



Faculty of Design

2015

Scaling-up nutrition: Bridging the great Indian hunger divide

Ghosh, Ishani and Nahar, Praveen

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SCALING UP NUTRITION

Bridging the great Indian hunger divide
through systemic thinking and design



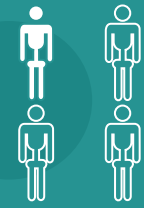


HUNGER, MALNUTRITION, POVERTY & FOOD SECURITY

In India & The National Food Security Act 2013

A TALE OF TWO INDIAS

A hungry, fast growing economy



1 in 4 hungry people in the world is in India



1 in 3 world's malnourished children is an Indian



1 in 3 adult women in India is underweight



16% of Indian children under-5 are wasted



47% of Indian children under-5 are underweight



45% of Indian children under-5 are stunted

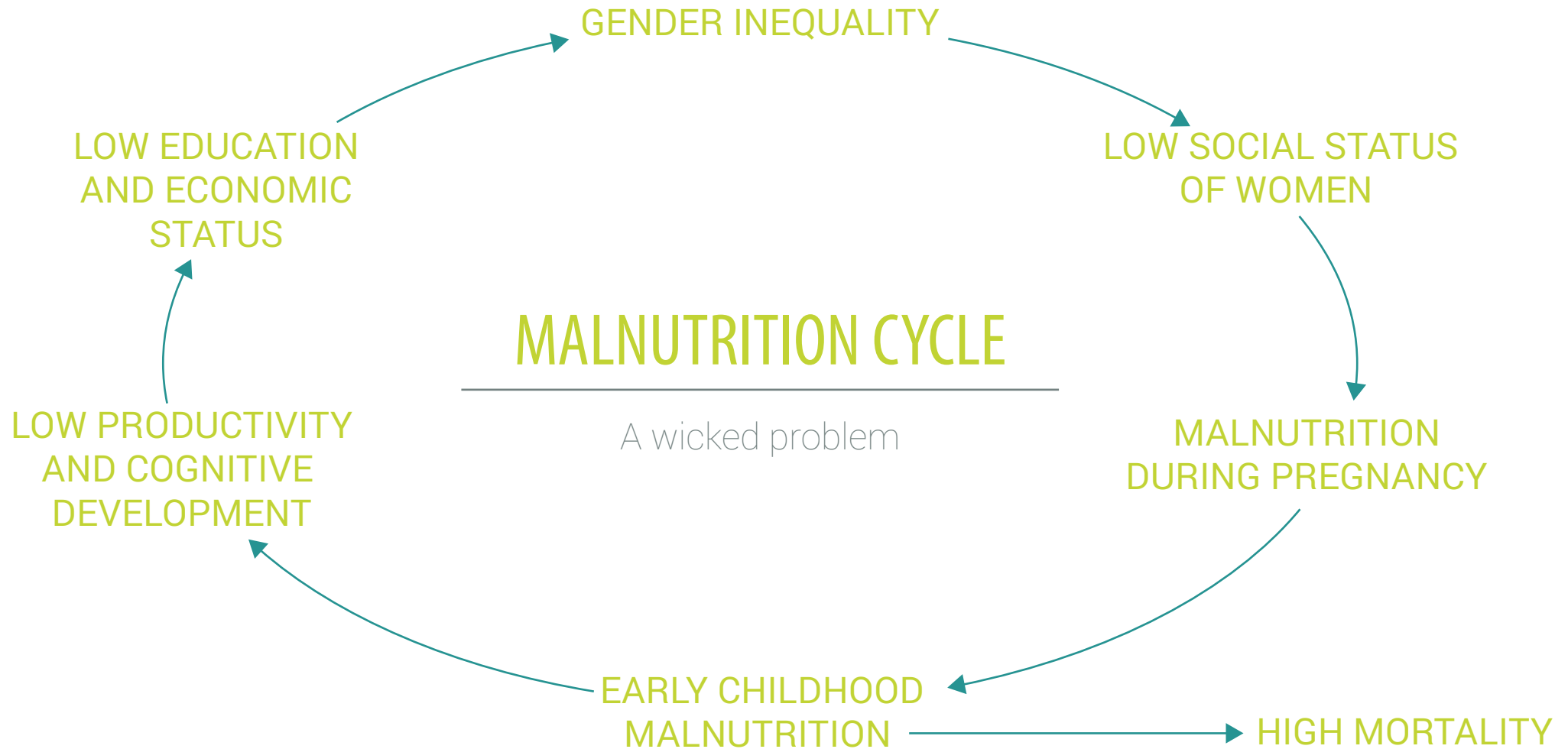
3rd largest economy in the world

Annual food security budget of Rs 1.25 lakh crores

World's largest producer of pulses, milk and spices

Largest area in the world under wheat and rice cultivation

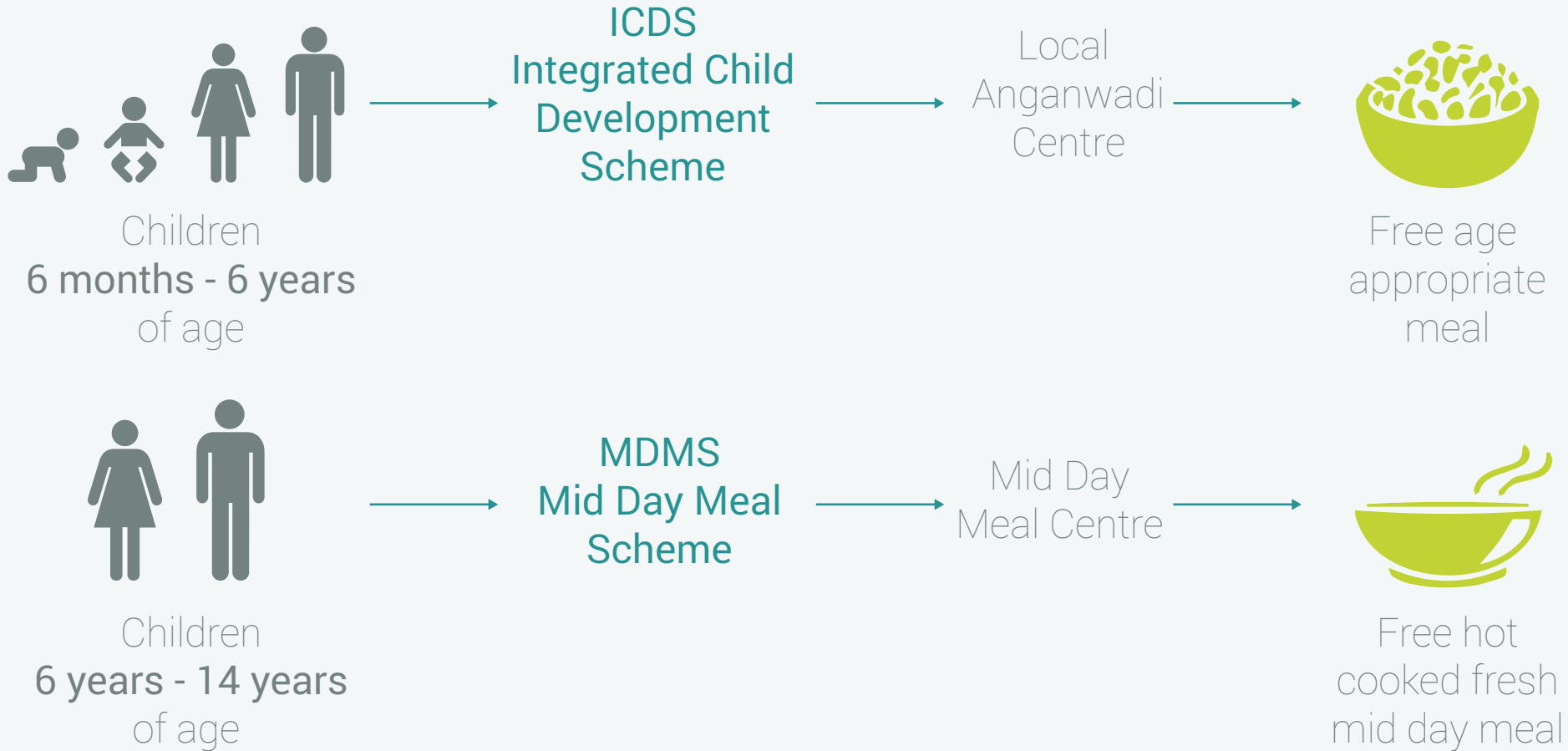
25 crore tonnes of foodgrains produced in India annually

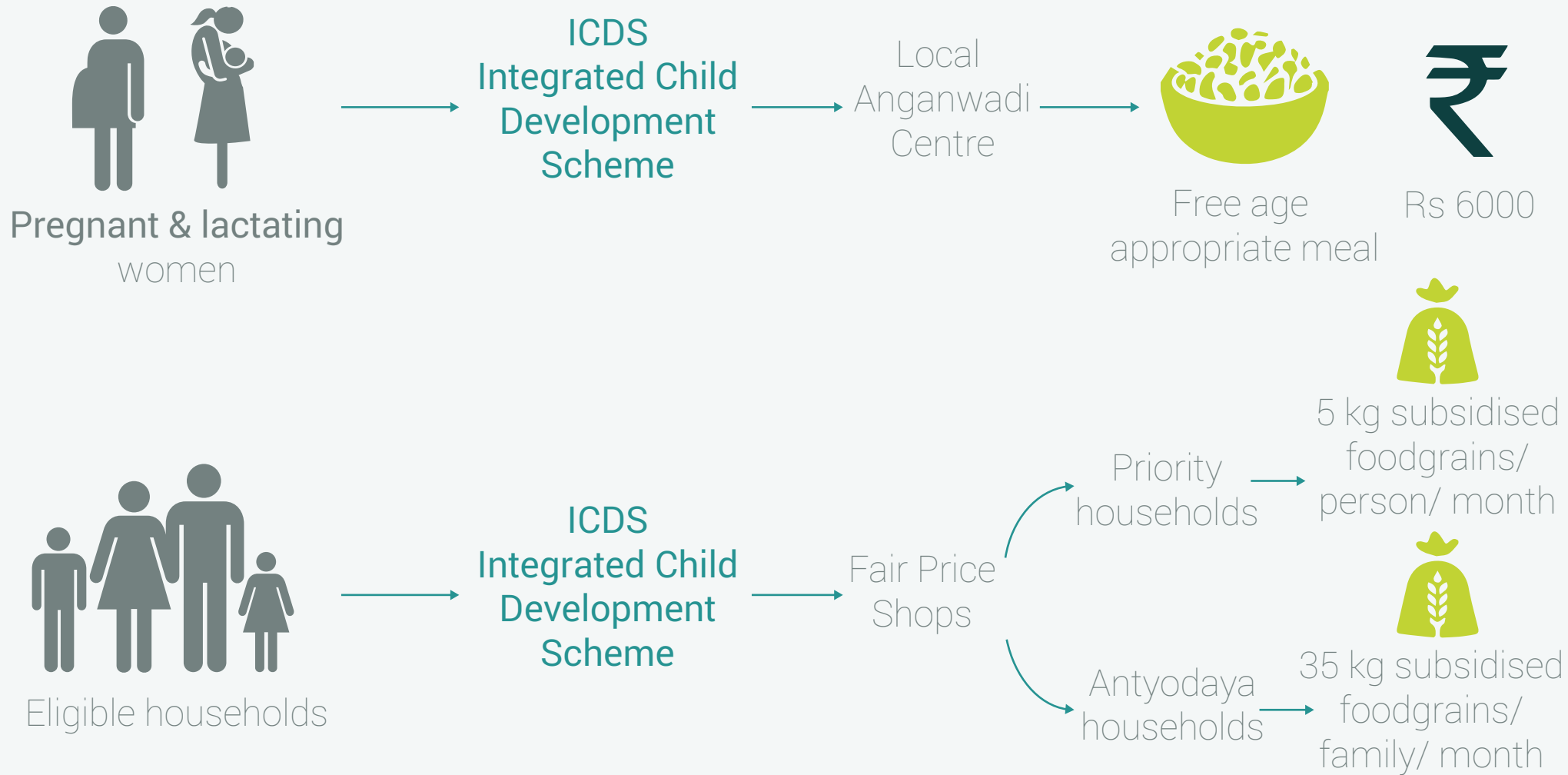


NATIONAL FOOD SECURITY ACT 2013

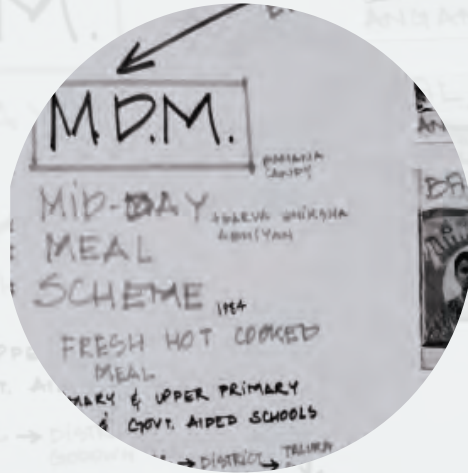
“An Act to provide for food and nutritional security in human life cycle approach, by ensuring access to adequate quantity of quality food at affordable prices to people to live a life with dignity and for matters connected therewith or incidental thereto.”







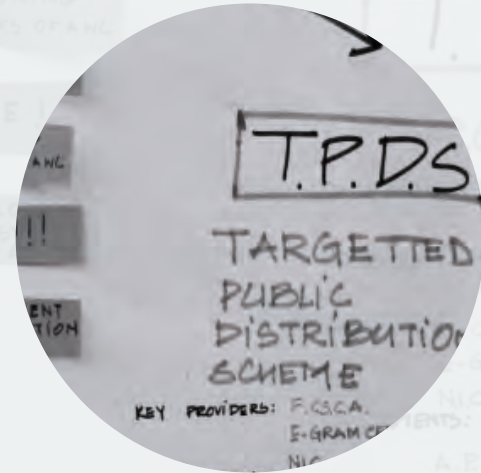
INDIAN FOOD SECURITY SCHEMES



Tackling the caste system
with education and
nutrition



Tackling early
childhood malnutrition
with women empowerment



Tackling poverty and
hunger with subsidies
and supporting farmers
by controlling minimum
support prices of their produce

National MDMS
Mid Day Meal
Scheme

Policies
and
Money

State & UT
MDMS Dept.

Infrastructure
and
Money

Mid Day
Meal
Centres

Raw materials

Food

Vigilance

FSSAI

FCI
State Grain
Storage

Raw materials

NGOs

MDMS
Mid Day Meal
Scheme





**ICDS
Integrated Child
Development
Scheme**

National TPDS
Targeted Public
Distribution
System

Policies
and
Money

State & UT
TPDS Dept.

Infrastructure,
and
Vigilance

Fair Price
Shops

Grains

Food
Corporation of
India
FCI

Policies
and
Money

Mandi

Grains

FCI state
grain
storage

Grains Money

Farmers
sell produce
at government
approved rates



Image Source: <http://www.tehelka.com/wp-content/uploads/2012/10/rations.jpg>



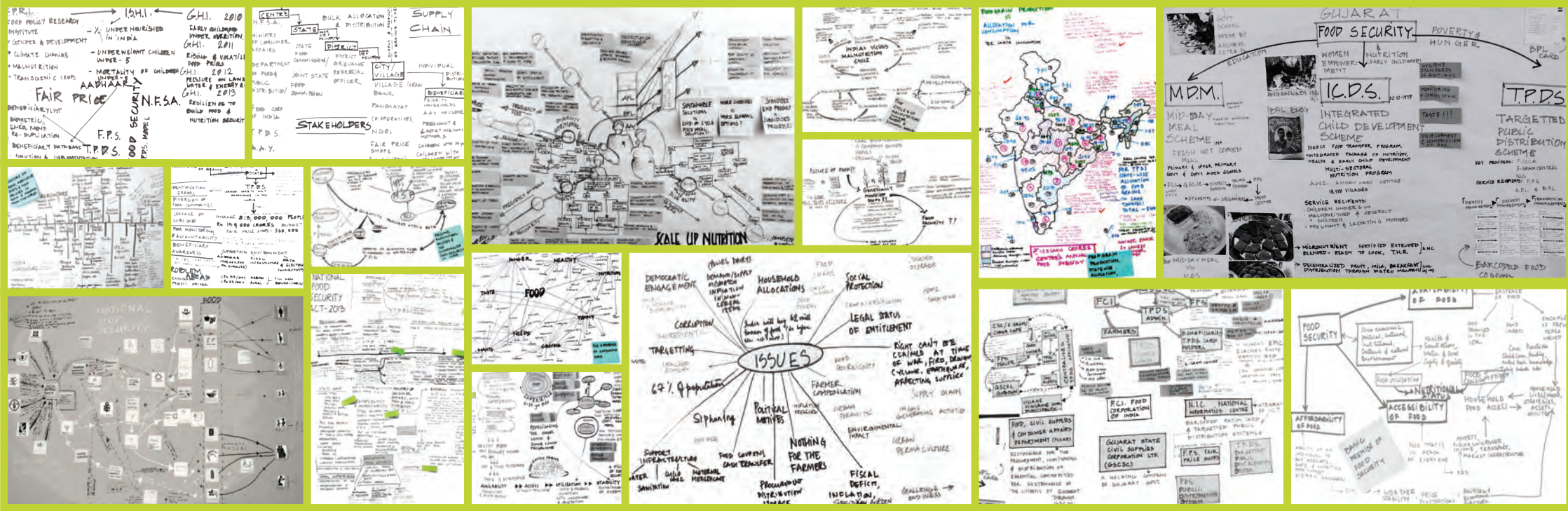
Image Source:
http://www.thehindu.com/multimedia/dynamic/00066/INTL_RATION_SHOP_66812f.jpg

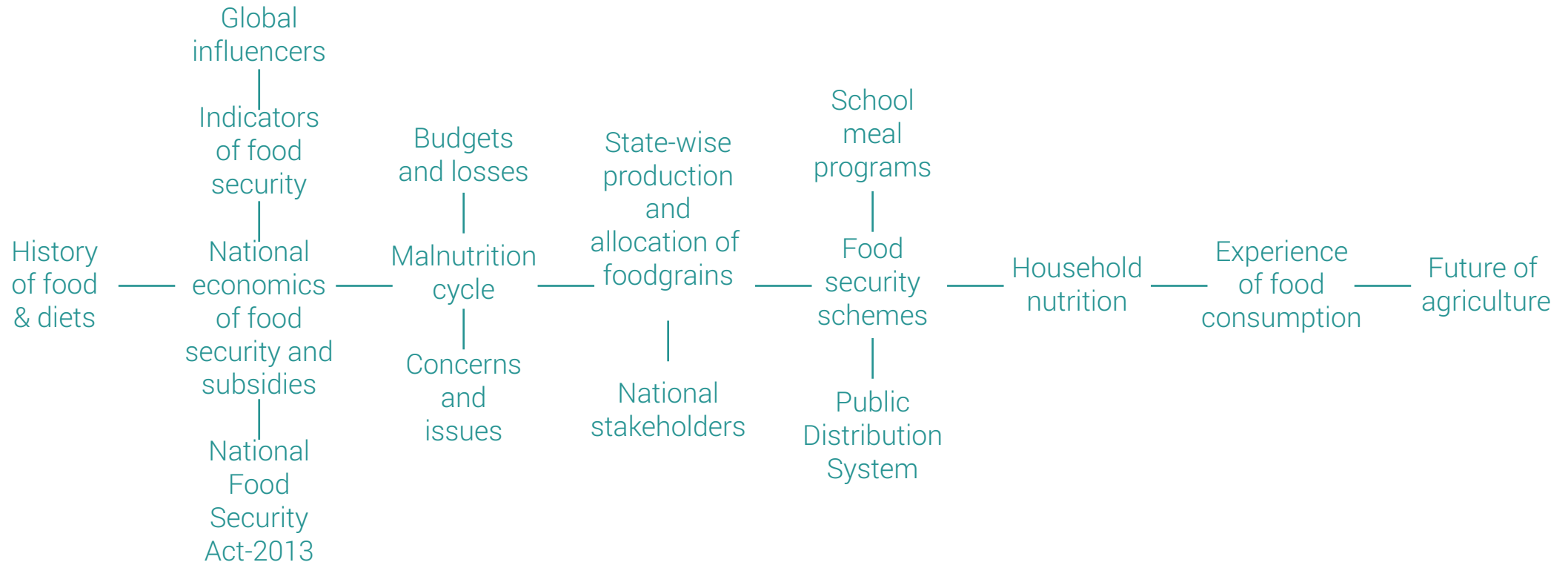


TPDS
Targeted Public
Distribution
System

Image Source:
http://www.thehindu.com/multimedia/dynamic/00066/INTL_RATION_SHOP_66812f.jpg

Exploring the layers involved





INGREDIENTS OF THE INDIAN FOOD SYSTEM

Ensuring food security with their interactions



Foodgrains:

production,
storage,
transportation,
sale and
disbursement



Money:

budgetary
allocations for
food security
and nourishment
programs, subsidies,
cash transfers
and monetary
allowances



Policies:

regulations
and laws to
ensure and
clarify the
implementation
of the clauses in
the NFSA-2013



Vigilance:

mechanisms
in the system to
monitor it and
for grievance
redressal in case
of wrong-doings



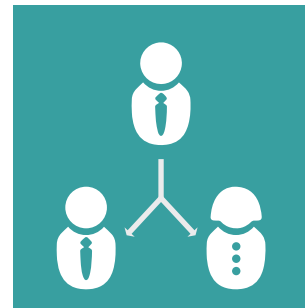
Infrastructure:

set of services
and facilities that
provide the
supporting
framework for the
system



Data:

set of
qualitative
and quantitative
information that
helps inform the
system's
economics and its
management



Administration:

organisational
structure which
delineates the
roles and
jurisdictions
of the various
authorities

DETERMINANTS OF FOOD SECURITY

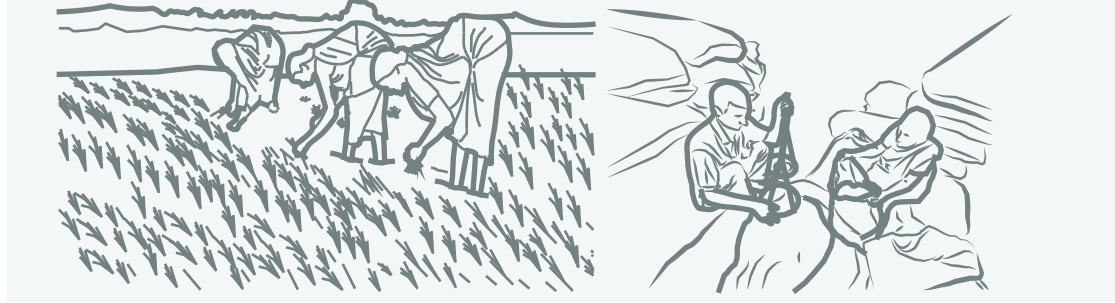
Ensuring food security with their interactions

There are various organisations and authorities working at the

INTERNATIONAL ► **NATIONAL** ► **STATE** ► **LOCAL**

levels with their focus on the following determinants of food security:



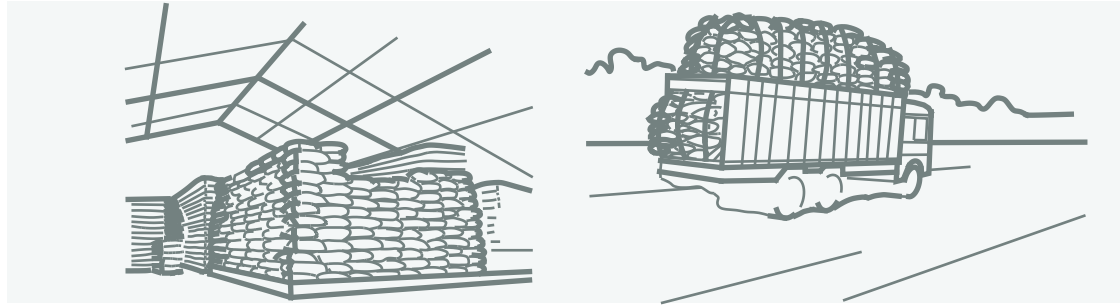


1. AVAILABILITY

Existence of Food: Domestic food production capacity, seasonal stock piling of food, import stocks, resilience to climate change and weather fluctuations, market access to farmers to sell at viable prices.

Determinants: agricultural viability and farmer support ,
rural infrastructure, ecological viability and international and national trade.





2. ACCESSIBILITY

Access to Food: storage and transportation of harvested food items to the open market/ retail with direct access to the consumer.

Determinants: civil infrastructure for storage and transportation, efficient monitoring and management of stocks, unprejudiced food allocation to all.





3. AFFORDABILITY

Ability to Purchase Food: economically viable pricing policies to ensure purchasing power for all. Special incentives and subsidies to economically and geographically fragile consumer groups.

Determinants: economic status, knowledge and access of government policies, absence of the black marketeers.





4. ADEQUACY

Adequate Energy and Nutrition Intake: regularity and frequency of optimum quantities of balanced, hygienic and nutritious age/occupation- appropriate meals.

Determinants: Intra household food distribution, status of women in the family/community, purchasing power of the family, feeding practices, eating habits, food preparation and nutritional knowledge.









5. UTILISATION

Absorption of Food: appropriate utilisation of the nutrients in food in the body.

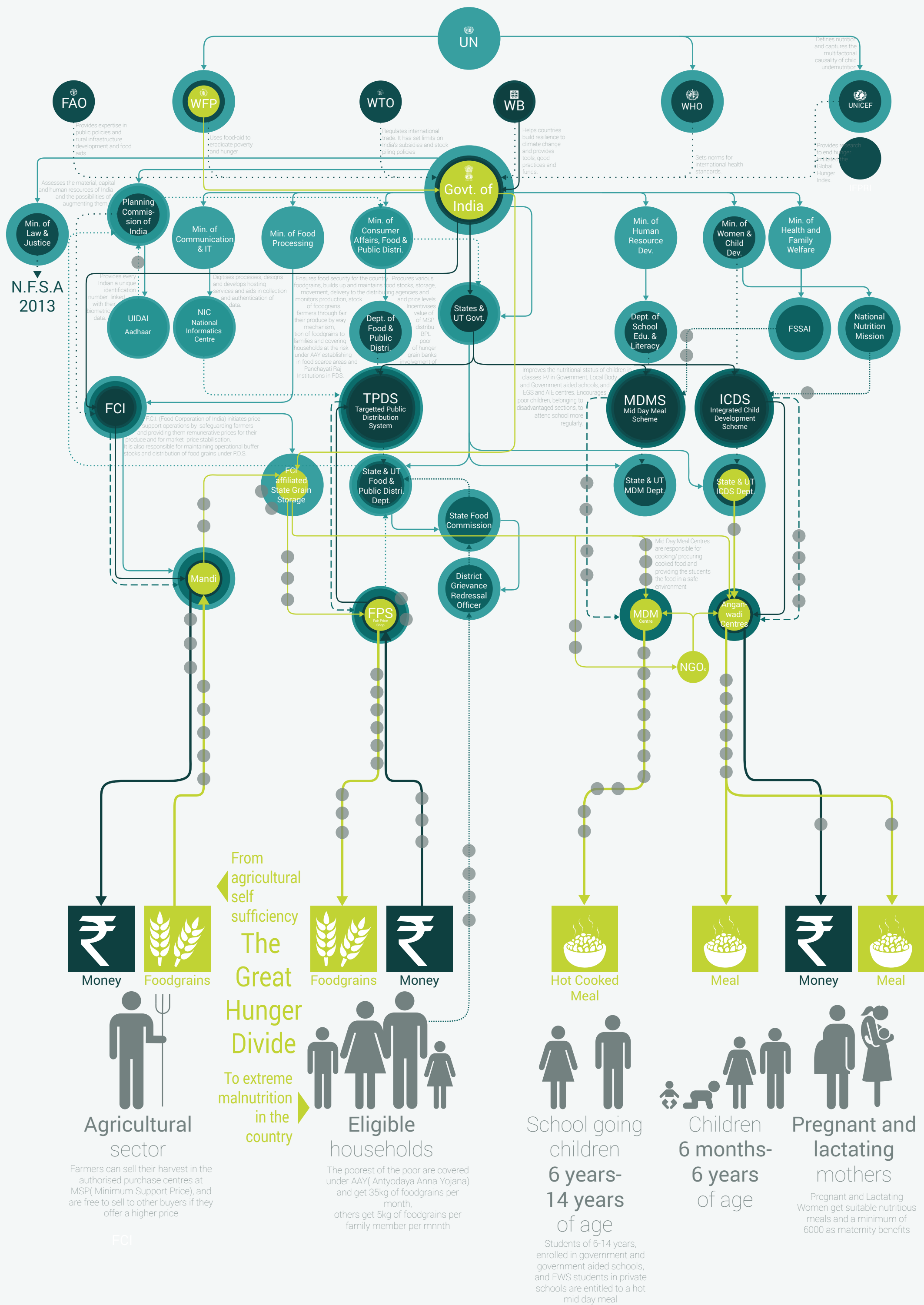
Determinants: community, household and individual hygiene, child care and maternal care, water and sanitation quality, individual health status.

MAPPING THE FOOD SYSTEM

Analysing the various components that back and drive the food network in India

	Availability	Accessibility	Affordability	Adequacy	Utilisation
International					
National		Money		Infrastructure	
State-level	Foodgrains		Vigilance		Administration
Local-level					
Individual- level		Policies		Data	

Opportunity Mapping



BRIDGING THE HUNGER DIVIDE

Exploring opportunities of intervention to aid food security in India



Administration

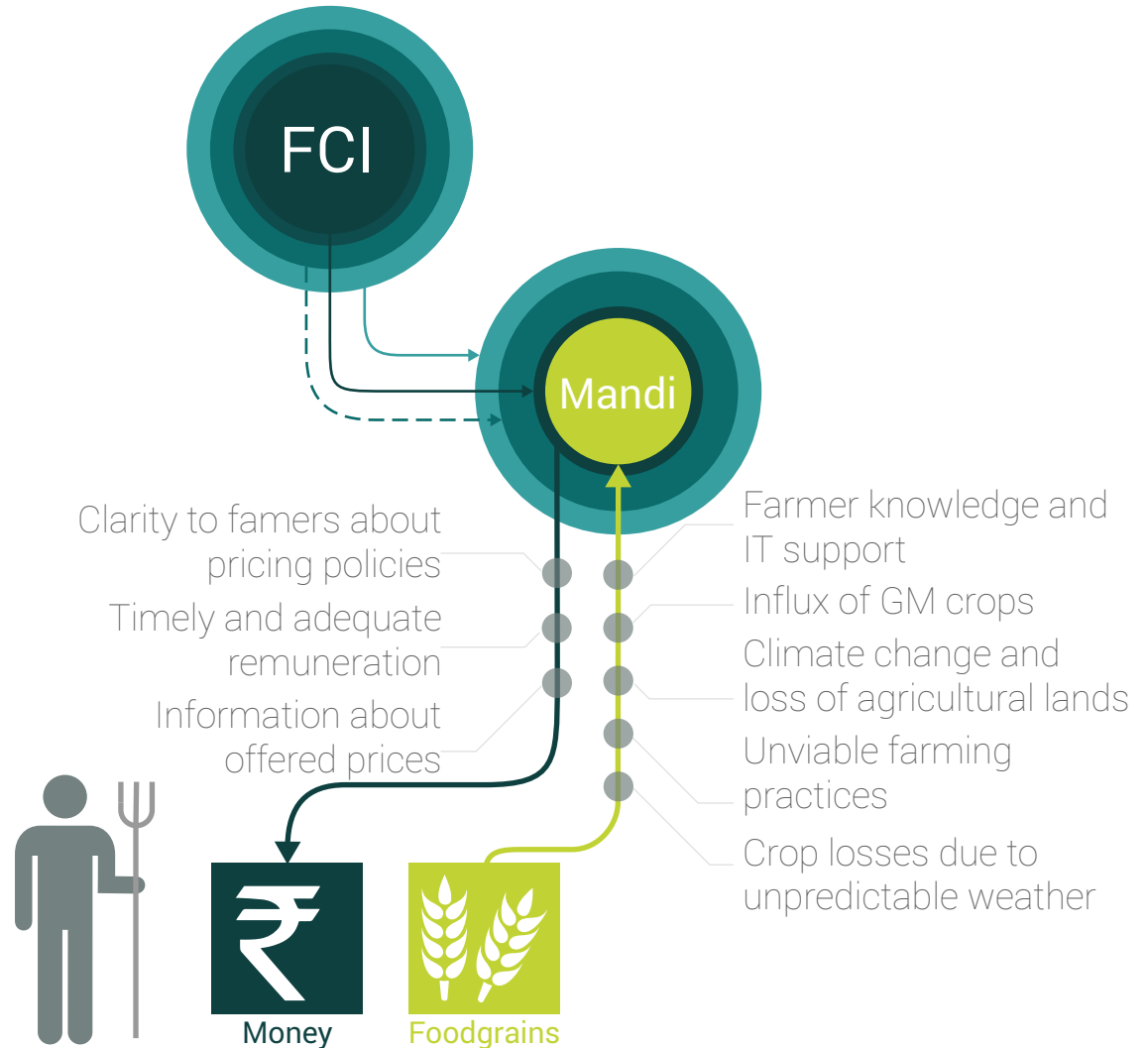


Infrastructure



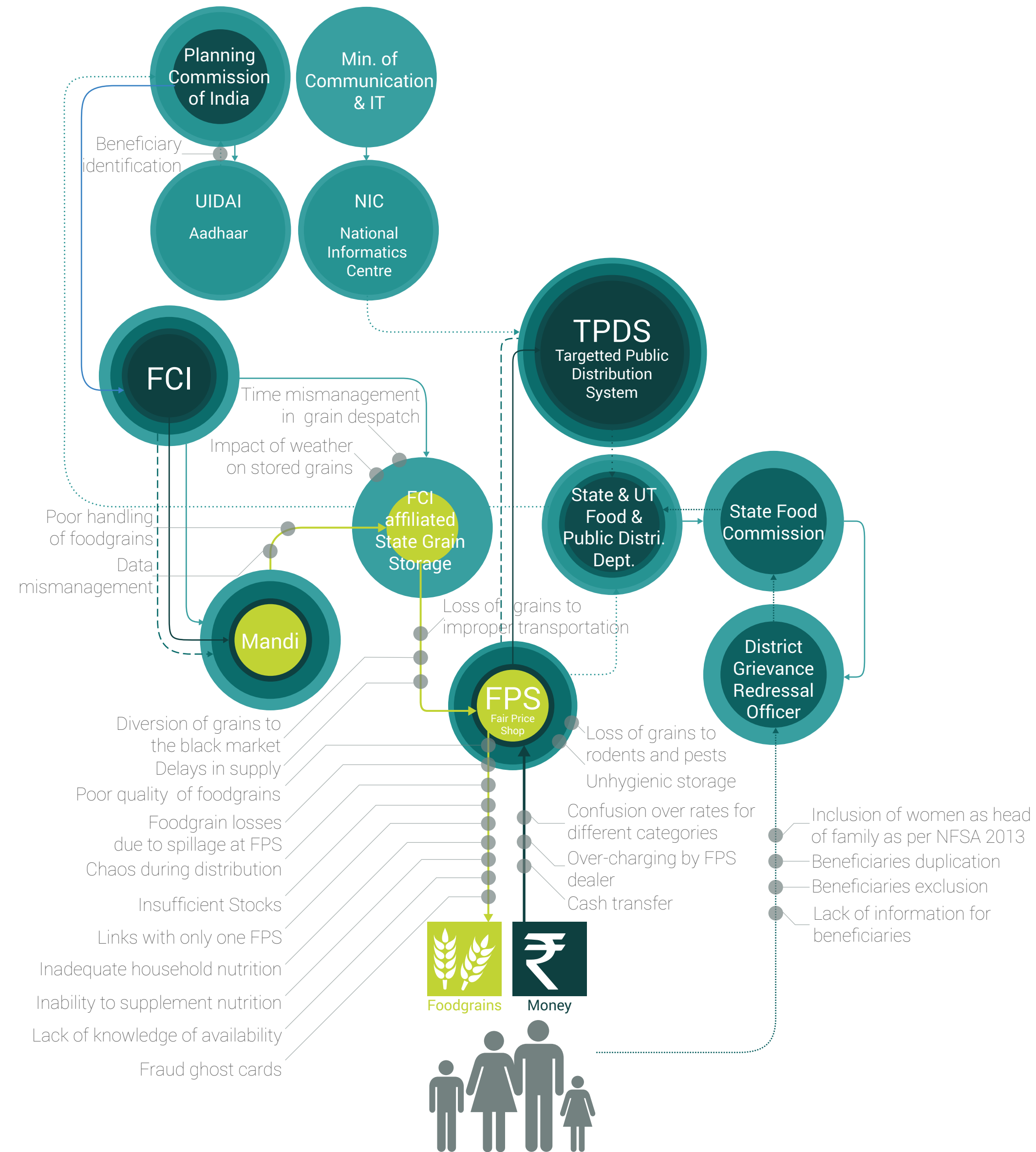
Policies

Areas of the concern in the existing agricultural sector



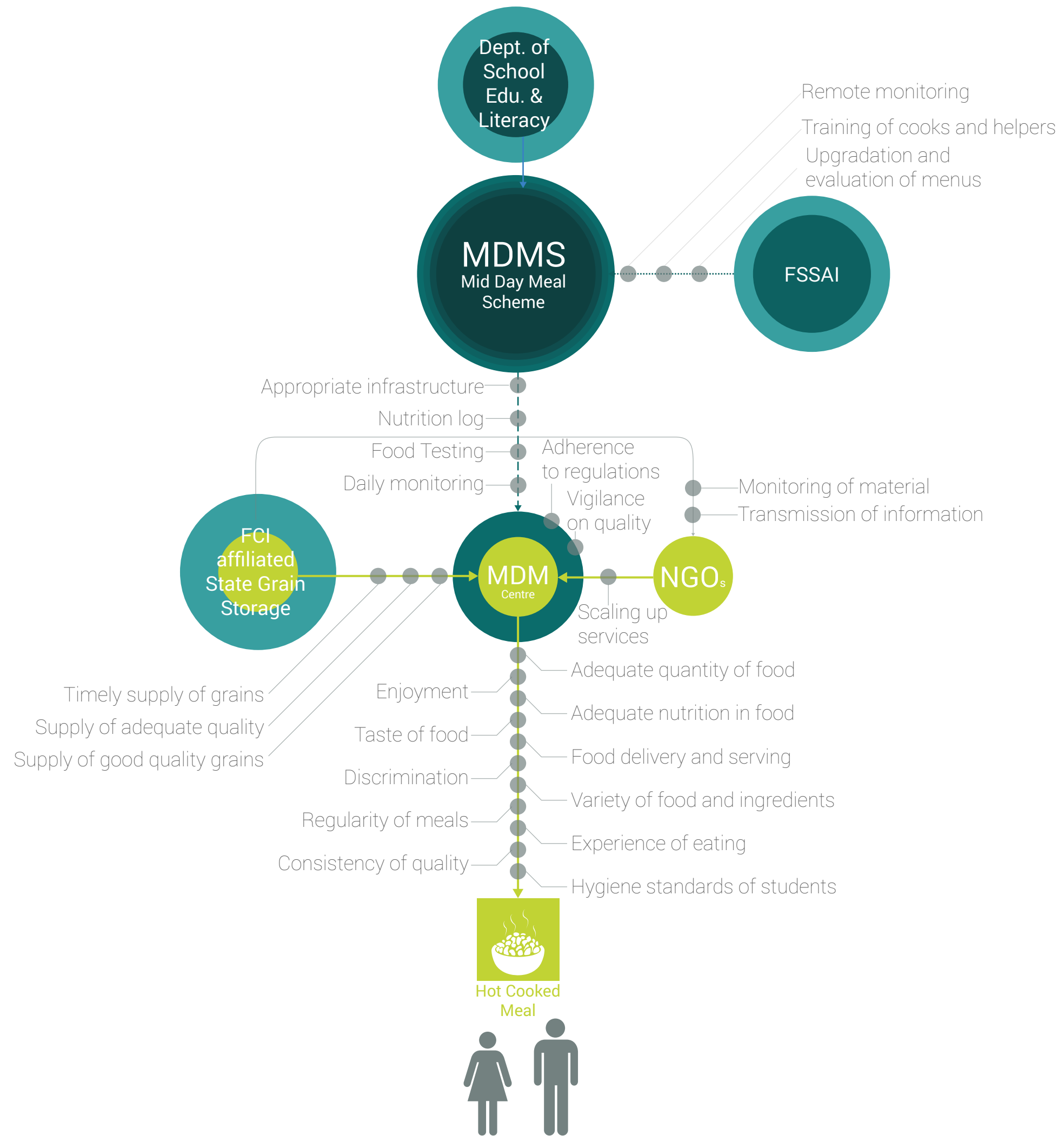


Areas of the concern in the existing Targetted Public Distribution System





Areas of the concern in the existing Mid Day Meal Scheme



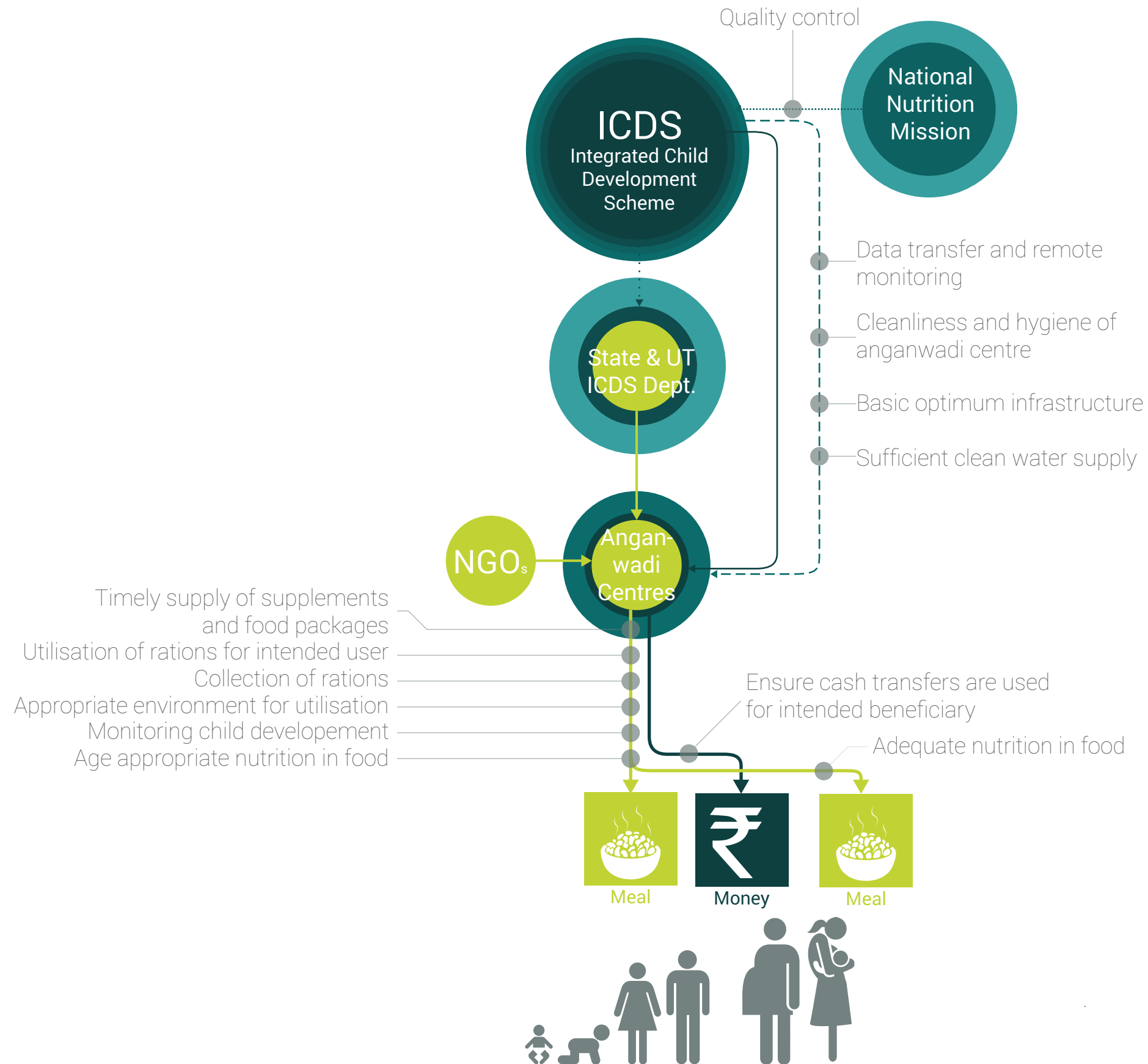


Infrastructure

Policies

Vigilance

Areas of the concern in the existing Integrated Child Development Scheme



KEY SYSTEM DESIGN QUESTIONS

How can the Indian food system be designed to ensure food security

How nutrition be scaled up?

How can the system evolve from a charity model to a cyclic and/or self sustainable model?

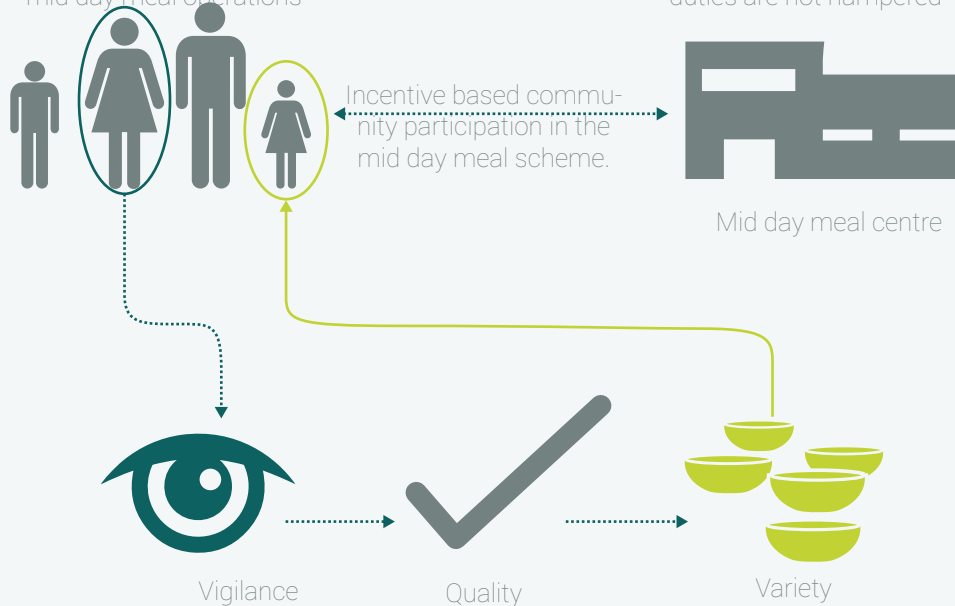
How can the intended beneficiaries be empowered to help themselves to extract maximum benefits from the system?

SYSTEMIC INTERVENTION PROPOSALS

Proposals to address concerns and unmet needs in the existing system

Every parent of a child assigned a day in the schedule when he/she must accompany the child to school and assist and oversee the mid day meal operations

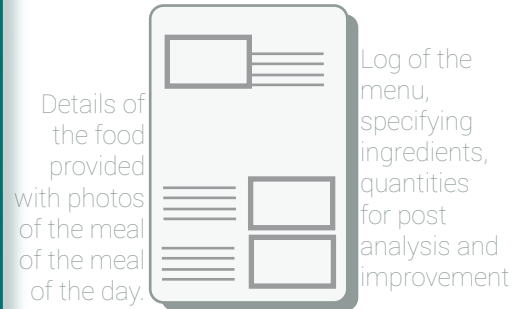
Assistance of the parent in overlooking the activities of the cook ensures that the teachers duties are not hampered



Community Participation in Quality Control

MDMS

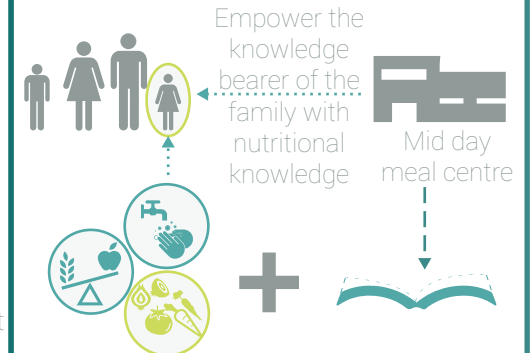
Daily logs for future assessments of impact



Menu and Nutrition Log

MDMS

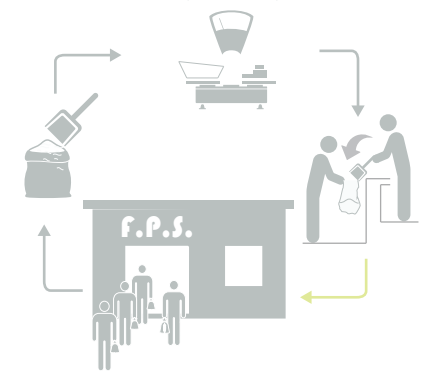
Integrate the experience of food consumption with process of learning



Food and Education

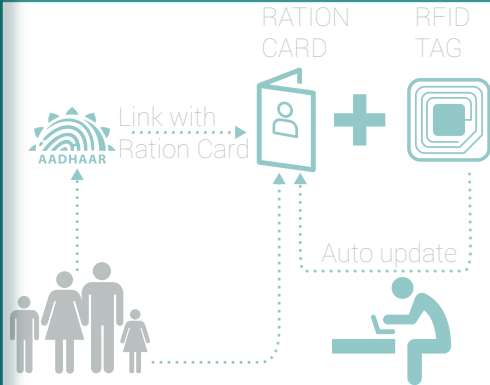
MDMS

Standardise and optimise practices



DeliveryTools at FPS

TPDS

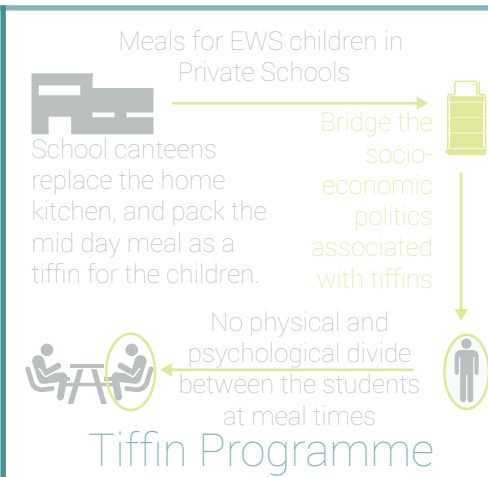


Ration Cards Update

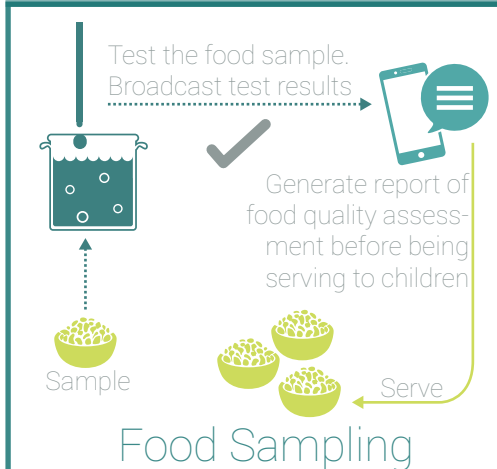
TPDS



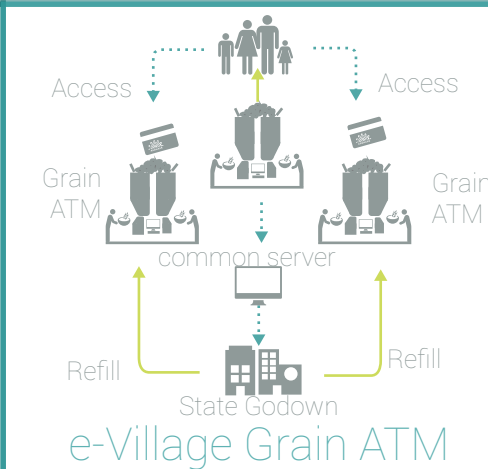
MDMS



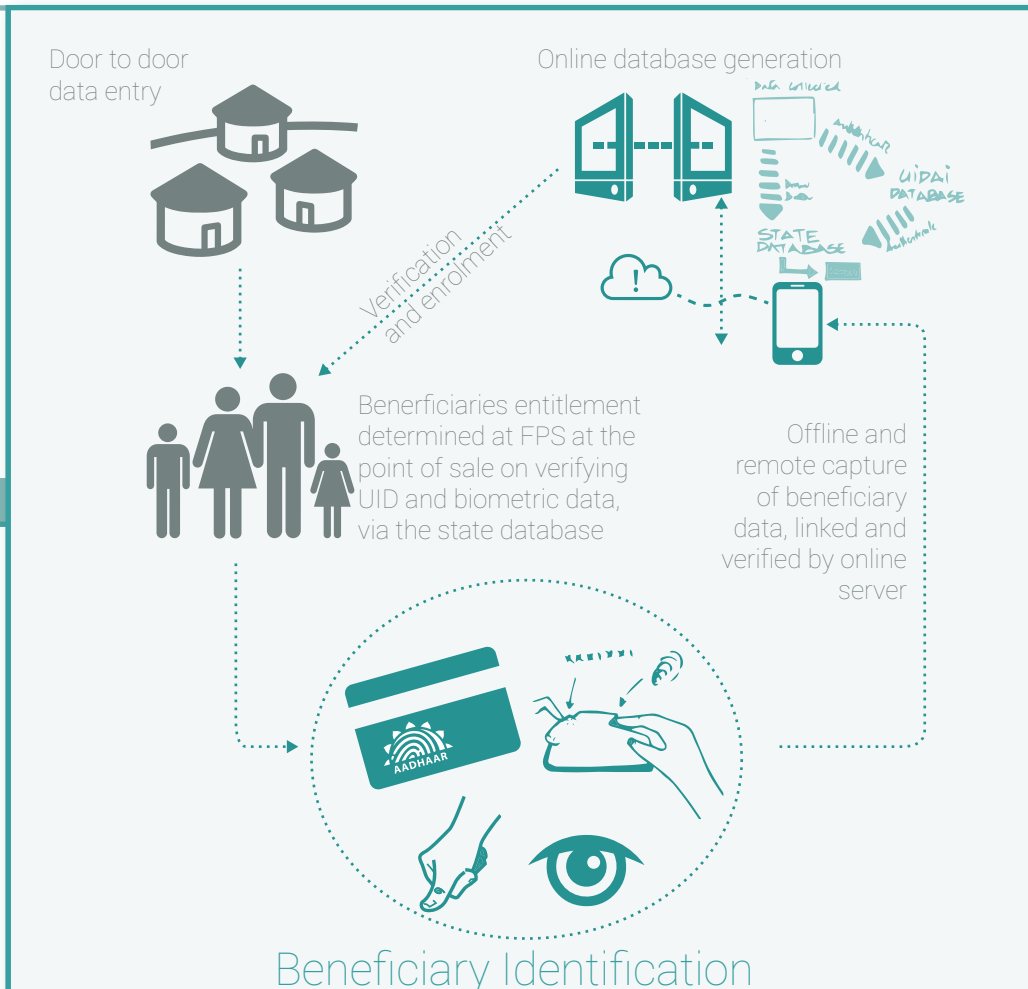
MDMS



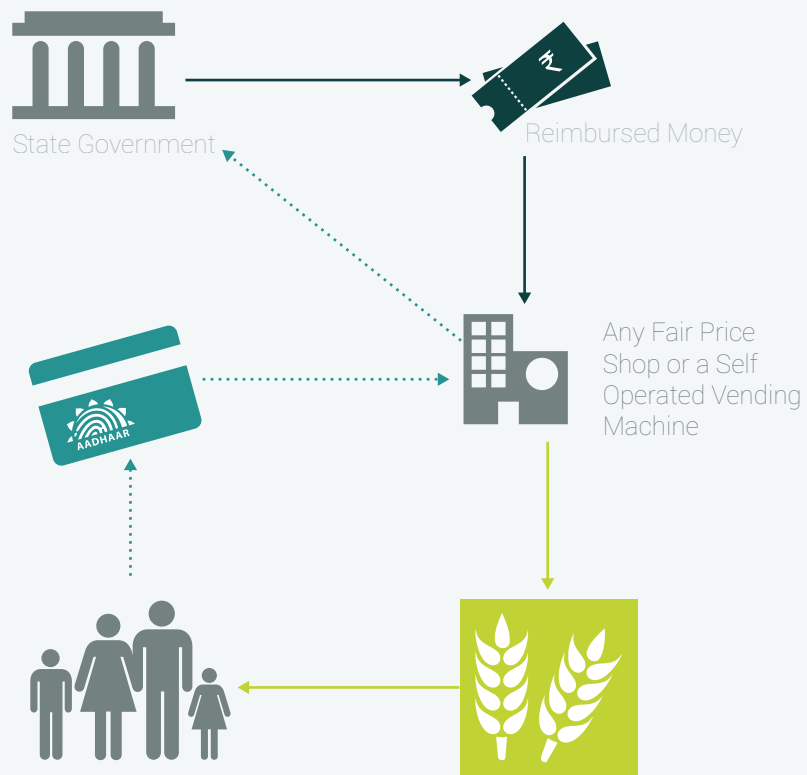
MDMS



TPDS

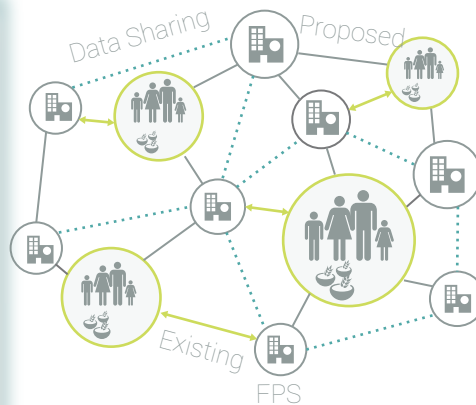


TPDS



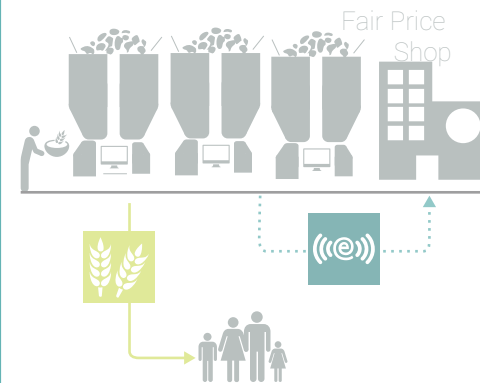
Grain Credits on Aadhaar Account

TPDS



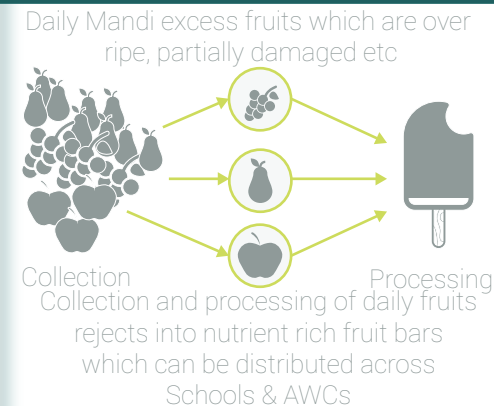
Multimodal FPS Network

TPDS



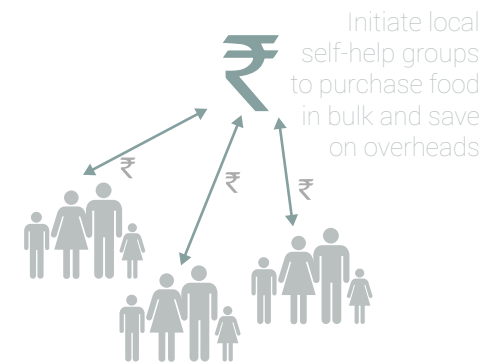
Grain Vending Machine

TPDS



Fruit Preservation

SUPPLEMENTARY NUTRITION



Bulk Food Purchases

COMMUNITY NUTRITION



Dehydrated food packages with increased shelf life for beneficiaries, removing the scope of contamination



School and Family Ration

+



Prepare by boiling with water

=



Serve Fresh Meal

Food Processing

FUTURE OF FOOD RELIEF

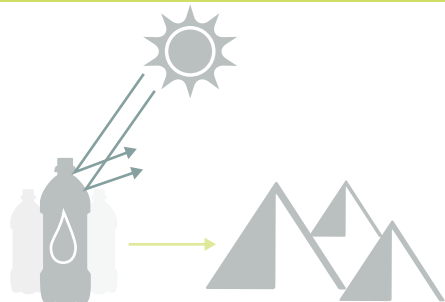
Present city models place us away from our source of food



Future Cities

Future models of cities could be centred around hubs of food production

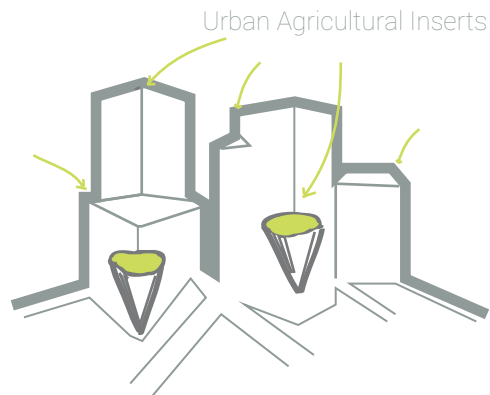
FUTURE OF AGRICULTURE



Solar Water purification using PET bottles and utilizing it to assist household clean water access, and assisting in nutrition utilisation in the body

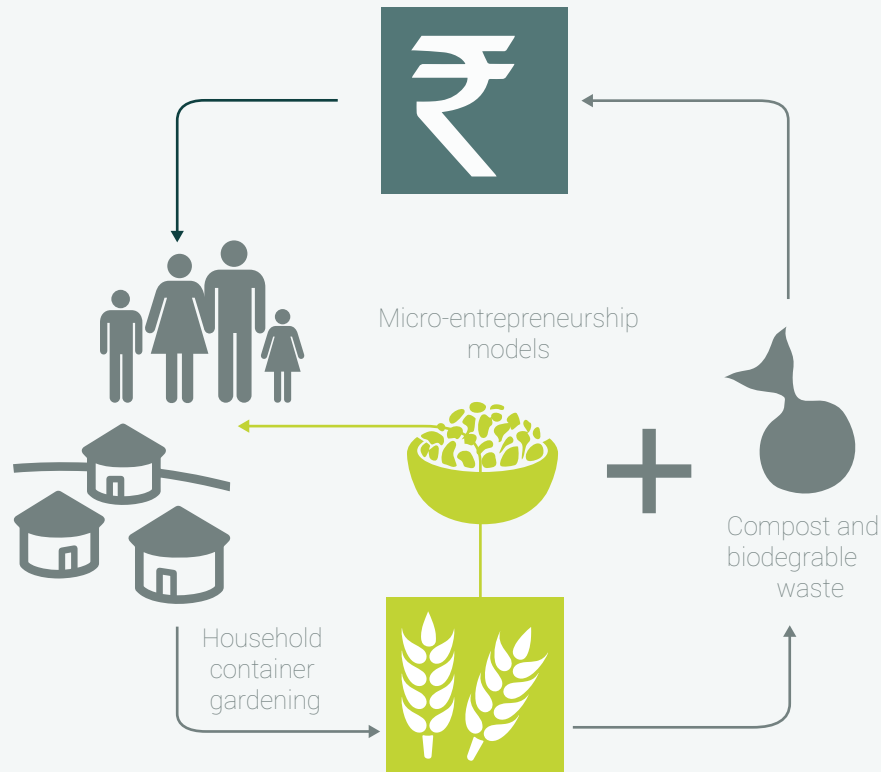
Water Purification

ASSISTING NUTRITION



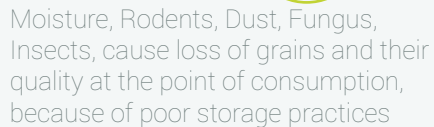
Agri Pods

FUTURE OF AGRICULTURE

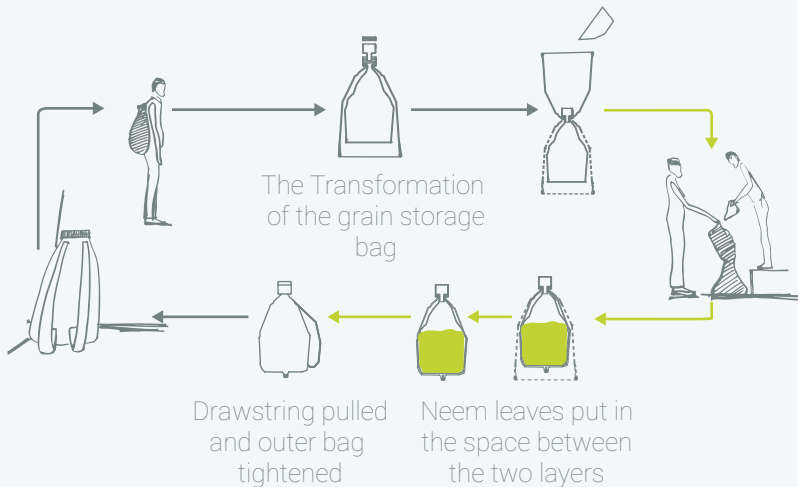


Food and Compost Production

HOUSEHOLD NUTRITION



The product is a combination of a jute and a plastic sack. It works as a bag when the individual goes to collect grains, and the double bag opening helps ease out the FPS operations. The outer layer consists of the plastic bag with a drawstring to tighten it, the inner layer between the sacks can be filled with neem leaves and other non chemical pest diverters.



Grain Storage

HOUSEHOLD NUTRITION



Mobile Food Vans

COMMUNITY NUTRITION



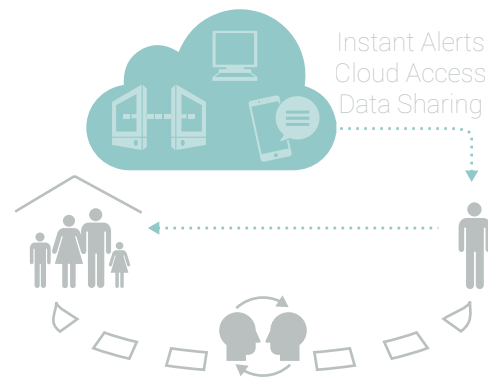
Food Banking

COMMUNITY NUTRITION



Food Pooling

COMMUNITY NUTRITION



Community Mentoring

HOUSEHOLD NUTRITION

SYSTEM GIGA-MAP

