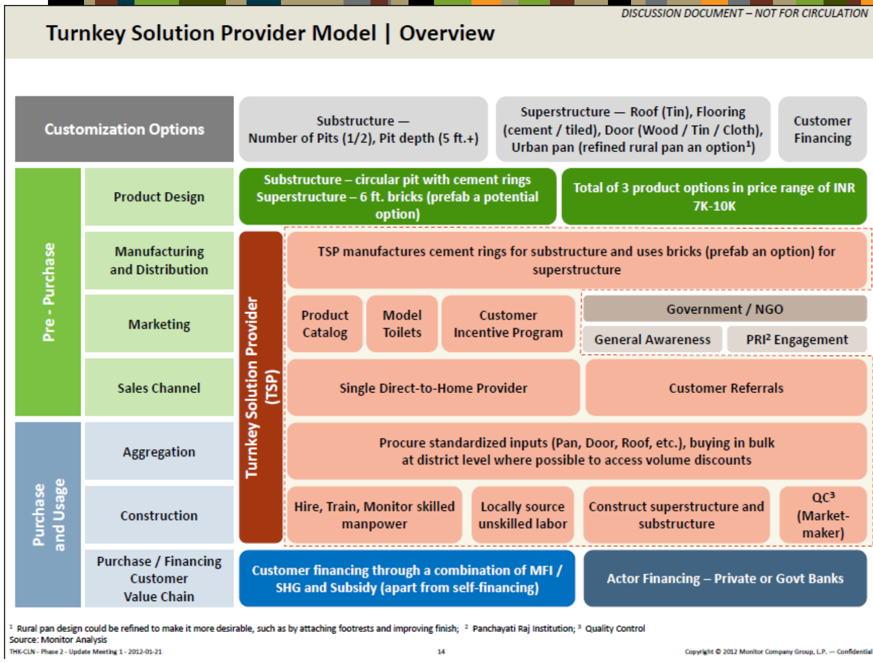
Value Chain | Entrepreneur Archetypes (2/2)

… Entrepreneurial families represent the most attractive archetype for executing sanitation solutions, given their strong business experience and ability to assess and take advantage of new opportunities

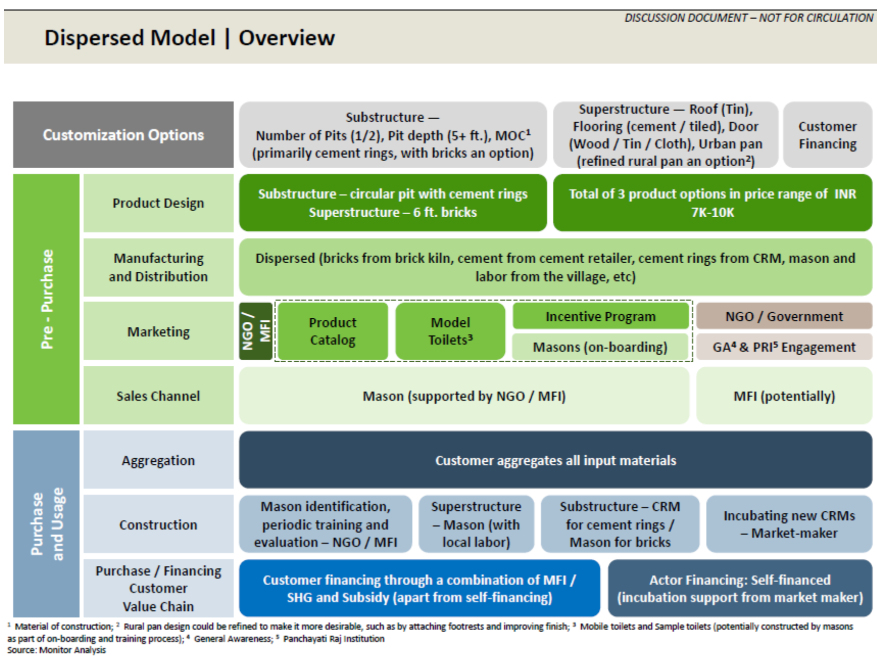


[1] Small local general store

Source: Primary Research; Monitor Analysis



<u>One-stop-shop</u> that manages supply chain end-to-end, from sales/marketing to toilet construction



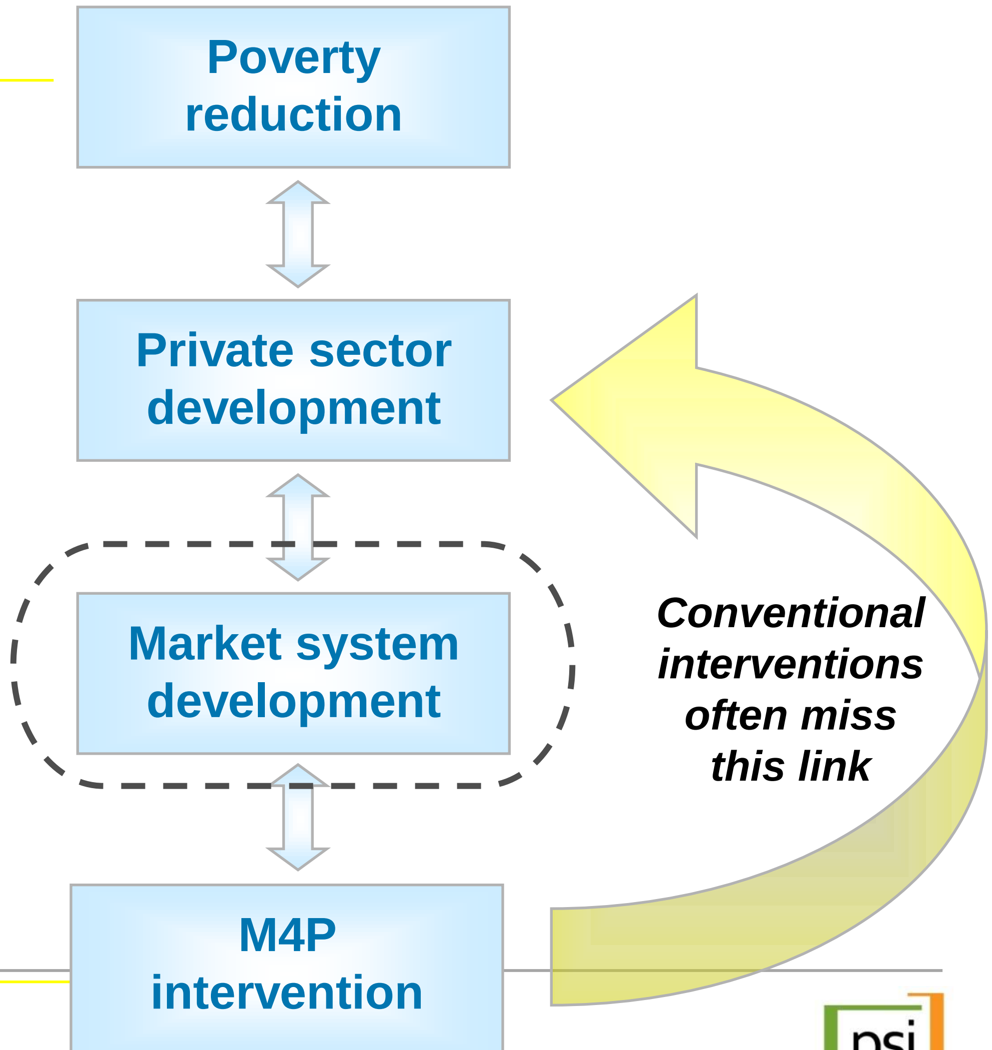
<u>Mimics the value</u> <u>chain</u> as it exists with actors like NGOs, MFIs, self-help groups, commercial aggregators and cement ring manufacturers, coordinating value chain functions to deliver the consumer promise

Market development

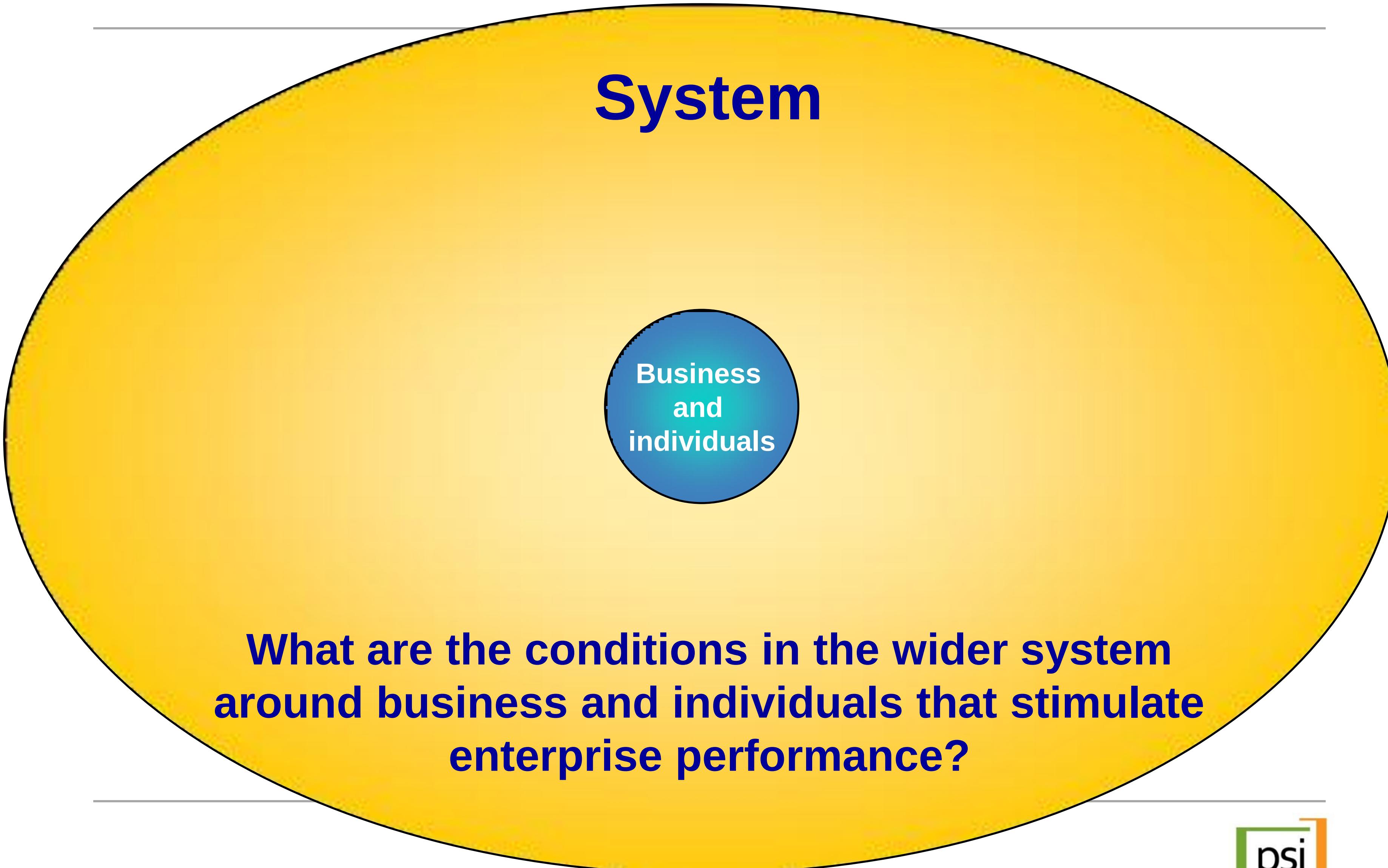
Effective private sector development generates growth and, in doing so, creates employment and increases incomes

Market systems functioning well create the right conditions for private sector development that is effective and inclusive

Development experience shows that a M4P approach is necessary to bring about inclusive and sustainable systemic change



Beyond individuals and firms to systems



Closing observations

Bringing this to Kochi

- New approach; building new expertise
- Many opportunities to apply outside of WASH, including social franchising, new products, “outside health”, agriculture, social entrepreneurship
- Shift in mindset to understand market systems and emphasis on commercial viability
- Need to understand finance better, especially how consumer finance helps ensure equity, and role of financiers in market system