Policy Brief

Pharos Global Health Advisors

TATA TRUST

No. 4

THR Production & Distribution Models

Challenges and Opportunities for Improvement

KEY INSIGHTS & RECOMMENDATIONS

Context: India's Integrated Child Development Services' (ICDS) Supplementary Nutrition Program (SNP) is a supplemental feeding program aimed at reducing malnutrition across India. Each state has a different model for producing and distributing Take-Home Rations (THR) which include:

- Decentralized SHG Models;
- Decentralized Production Facility Models; and
- Centralized Production Facility Models.

Policy Recommendations

Recommendation 1: Transition all state ICDS payments to e-payment systems.

Recommendation 2: All steps of the THR production and distribution process should be monitored via an electronic monitoring system.

Recommendation 3: Contracts for THR production should incorporate, and be contingent upon, attainment of pre-established metrics for both access and quality.

Recommendation 4: THR access and quality metrics should be publicly reported.

Recommendation 5: State governments should exclusively procure THR fortified with added micronutrients.

Recommendation 6: States should ensure strict compliance of quality testing for THR through independent quality testing that examines food safety, micronutrient and macronutrient content and moisture level. These results should be communicated back to the producer to enable quality improvement as necessary.

Recommendation 7: Self-Help Group contracts should be awarded at the Block level to optimize production and guarantee financial viability.

Recommendation 8: All Self-Help Groups should be enabled to utilize consortium purchasing mechanisms.

Recommendation 9: Self-Help Groups should be graded and certified, and awarding of THR contracts should incorporate SHG grading.

Context

India has made significant economic progress over the past thirty years, but this progress has not translated to achievement of national nutrition targets. Over half of women in India are anemic, one-fifth of children under five are wasted, and over one-third are stunted[1] Future productivity, general health, and overall wellbeing are greatly impacted by the effects of malnutrition, particularly in children and adolescents.[2] To improve nutrition outcomes at the national level, the Government of India (GOI) launched the Integrated Child Development Services' (ICDS) Supplementary Nutrition Program (SNP) in 1975.[3]

The SNP provides Take-Home Rations (THR) to young children, adolescent girls, and pregnant and lactating women across India in an effort to help close the gap between recommended daily nutrient intake and the typical daily diet of beneficiaries. THR is a supplementary food designed to add protein, calories, and nutrients to beneficiary diets. THR production and distribution is the responsibility of the state, and states have flexibility in THR production within overarching ICDS norms.[4] Typically, THR is composed of a ready-to-eat powder made up of wheat, dal, soya chunks, groundnut and sugar.

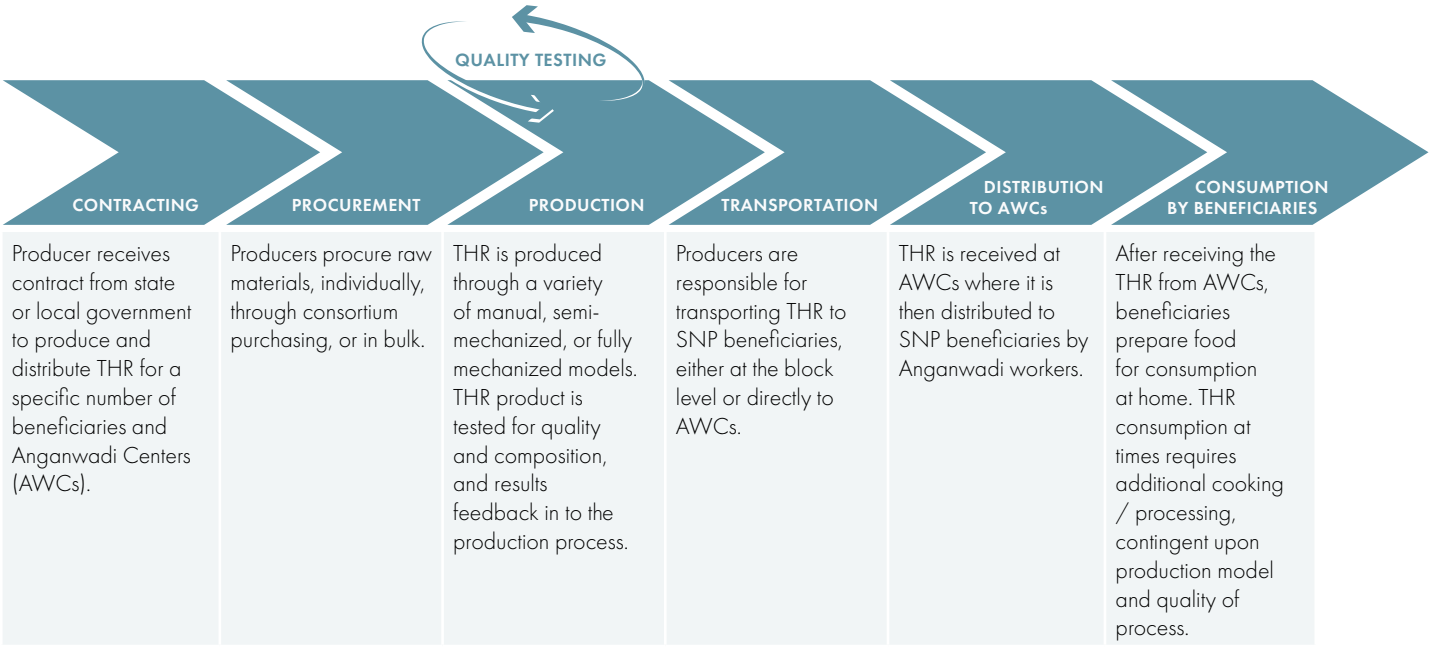
Production and distribution of THR varies by state (see Annex), however the basic process is illustrated in Figure 1. Every step of the THR production and distribution value chain is critical to ensuring a high-quality and nutritious THR product that reaches all SNP beneficiaries. However, there are challenges and gaps throughout this process which will be explored further in this Policy Brief.

Recommendation 10: A quality improvement mechanism should be developed to build capacity and further develop skills among Self-Help Groups.

Recommendation 11: Contracts should be awarded based on quality parameters and incorporate advanced-market commitments from ICDS to guarantee demand and improve sustainability.

Recommendation 12: Centralized producers should be held accountable for down-stream access gaps (including stockouts, late and inconsistent supply), with a portion of overall compensation tied to access.

Figure 1. THR Production and Distribution Value Chain



In 2004, the Supreme Court issued an order to decentralize the production and distribution of THR, ideally utilizing local Self-Help Groups (SHGs) or other women's groups.[5] The court order aimed to enhance transparency, decrease leakage, and improve quality by increasing local ownership of the program. However, despite this court order, today, three models of THR production and distribution exist across India:

- Centralized Production Facilities
- Decentralized Production Facilities
- Decentralized Self-Help Groups

These models are further described in Box 1.

This Policy Brief is one part of a larger series focusing on challenges with the present THR system. This Brief provides an overview of the spectrum of production and distribution models, including model-specific challenges, as well as Policy Recommendations to address them.

Challenges and Opportunities in Production and Distribution Models

While the past Supreme Court order has encouraged decentralization, there are both opportunities and challenges that each of the three existing models face, which should be considered by policymakers in choosing a state-level production and distribution approach. An overview of these opportunities

BOX 1

THR Production & Distribution Models

The three production and distribution models are described here with examples of states that employ each model. For a comprehensive list describing the model each state employs see Annex.

In the **Centralized Production Facility model,** as seen in Telangana, one production facility is contracted to produce and distribute THR for an entire state. These facilities procure the raw ingredients for all orders, often have in-house quality testing, and transport the THR to communities (typically at the block level). Centralized facilities can be run either by state governments or private corporations.

In the **Decentralized Production Facility model,** as seen in Kerala, producers are typically contracted to produce THR for AWCs across multiple communities or at the Block level. These production facilities are run by SHGs who are responsible for procuring materials, either in a consortium or individually, producing the THR usually through an automated or semi-automated process, and transporting the THR to AWCs or the CDPO office. In this model SHGs may also form federations or consortia and work together for larger-scale production.

The **Decentralized Self-Help Group model,** as seen in Rajasthan, is the most decentralized model. These SHGs are contracted to provide THR typically to only one or two AWCs per SHG. SHGs procure ingredients locally and produce THR often with limited or no automation. There is limited to no quality testing done in SHG models.

Figure 2. Challenges and opportunities in the three production and distribution models

	DECENTRALIZED SHG's	DECENTRALIZED PRODUCTION FACILITIES	CENTRALIZED PRODUCTION FACILITIES
Opportunities	• Enhanced community ownership of THR production • Promotes income-generating activities and female empowerment • Improves THR access in rural areas	• Provides economies of scale • Produces THR with high nutrient value through the addition of micronutrient premix • Enhanced community ownership of THR production • Promotes income-generating activities and female empowerment • Improve access to THR	• Provides economies of scale • Produces THR with high nutrient value through the addition of micronutrient premix • Greater potential to ensure a high-quality product
Challenges	• Fortified food products and micronutrient premix are not typically used in THR production • Small contracts and margins result in challenges with financial viability • Few decentralized states have mechanisms to improve quality of THR product or to improve SHGs skills	• Lack of guaranteed contracts and demand from ICDS • Limited management experience in SHGs • Delayed feedback from external quality testing leading to limited impact of results on THR production	• THR is not reaching all beneficiaries, particularly those in rural areas • Corruption and poor quality are seen in some privatized centralized facilities

and challenges are presented in Figure 2 and are further explored in relevant sections later in this brief. In general, the decentralized models improve access and acceptability at the community level, while risking quality of the THR produced, and the centralized model offers enhanced quality though experiences challenges with beneficiary access.

In addition to challenges that affect each model individually, broader challenges in production and distribution exist that impact all models, as demonstrated in Figure 3.

Liquidity and accountability challenges with producer payments

Following contracting with ICDS to a particular SHG or production facility for THR production, payment must be made to producers. States differ in terms of when payment is completed, with some states processing payment upon delivery of the THR product to the AWC, and others upon delivery to the block or CDPO office. Payment type also varies with some producers receiving payment via cash or check, and others via e-payments. In conversations with producers in several states, delays in payment were common with some producers reporting payment delays of six or more months, though typically those with e-payment mechanisms had more reliable payment regularity.[6] Delays in payment can be challenging for producers, particularly SHGs and decentralized production facilities who have limited liquidity and rely heavily on monthly payments to continue their production process. However, if ICDS were to transition to e-payment systems in all states, payment delays could be minimized. A secondary benefit of the e-payment system is enhanced transparency and accountability in transactions which would also benefit the ICDS system and address ongoing challenges with leakage and pilferage. Some states are already working with e-payment systems, for example in Odisha, e-payments are deposited into a bank account that has been set up specifically for the SHG; SHG leadership then distribute funds to all members. Per our discussions with SHGs in Odisha, liquidity challenges had improved under this system. [7]

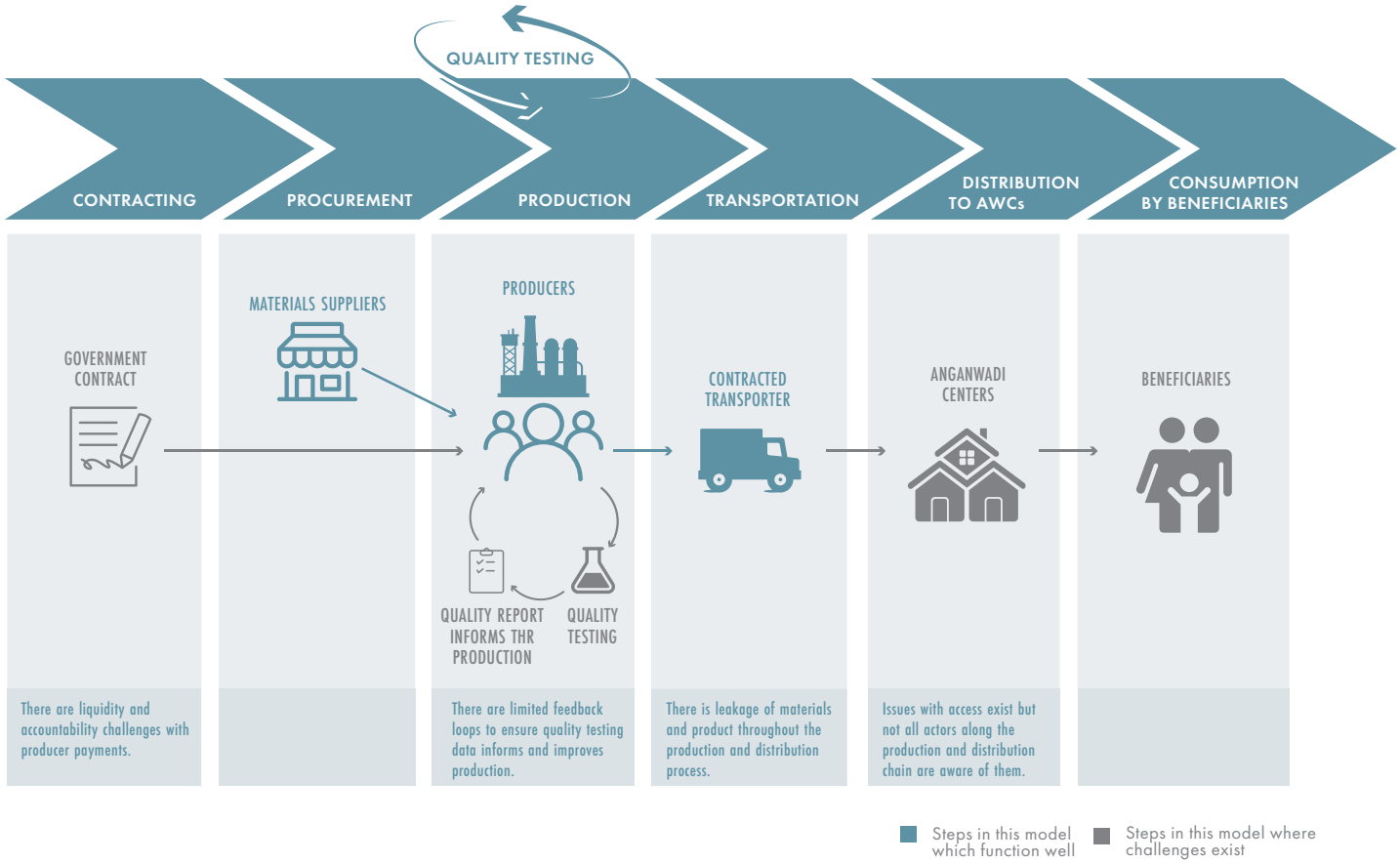
RECOMMENDATION 1

Transition all state ICDS payments to e-payment systems.

Leakage of materials and product throughout the production and distribution process

There are many steps along the production and distribution value chain and few practices to ensure that materials and product proress through each step without leakage of pilferage. Across states both beneficiaries and Anganwadi Workers have reported that THR is not being received at the prescribed frequency and amount, however, it is difficult to ascertain where in the production and distribution process product is being lost. For the effectiveness of the SNP, it is critical that THR is received by beneficiaries on a regular basis, and in the appropriate amount. Thus, to improve SNP, upstream points of leakage and pilferage must be minimized.

Figure 3. THR Production amd Distribution Value Chain: Gaps and Bottlenecks



There are several examples of electronic tracking mechanisms that have been used to address supply chain issues and monitor raw materials and THR product from producer to beneficiary, including through Aadhaar[8] and bar coding systems.[9] If employed for SNP monitoring, electronic systems such as these have the potential to dramatically decrease leakage and pilferage by increasing transparency and accountability at all steps in the production and distribution value chain. In Gujarat for example, bar coding is being implemented with the goal of all materials tracked via a scannable bar code at points throughout the THR supply chain.[10] Bar coding is also compatible with the new CAS-RTM system that all Anganwadi Workers will have by the end of 2019, creating a further opportunity to leverage this type of system in broader efforts to decrease pilferage and leakage.[11]

Quality testing frequently does not lead to improvements in the THR production process

Quality testing across different production models differs, however, across all models, it is clear that even where quality testing is performed, results rarely inform or improve subsequent production practices. However, certain examples are instructive as to how other states could improve practices in these regards – for example, in Kerala, decentralized production facilities have samples of their THR tested by an external laboratory, results are then communicated to the local CDPO, and those facilities whose results demonstrate poor THR quality are required to improve their production within a certain amount of time or contracts are terminated.[12] This feedback loop ensures that production facilities have the necessary information and are held accountable to changing their THR production processes when quality is inadequate.

RECOMMENDATION 2

All steps of the THR production and distribution process should be monitored via an electronic monitoring system.

Producers are not held accountable for downstream access issues

Across states, beneficiary access challenges are seen in all three models. Data from 2016 show that throughout India less than 60% of all beneficiaries are covered by ICDS food supplementation: 52% of pregnant women are covered, 47% of lactating women, and only 55% of children 6-35 months of age.[13] Despite these access challenges, producers are frequently not held accountable for ensuring access at the beneficiary level – for example, in some states producers must only ensure delivery of THR product to the block level, though there remain challenges in subsequent distribution from the block to ultimately

reach the beneficiary. However, mechanisms do exist to address these challenges – in Odisha for example, a Jaanch committee is recommended to monitor community-level access and authorize payment to producers only upon verification of THR delivery to the AWC, and that THR meets specified quality standards.[14] Employing monitoring mechanisms like this in other states could ensure producers are held accountable for downstream access challenges, and ultimately that beneficiaries have ready access to THR. Further, there is the opportunity to tie ICDS contracting to the attainment of these standards, such as has been seen in Kerala's decentralized production facilities.[15] In this way, contractual agreements for THR production could be enhanced by guaranteeing producer accountability for both THR quality and beneficiary access.

RECOMMENDATION 3

Contracts for THR production should incorporate, and be contingent upon, attainment of pre-established metrics for both access and quality.

Limited knowledge or awareness of access and quality challenges throughout the production and distribution value chain

To effectively hold producers accountable for access and quality standards, producers must be provided with actionable information so that they can continually improve their production and distribution processes. However, access challenges at the beneficiary level are often not reported back to producers, and quality reports are usually only shared with ICDS officials – by not communicating the challenges with access and quality, the producer is unaware of inadequacies and challenges, and are unable to improve their processes. Similarly, SNP beneficiaries are also often unaware of their right to regular THR supply, or the quality of the product they are receiving. To address both of these information asymmetries, public reporting of both access and quality metrics could enable enhanced accountability and improved processes across the value chain.

RECOMMENDATION 4

THR access and quality metrics should be publicly reported.

Micronutrient premix and fortified staples are not consistently used in THR production

As THR is intended to combat malnutrition and provide beneficiaries with nutrients that they do not receive sufficiently in their daily diets, it is critical that these nutrients are present in the THR product, and in the appropriate amounts. However, current THR recipes are frequently insufficient in their nutrient composition (see Policy Brief 2 for further discussion).[16] Therefore, by adding a micronutrient premix to the product, THR composition could be further optimized. However, in many locations, particularly rural areas, producers do not have access to premix and thus THR is produced with sub-optimal nutrient composition. Improved access to micronutrient premix could dramatically improve the impact of the THR program and thus should be guaranteed in all local markets.

RECOMMENDATION 5

State governments should exclusively procure THR fortified with added micronutrients.

RECOMMENDATION 6

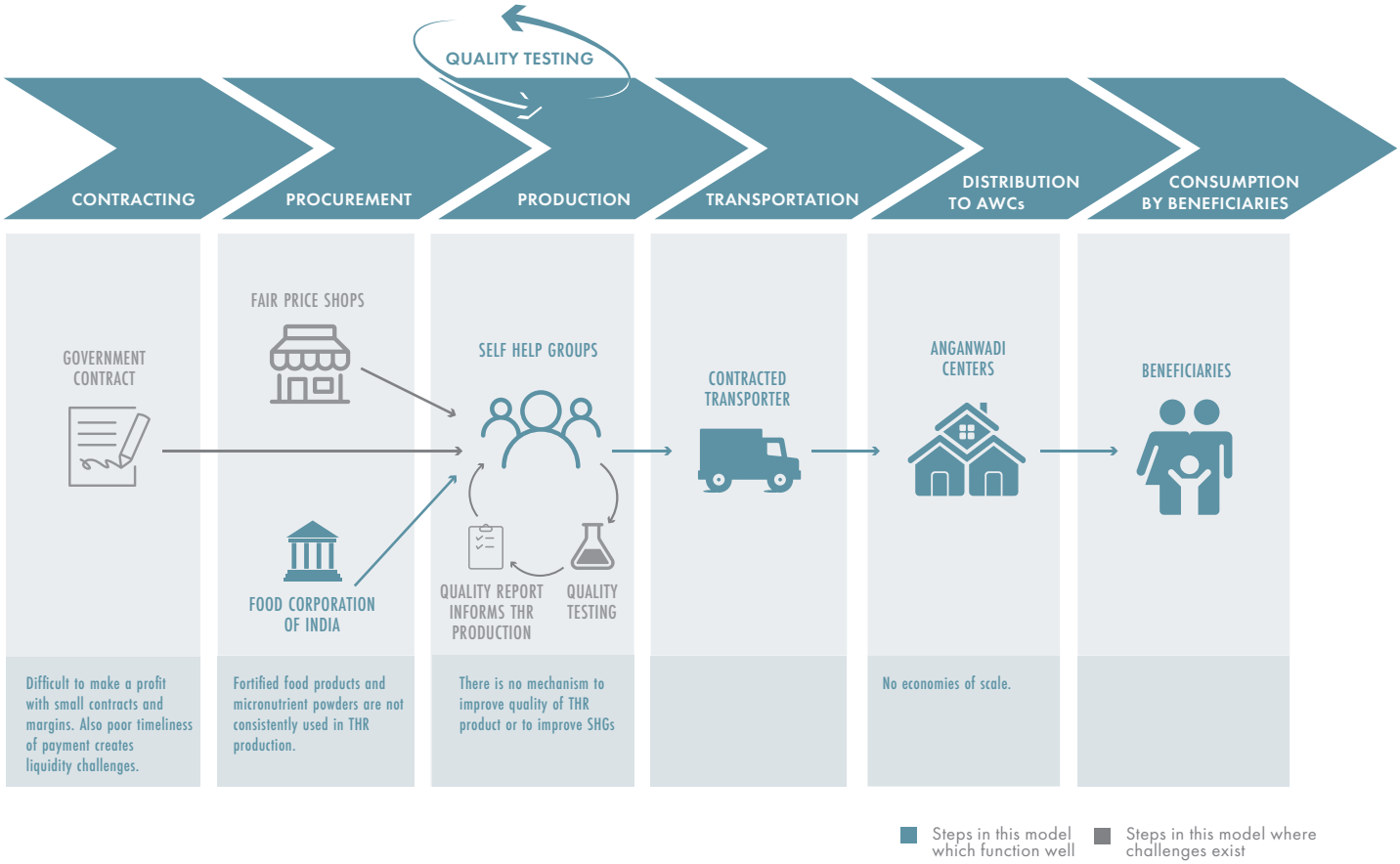
States should ensure strict compliance to quality testing mandate for THR through independent quality testing that examines food safety, micronutrient and macronutrient content and moisture level. These results should be communicated back to the producer to enable quality improvement as necessary.

We now transition our discussion to focus on the opportunities and challenges of each individual production and distribution model, beginning with the decentralized Self-Help Group model, as described in Box 1; subsequent sections will discuss the decentralized production unit and centralized models.

Decentralized Self-Help Group Models

Opportunities provided by Decentralized Self-Help Group Models

Figure 4. THR Production & Distribution in the Decentralized SHG Model



There is greater community ownership with decentralized SHG models

Self-Help Groups are community-based financial intermediary committees that typically consist of ten to twenty women.[17] In addition to financial savings and lending activities, SHGs also engage in income-generating activities, and in multiple states are the primary producers of THR.[18,19,20] Frequently, the children of SHG members and their neighbors are SNP beneficiaries.[21] This increases accountability and incentivizes SHG members to produce a high-quality THR product, and theoretically to also minimize leakage and pilferage, in an effort to ultimately improve the nutrition of their families and communities. A secondary benefit of the decentralized SHG production model is that THR is produced locally and recipes may be adjusted according to local preferences, thereby improving acceptability of the THR product.

Decentralized SHGs lead to women's empowerment and provide opportunities for income generation

Profit made from THR production is retained by SHG members, increasing household income, and ultimately improving the wellbeing of those families. Even when profit is minimal, SHG membership and THR production can be empowering for women to have a responsibility outside of their home and to know that they are improving their own communities. Finally, having such a role in the community also cultivates respect by community members and local stakeholders for SHG members.[22,23,24,25]

Access is improved with decentralized SHGs

Each SHG typically supplies THR to one or two AWCs within their local communities. Therefore, even rural AWCs will have THR that has been produced locally. SHGs are also responsible for delivering the THR directly to the AWC increasing SHG accountability for SNP beneficiary access. Theoretically, this model leads to fewer challenges upstream in the production and distribution value chain that result in decreased beneficiary access. During state visits and key informant interviews, anecdotally, it was reported there are fewer access challenges in this model than in more centralized models, however limited data exist to substantiate or refute this claim which could be an area for further research.

BOX 2

Rajasthan THR Production & Distribution[26]

THR production in Rajasthan is mainly carried out by small, kitchen-based SHGs. These SHGs typically provide THR to one AWC in their local community. If there is a shortage of SHGs in the community, SHGs can provide to up to two AWCs. SHGs typically grind and roast the raw materials by hand and store the THR product within their homes prior to delivery.

SHGs are contracted for 18 months by signing a MoU with the local Chief Development Project Officer (CDPO). The MoU dictates the THR recipe, beneficiaries, proportions and payment method, and stipulations for quality control. The MoU gives CDPO authority to send THR samples for quality testing at their discretion.

Lady Supervisors visit SHGs once per month to check for cleanliness of the production area. If complaints are made regarding the quality of the THR product, SHGs must correct their procedures to guarantee the quality that is specified in the MoU or the contract may be temporarily or permanently discontinued. Notably, there is no mechanism in place to provide technical assistance to SHGs to improve their process.

Two SHG-run production facilities have also been set up in Rajasthan, with support from GAIN, but only one is currently functioning. GAIN supported the establishment of these facilities beginning in 2010. The ICDS contracted one of the facilities to provide 30 metric tons per month of THR and it has been generally successful, however the second facility has not yet received a contract from the ICDS. The decentralized production facility model is discussed further below.

Challenges with decentralized SHGs

Despite the potential opportunities for improved access, female empowerment, and community ownership, decentralized SHGs also face a number of challenges across the production and distribution value chain, as demonstrated in Figure 4.

Fortified food products and micronutrient powders are not consistently used in THR production

SHGs procure fortified wheat from the government Public Distribution System (PDS), however, the availability of other fortified products, such as fortified oil and raw ingredients, is lacking in most rural settings. Similarly, market availability of micronutrient premix is limited throughout much of India. In our experience, knowledge of the importance of using fortified products and micronutrient premix is also limited among SHG members.[27,28] Therefore, fortified raw materials and micronutrient premix are not typically added to THR in states employing a SHG model, leading to a THR product that is frequently insufficient in micronutrient composition.[29]

As discussed above, we therefore recommend that state governments should ensure access to micronutrient premix and government should exclusively procure fortified THR.

Small contracts lead to small margins and challenges with financial sustainability

As most SHG contracts are for only one or two AWCs, there are limited economies of scale in this model. Additionally, such small contracts do not allow for bulk purchasing as the raw ingredients are not used quickly enough. In certain states consortium purchasing is permitted, enabling multiple SHGs to purchase ingredients together at bulk pricing rates, however this model has only been variably implemented. Further, given limited revenue, SHGs typically lack capital to invest in mechanization for THR production, which impacts both efficiency as well as quality of the THR product. For these reasons, small contracts that have SHGs supplying to only one or two AWCs lead to very small margins and create financial sustainability challenges.[30,31] Conversely, in certain states including Kerala, SHG contracts are awarded at the Block level which addresses many of these challenges and leads to a more financially-viable model.

RECOMMENDATION 7

Self-Help Groups should be permitted to utilize consortium purchasing mechanisms.

RECOMMENDATION 8

Self-Help Group contracts should be awarded at the Block level to optimize production and guarantee financial viability.

Few decentralized states have mechanisms to improve SHG production quality

Quality and production of THR in the SHG model is primarily monitored by Lady Supervisors, as previously described. Additionally, SNP beneficiaries and community members can submit complaints via Lady Supervisors or the CDPO if there are concerns about quality of THR product, supply, or access. If concerns are identified by either Lady Supervisors, or community members and beneficiaries, SHGs can be compelled by the CDPO to address the inadequacies or contracts can be terminated. However, unfortunately, there are very few formal mechanisms in place to help SHGs improve their own performance if and when such concerns are identified. Secondly, even in the absence of concerns, there are limited

BOX 3

Rajasthan Production Facilities

In 2010, with support from GAIN, two THR production facilities were established in Rajasthan. These production facilities were meant to be run by a consortium of SHGs that received training and ongoing support from GAIN. Currently, only one facility is operational – it is fully automated and can produce more than one metric ton of THR daily. As a part of the THR production process (see Image 1) micronutrient premix is added to improve the micronutrient composition of the final THR product.

The facility currently operating has a contract with ICDS for the production of 3 metric tons of THR per month.[32] The second production facility has yet to secure a contract with ICDS and therefore has not begun production.

opportunities for continued skills-development among SHG members to improve their operations, THR quality, or production and distribution processes.[33,34]

A parallel problem exists insofar as there is no clear mechanism by which SHGs are evaluated for skills or their ability to fulfill THR production needs prior to awarding of contracts. In many communities there are multiple SHGs, yet not all of them are awarded contracts for THR production given demand requirements. The development of a grading or certification process for SHG capacity for THR production could enable communities to award THR production contracts to the SHGs most well-suited and capacitated to fulfill community needs.

Given the magnitude of the malnutrition burden, and the urgency to address it, for states who employ the decentralized SHG model, developing parallel mechanisms to guarantee and improve quality and skills of SHGs could lead to similar improvements in local nutrition outcomes. Programs like the National Nutrition Mission's Incremental Learning platform offer insights into what a mechanism might look like and should be considered for SHG models as well.[35] The National Nutrition Mission could also engage multiple sectors in building SHG capacity, such as the Ministry of Rural Development or international development partners.

RECOMMENDATION 9

Self-help groups should be graded and certified and awarding of THR contracts should incorporate SHG grading.

RECOMMENDATION 10

A quality improvement mechanism should be developed to build capacity and further develop skills among self-help groups.

Decentralized Production Facility Models

Opportunities provided by the Decentralized Production Facility Model

Decentralized production facilities allow for economies of scale

In decentralized production facilities, a single facility typically supplies THR for an entire block, though this varies across states. This enables decentralized production facilities to purchase the required raw materials in bulk, lowering the unit cost. With large orders and higher margins, decentralized production facilities can also invest in technology and machinery to speed production and increase efficiencies. With this increased automation, many SHGs in Odisha and Kerala reported producing other products for commercial sale to increase the SHGs' overall revenue.[36]

Producing THR with high-nutrient value is more feasible in decentralized production facility models

The addition of a micronutrient premix to THR is more feasible for decentralized production facilities due to the automated nature of their THR production. This practice has been seen in existing decentralized production facilities, such as in Rajasthan, which is further described in Box 3. [37]

BOX 4

Kerala THR Production & Distribution

In Kerala, THR is produced through a decentralized production facility model. SHG members receive training and continued capacity building through Kudumbashree, which is a state-run poverty eradication mission that manages a variety of income-generating and poverty-eradication schemes, including THR production.

Production facilities produce THR through a fully automated process. SHGs purchase raw materials in bulk and produce THR for the entire block. A micronutrient premix is not currently added to the nutrimix product. The THR is delivered to the ICDS office, where it is then distributed to individual AWCs. THR production is reported publicly through Kudumbashree's website.

THR production also undergoes external quality testing. One sample is taken from each batch and sent to a testing facility in Chennai. The product is tested for quality, composition, and moisture content. Results are sent back to the CDPO approximately three months later who communicates results to the SHG. Production facilities are also visited to ensure hygienic production conditions. SHG members must wear masks and uniforms to ensure a high-quality product.

There is greater community ownership of decentralized production facilities and empowerment of women running the decentralized facilities

Decentralized production facilities are typically run by Self-Help Groups from the local communities served by the facility. The children of these women or their neighbors often are SNP beneficiaries and use THR in their homes. This creates local accountability, incentivizes SHG members to produce a high-quality product, and to reduce pilferage, ultimately in an effort to improve the overall nutrition status of their families and communities.[38,39]

As described above, profit made from THR production is retained by SHG members, increasing household income, and ultimately improving the wellbeing of those families while empowering the women.[40,41]

Decentralized production facilities improve beneficiary THR access

Production facilities typically supply THR to a single block and are run by local SHGs. Facilities are responsible for THR distribution typically to the AWC level, ensuring there are limited downstream access gaps and that production facilities are accountable to beneficiary access. Because THR is produced in close proximity to communities the facility serves, it is also easier for production facilities to fulfill this responsibility. According to a study using 2016 NFHS-4 data, highest coverage of food supplementation was seen in Odisha, which employs a decentralized facility model.[42]

Challenges with decentralized production facility models

Despite the opportunities for economies of scale, high-nutrient THR product, improved access, female empowerment, and improved community acceptance, decentralized production facilities also face a number of challenges throughout the production and distribution value chain, as demonstrated in Figure 5.

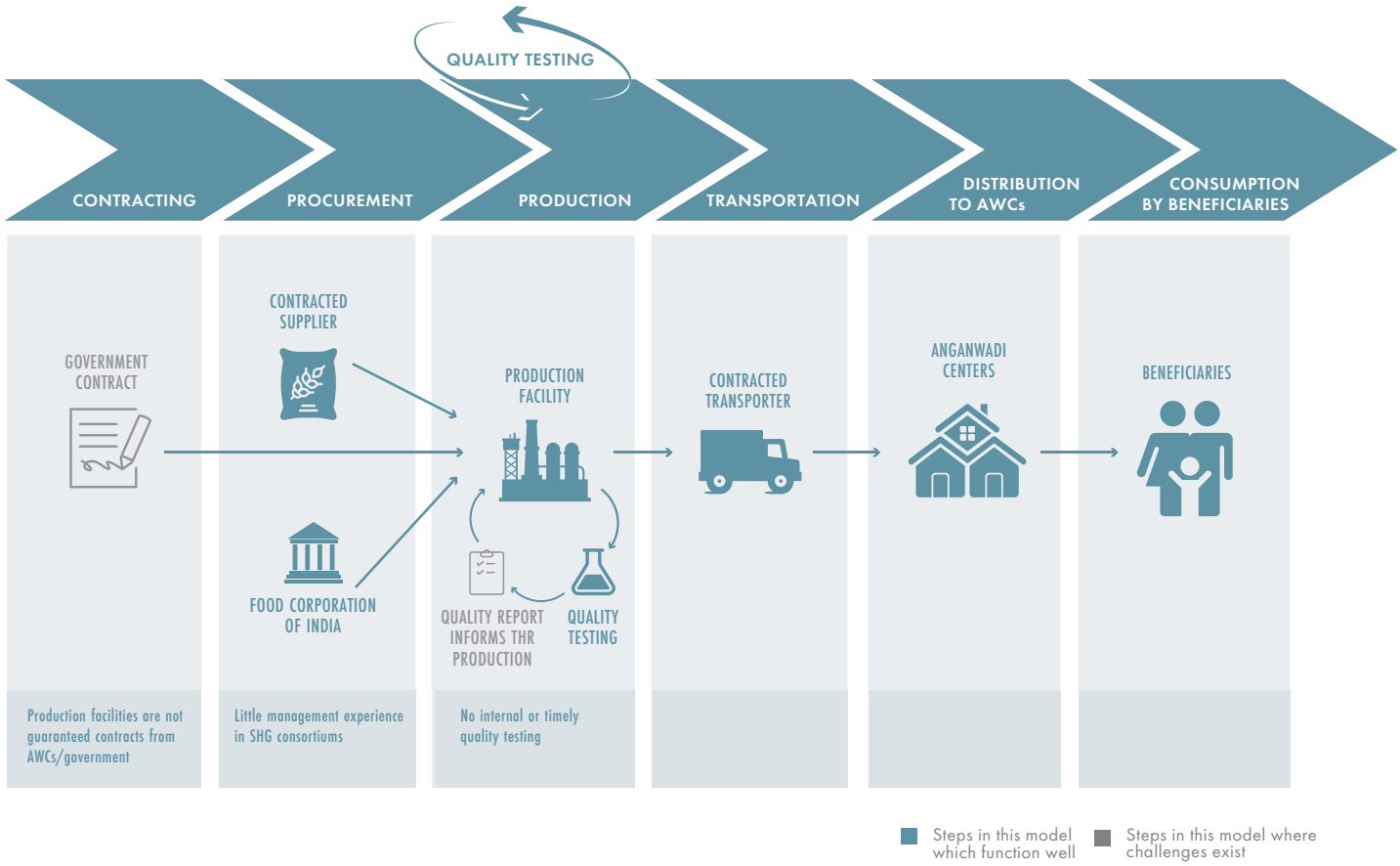
Production facilities are not guaranteed contracts

As demonstrated in the Rajasthan example (Box 3), while significant investment and effort may be put in to the development of production facilities, contracts for THR production are not guaranteed by ICDS. Given the capital and operational expenses necessary for production facilities, this is not a viable business model without some form of guaranteed demand.[43] On the other hand, ICDS should have the ability to ensure high-quality production and therefore should not be obligated to purchase from facilities without regulatory control over production quality. Therefore, to ensure financial viability of the decentralized production facility model, some form of guaranteed demand must be ensured by ICDS, and in parallel, production facilities must be held accountable to ICDS standards for quality, access, and adequate and timely supply.

RECOMMENDATION 11

Contracts should incorporate advanced-market commitments from public sector to guarantee demand and improve sustainability

Figure 5. THR Production & Distribution in the Decentralized Production Facility Model



Limited management experience in SHGs

Production facilities combine management by local SHGs with automated, large-scale THR production. However, SHGs typically have limited management experience which has led to challenges in implementation of this model. Capacity-building and skills-development activities are often provided when an SHG is initially contracted, but continued capacity building on a regular basis is not mandated. In the Rajasthan GAIN-supported factory this was found to be a limitation of the model.[44] In Kerala, Khudumbashree provides management oversight for the SHG production facilities, which promotes the sustainability of SHG production (see Box 4). [45]

External quality testing results are delayed leading to limited impact on THR production

Although decentralized production facilities do not have internal quality testing labs, external quality testing is employed in some states, including in Odisha and Kerala.[46,47,48] In these states samples are taken from each batch of THR produced and sent to external laboratories, sometimes in different states. Results are sent back to the local CDPO and in some cases the SHG themselves, however frequently results can take three or more months to return. Because of the extended period between THR production and receipt of results, it is difficult to operationalize changes and improvements to production processes accordingly, or at best, such changes take extended periods of time to occur. However, state food labs currently exist in all states in India which could also satisfy this quality testing function, and if utilized could significantly decrease the time involved in testing and results feedback, thereby enabling more rapid improvements and accountability for THR production.

Image 1. THR Production Facility in Rajasthan

BOX 5

Telangana Foods

Telangana Foods (previously AP Foods) is a government-run centralized facility that is currently serving both Telangana and Andhra Pradesh. AP Foods was established in 1974 with support from CARE, UNICEF, and the GOI. The single production facility supplies THR product to 400 ICDS projects and reaches over 53 lakh children.

Telangana Foods produces THR within ICDS budgetary norms, and remaining funds are used to improve the facility and production practices. Telangana Foods recently finished the construction of another factory onsite that will produce alternative nutritious products for children.

Telangana Foods has an on-site Quality Control Laboratory, through which they test quality of raw materials, packaging, and finished THR product. They also have the capacity to test vitamin and mineral composition. Finally, beneficiary complaints are also addressed through the Quality Control Laboratory to ensure ongoing improvement.

THR from this facility is distributed to ICDS projects, who in turn are responsible for delivering THR to AWCs. Research has demonstrated that there are frequent access issues, particularly in rural areas.[49]

Despite the challenges with access, Telangana Foods has been largely successful at providing a high-quality THR product to beneficiaries who are generally very satisfied with taste and quality. Andhra Pradesh is now in the process of building their own centralized production facility, which will be modeled off Telangana Foods' operation.

Centralized Production and Distribution Models

Opportunities with Centralized Models

While the GOI has recommended decentralization, centralized production models remain a prominent modality of THR production and offer important strengths along the THR production and distribution value chain instructive for other models.

Centralized models provide economies of scale

In centralized models, THR for an entire state is typically made at one, or at most several, facilities, via large-scale production. This enables centralized production facilities to purchase required raw materials in bulk, lowering productions costs. Centralized facilities also have the opportunity to invest in technology and machinery to speed production and increase efficiencies. In parallel, overhead costs, including accounting and administration, may also be reduced through the efficiencies of centralization.

Producing THR with high nutrient value is more feasible in centralized models

Due to the ability to buy in bulk, other cost savings, and the greater availability of products in urban locations, purchasing fortified staples, such as wheat, is less challenging for centralized facilities. Further, the addition of a micronutrient premix to THR production is much easier to streamline and purchase in centralized models. In many areas of India, particularly rural settings, access to micronutrient premix is limited; however, centralized facilities – usually based in urban settings – face fewer difficulties purchasing micronutrient premix.

There is greater potential to ensure a high-quality product with centralized production facilities

Standardization of the production process is easier to implement in centralized facilities, thereby increasing the likelihood of a higher quality THR product. Centralization and standardization enable improved hygienic conditions, appropriate processing times, and enhanced fidelity to approved formulation and recipes. In addition, some centralized facilities, such as Telangana Foods (see Box 5), have on-site quality control laboratories, which also provide a quality improvement mechanism for the facility and production process.[50]

Challenges with centralized models

Despite the opportunities for economies of scale and high-quality THR production, centralized facilities also present a number of challenges across the production and distribution value chain, as demonstrated in Figure 6.

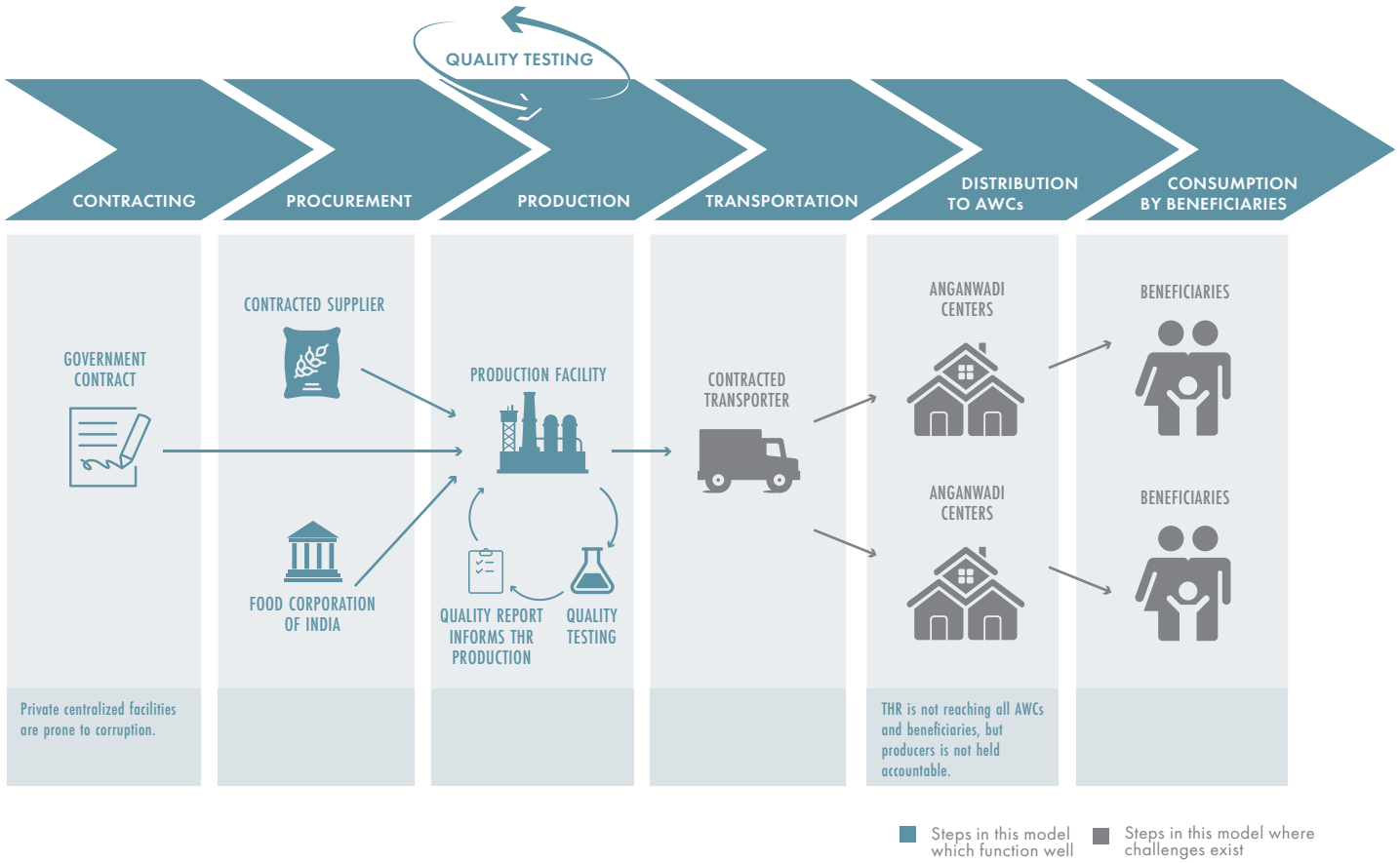
Income-generating activities and female empowerment is not a central part of this model

As centralized facilities are either run by government or by a private contractor, there are few opportunities to include local SHGs in the production of THR. The GOI's order for decentralization, among other factors, was premised upon the idea that decentralization would lead to local economic opportunities and empowerment.[51,52] The centralized model however does not prioritize this approach, which may also lead to less community ownership of the SNP and THR program.

THR is not reaching all beneficiaries, particularly those in rural areas

Because centralized production models consist of one or

Figure 6. THR production and Distribution Value Chain Centralized Models



only several facilities, usually based in urban areas, it can be more challenging to reach those areas that are furthest from production facilities. According to a 2016 study, 28% of caretakers in Telangana reported that their local AWC had no THR in stock, and 39% reported that their AWC did not supply THR.[53] Centralized facilities are not currently held accountable for any downstream challenges at the transportation and distribution steps of the value chain that may prevent THR from being accessible to beneficiaries. To improve access, centralized facilities should be held accountable for ensuring access at the beneficiary level.

RECOMMENDATION 12

Centralized producers should be held accountable for down-stream access gaps (including stockouts, late or inconsistent supply), with a portion of overall compensation tied to access.

If this recommendation were to be implemented in Telangana and Andhra Pradesh, for example, where coverage issues have been reported,[54] we estimate that over 1 million more beneficiaries could have improved access to THR. This is assuming that Telangana Foods is responsible for 53.77 lakh beneficiaries[55] and that approximately 28% of these beneficiaries face stock outs at their AWC.[56]

Corruption and poor quality are seen in some privatized centralized facilities

Some states have chosen to contract production and distribution of THR to private corporations through centralized models. Although in theory the private sector brings experience and infrastructure to deliver a high-quality product, in practice, certain examples from private corporations in Uttar Pradesh and Madhya Pradesh demonstrate challenges in both quality and access, as well as corruption in operations.[57,58,59] Limited access for beneficiaries at the AWC-level have been observed in these states, but upstream steps in the production and distribution value chain also experience challenges and have been subject to corruption of various scales. While corruption and other challenges exist in many systems, these examples are nonetheless cautionary as other states consider centralized production models and the contracting process therein.

BOX 6

Great Value Foods

Great Value Foods was established in 2003 and is one of the largest producers of supplementary nutrition in India. Great Value Foods currently holds the contract for producing all THR for Uttar Pradesh.[60]

Data is limited regarding the quality of THR produced by Great Value Foods, though independent analysis by NIN found that neither of two products evaluated met the pre-specified criteria that were agreed to by the contractors.[61] In parallel, Uttar Pradesh SNP beneficiaries experience challenges with access. Through our own research, beneficiaries and AWC staff reported THR stock-outs ranging between 3 to 9 months, as well as the need for AWC staff to pay bribes to receive THR when in-stock. Conversely and notably, beneficiaries reported that when THR was in-stock, they thought it was of good quality and taste.[62]

Limited information is available regarding Great Value Foods' operations, and they declined interviews or a request to visit their facilities for further research.

Conclusion

In this Brief we have reviewed the various benefits and challenges across production and distribution models, and opportunities to improve each model specifically. Optimizing production and distribution of THR has the potential to dramatically improve the nutrition and health of SNP beneficiaries. Deciding on the best model for a state will depend on a number of considerations, and states must understand the tradeoff between quality and access that each model represents. Regardless of the model that a state employs for THR production and distribution, challenges with accountability, leakage, and quality will be faced. We believe that if states implement the recommendations presented here, production and distribution systems may be greatly improved and more regular access to high-quality THR could be ensured. In parallel, these benefits could significantly improve nutrition outcomes across India and build a foundation towards achieving the National Nutrition Mission's goals.

Policy Brief

No. 4

THR Production & Distribution Models –
Challenges and Opportunities for Improvement

14

AUTHORS

Kelly Flanagan, MPH
Associate Program Officer, Pharos Global Health Advisors

Shan Soe-Lin, PhD
Principal, Pharos Global Health Advisors

Robert Hecht, PhD
President, Pharos Global Health Advisors
Professor, School of Public Health and the Jackson Institute of Global Affairs, Yale University

Ryan Schwarz, MD, MBA
Senior Program Officer, Pharos Global Health Advisors
Instructor of Medicine, Harvard Medical School

SUGGESTED CITATION

Flanagan, K. F., Soe-Lin, S., Hecht, R. M., & Schwarz, R.K. (2018). THR Production and Distribution Models- Challenges and Opportunities for Improvement. Policy Brief 4. Pharos Global Health Advisors.

CONTACT

Pharos Global Health Advisors
780 Boylston Street
Suite 16J
Boston, MA 02199 USA
T +1 857.284.7425

TATA TRUST
R K khanna Tennis Stadium, 1, Africa Avenue,
Mohammadpur, RK Puram, New Delhi, Delhi 110029, India

ABOUT PHAROS

Pharos Global Health Advisors is a non-profit policy and advisory organization whose mission is to save lives on a large scale by focusing on emerging issues in global health. Using data, analytics, and experience, we help our country and donor partners make sound decisions in the allocation of scarce financial and human resources.

ABOUT POLICY BRIEFS

This brief is a part of a larger series of policy briefs commissioned by Tata Trusts and developed by Pharos Global Health Advisors assessing the challenges and opportunities of the THR portion of India's ICDS. There are four briefs in total focusing on THR Composition and Formulation, Programmatic Governance and Accountability, and Production and Distribution. All briefs can be found at https://pharosglobalhealth.com/resources/.

Annex[63]

No. 4

STATE	MAJORITY MODEL	PRODUCER	THR PRODUCT
Andaman & Nicobar Islands		SHG	Khichdi
Andhra Pradesh	Centralized (public) facility	Telangana Foods (Public centralized facility)	Balamrutham (Weaning Food), Eggs
Arunachal	Centralized (private) facility	Private manufacturer	Cereal based weaning food, Kheer, Soya base fortified biscuits.
Assam		NGOs	Rice, White Peas
Bihar		At AWCs by AWHs	Rice, Pulse, Soya Chunk, Egg
Chandigarh		SHG	Weaning foods
Chattisgarh		SHG	
Dadra & Nagar Haveli		AWC	Hot cooked meals
Daman & Diu	Centralized (private) facility	Private Agency	'Swabhiman' scheme, 7.5 kg of ration.
Delhi		SHG	Panjiri , Weaning Food
Goa	Centralized (private) facility	Private Agency (supply of food grains is done by Dept. of WCD)	Dry Fruit grain, jaggery, Gram dal, Rice, Salt, ghee watana, green & black chick peas, ragi
Gujarat		Gujarat Cooperative Milk Mkt Fed	Ready to Eat Balbhog
Haryana	Centralized (public) facility	State Govt. Micronutrient fortified	Fortified Panjiri, Bharva Prantha, Meetha Dalia, Aloo Purii, Meetha Chawal, Pulao & Gulgule/ Saviea
Himachal Pradesh	Centralized (private) facility	Private Agency (HP Coop. Milk Producer Ltd, HP Civil Supplies Corp & ALMSCs)	Foritifed Panjiri, Rice Pularo, Fottified Biscuit, Sweet Dalia
Jammu & Kashmir	Centralized (private) facility	Private Agencies	Cooked Rice
Jharkhand	Centralized (private) facility	Private Agency	Fortified Panjiri Food, Khichdi, Sweet and Salty Upma
Karnataka		Mahila Supplementary Nutrition Production & Training centre	Nutrimix Powder (Ragi/Wheat/Rice, Jaggery, G.nut, Green Gram, Bengal Gram,) Milk Powder
Kerala	Decentralized production facilities	SHG (Kudumbashree Mission)	THR – Amrutham Nutrimix for children (6-36 months)

No. 4

STATE	MAJORITY MODEL	PRODUCER	THR PRODUCT
Lakshadweep		Panchayat Department	Prepared from (RTE- Rice, Green gram, bengal grams)
Madhya Pradesh	Centralized (public) facility	MP State Agro Industries Devp. Corp. Ltd. (GoMP)	Bal Aahar-Mixture of wheat soyabean, channa, makka aata, sugar, soya oil Khichdi mix, instant Soya barfi/ laddu mix
Maharastra		SHGs	Balahar, upma, Sukhadi, Sheera, Sevai
Manipur	Centralized (private) facility	Manufacturer	Supplementary Weaning food, Sangam Kheer
Meghalya	Centralized (private) facility	Manufacturer	Fortified Atta, cereal based weaning food, Pulse based RTE, Suji Halwa RTE
Mizoram	Centralized (private) facility	Private Agency	RTE- Milk Cereals, Energy dense fortified foods
Nagaland		NGOs	Ready to cook food
Orissa	Decentralized production facilities	SHG consortiums	Chatua- wheat, Bengal gram, kalla channa, G.nut, sugar, rasi laddu
Puducherry	Centralized (private) facility	Private agency	Micro nutrient Fortified Food supplements
Punjab	Centralized (public) facility	State Coop. Milk Producer Federation Ltd.	Panjiri
Rajasthan	Decentralized SHG	SHGs	Baby mix (Cereal Pulse Based , Weaning Food)
Sikkim	Centralized (public) facility	Govt. Run EFPP Plant	In powdered form, Ready to Eat (Paushtik Aahar-Cereal Pulse based Micronutrient Fortified)
Tamil Nadu		SHGs	Complementary food- Sathumavu (Amylase rich Weaning Food)
Telangana	Centralized (public) facility	Telangana Food, Hyderabad (Govt)	Balamrutham -powder consists of roasted wheat , Bengal Gram, Milk powder, Eggs, Sugar & oil
Tripura		SHG	Row Rice, Row Masoor Dal, Row Eggs and Row Soyabean
Uttar Pradesh	Centralized (private) facility	Private Agency	Micronutrient Fortified weaning food, Meetha & Namkeen Dalia, Laddu premixes
Uttarakhand		SHGs	Dalia, Suji, Daal, Cholai, Mungfali dana, Bhuna Channa, Jaggery, Chura
West Bengal		SHG	Paustik Powder/ Paustik Laddu

End Notes

No. 4

THR Production & Distribution Models –
Challenges and Opportunities for Improvement

1. Ministry of Health and Family Welfare, Government of India. (2017). National Family Health Survey- 4. 2015-2016. India Fact Sheet.
2. Martorell, R. (1999). The nature of child malnutrition and its long-term implications. Food and nutrition Bulletin, 20(3), 288-292.
3. Rao, N., & Kaul, V. (2018). India's integrated child development services scheme: challenges for scaling up. Child: care, health and development, 44(1), 31-40.
4. Ministry of Women and Child Development, Government of India. (2009). Integrated Child Development Services (ICDS) Scheme. http://www.icds-wcd.nic.in/icds.aspx.
5. Leyvraz, M., Wirth, J. P., Woodruff, B. A., Sankar, R., Sodani, P. R., Sharma, N. D., & Aaron, G. J. (2016). High coverage and utilization of fortified take-home rations among children 6–35 months of age provided through the integrated child development services program: findings from a cross-sectional survey in Telangana, India. PloS one, 11(10), e0160814.
6. Chhabra, I. Community Participation through empowerment in India's Supplementary Nutrition Programme.
7. Key informant interviews – Odisha, May, 2018.
8. National Informatics Centre. Functional requirements specification for fps automation, version 1.0. http://epds.nic.in/documents/FRS-for-FPS-Automation.pdf
9. Dave, K. & Rupera, P. (2018). Amul rations to help government fight malnutrition. https://timesofindia.indiatimes.com/city/ahmedabad/amul-rations-to-help-govt-fight-malnourishment/articleshow/64607946.cms
10. ibid
11. ICDS WCD. Guidelines for ICDS-CAS device distribution. 2018. https://www.icds-wcd.nic.in/nnm/NNM-Web-Contents/LEFT-MENU/ICT-RTM/ICDS-CAS_Device_Distribution_Guidelines_English.pdf
12. Key informant interviews with SHG members in Kerala, May 2018.
13. IFPRI. (2018). District-level coverage of interventions in the Integrated Child Development Services (ICDS) scheme during pregnancy, lactation and early childhood in India: Insights from the National Family Health Survey-4. http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/132803
14. Department of Women and Child Development. (2016). Guidelines THR. http://wcdodisha.gov.in/Application//uploadDocuments/plugin/doc20170527_113230.pdf
15. Pati, R. & Arshand, B. (2015). A concept note on amrutham nutrimix. http://kudumbashree.org/storage//files/di9x7_12.%20a%20concept%20note%20on%20amrutham%20nutrmix.pdf
16. Schwarz, R. K., Briskin, E. A., Flanagan, K. F., Dodd, N., Soe-Lin, S., & Hecht, R. M. (2018). ICMR and ICDS Guidelines & THR Formulation and Composition – Challenges and Opportunities for Improvement. Policy Brief 2. Pharos Global Health Advisors.
17. Kondal, K. (2014). Women empowerment through self help groups in Andhra Pradesh, India. International Research Journal of Social Sciences, 3(1), 13-16.
18. ibid
19. Sarkar, M. A. (2018). Assessment of Self-Help Groups in Rural India-A Study of Jalpaiguri District. Small Enterprises Development, Management & Extension (Sedme) Journal, 45(2).
20. Kudumbashree.org. (2018). State poverty eradication mission. Government of Kerala.
21. Key Informant Interviews, May 2018. Rajasthan and Kerala.
22. Kondal, K. (2014). Women empowerment through self help groups in Andhra Pradesh, India. International Research Journal of Social Sciences, 3(1), 13-16.
23. Sarkar, M. A. (2018). Assessment of Self-Help Groups in Rural India-A Study of Jalpaiguri District. Small Enterprises Development, Management & Extension (Sedme) Journal, 45(2).
24. Kudumbashree.org. (2018). State poverty eradication mission. Government of Kerala.
25. Antier, C., Kumar, S., Bhagwat, S., & Sankar, R. (2014). Production of fortified food for a public supplementary nutrition program: performance and viability of a decentralised production model for the Integrated Child Development Services Program, India. Asia Pacific journal of clinical nutrition, 23(S1), s20-s28.
26. GAIN. Case Study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
27. Key Informant Interviews, Rajasthan. March 2018.
28. Gupta, A. (2014). Fortification of foods with vitamin D in India. Nutrients, 6(9), 3601-3623.
29. GAIN. Case study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
30. Key Informant Interviews, Rajasthan. March 2018.
31. GAIN. Case study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
32. GAIN. Case Study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
33. Key Informant Interviews, Rajasthan. March 2018.
34. GAIN. Case study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
35. National Nutrition Mission. (2018). Guidelines for implementation of incremental learning approach.
36. Key Informant Interviews, May 2018. Kerala and Odisha SHGs.
37. GAIN. Case Study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
38. Key Informant Interviews, March-May 2018.
39. Chhabra, I. Community Participation through empowerment in India's Supplementary Nutrition Programme.

End Notes

No. 4

40. Odisha. (2015). Social Sector Service Delivery: Good Practices Resource Book 2015. Decentralisation of ICDS Supplementary Nutrition Programme: Ensuring timely and quality nutrition to all beneficiaries in Odisha.
41. GAIN. Case study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
42. IFPRI. (2108). District-level coverage of interventions in the Integrated Child Development Services (ICDS) scheme during pregnancy, lactation and early childhood in India: Insights from the National Family Health Survey-4. http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/132803
43. GAIN. Case Study: Empowering women entrepreneurs to produce fortified food for mothers and children in Rajasthan.
44. ibid
45. Kudumbashree: State Poverty Eradication Mission Government of Kerala. 2017. http://www.kudumbashree.org/
46. Pati, R. & Arshand, B. (2015). A concept note on amrutham nutrimix. http://kudumbashree.org/storage//files/di9x7_12.%20a%20concept%20note%20on%20amrutham%20nutrmix.pdf
47. Key Informant Interviews, Odisha and Kerala. May 2018.
48. WCD Government of Odisha. (2015). Guidelines for the decentralized implementation of supplementary food. http://wcdodisha.gov.in/Application/uploadDocuments/plugin/doc20170527_121846.pdf
49. "Leyvraz, M., Wirth, J. P., Woodruff, B. A., Sankar, R., Sodani, P. R., Sharma, N. D., & Aaron, G. J. (2016). High coverage and utilization of fortified take-home rations among children 6–35 months of age provided through the integrated child development services program: findings from a cross-sectional survey in Telangana, India. PloS one, 11(10), e0160814."
50. Further discussion of quality assessment and quality improvement mechanisms within the production and distribution value chain is discussed in Policy Brief 3 of this series.
51. Sehgal, R. (2017). Is the Government Planning to Dismantle the ICDS Programme? https://thewire.in/government/government-planning-dismantle-icds-programme
52. Chhabra, I. Community Participation through empowerment in India's Supplementary Nutrition Programme.
53. Leyvraz, M., Wirth, J. P., Woodruff, B. A., Sankar, R., Sodani, P. R., Sharma, N. D., & Aaron, G. J. (2016). High coverage and utilization of fortified take-home rations among children 6–35 months of age provided through the integrated child development services program: findings from a cross-sectional survey in Telangana, India. PloS one, 11(10), e0160814.
54. ibid
55. Andhra Pradesh Foods. (2014). M Foods. Accessed at http://apfoods.ap.nic.in/.
56. Leyvraz, M., Wirth, J. P., Woodruff, B. A., Sankar, R., Sodani, P. R., Sharma, N. D., & Aaron, G. J. (2016). High coverage and utilization of fortified take-home rations among children 6–35 months of age provided through the integrated child development services program: findings from a cross-sectional survey in Telangana, India. PloS one, 11(10), e0160814.
57. Tewari, S.S.K. (2011). Summary of report on ICDS, Gorakhpur, U.P..
58. Office of the Supreme Court Commissioners. (2012). Report of our Principal Adviser, Biraj Patnaik, with reference to SLP (Civil) No. 10654 of 2012 in the matter of Vyankateshwar Mahila Auyodhigik Sahakari Sanstha v. Purnima Upadhyay and Others listed along with Civil Writ Petition 196 of 2001 (PUCL v. UOI).
59. Johari, A. (2018). How three tainted companies retained their grip over Madhya Pradesh's nutrition scheme for children. Accessed at : https://scroll.in/article/880136/how-three-tainted-companies-retained-their-grip-over-madhya-pradeshs-nutrition-scheme-for-children.
60. Great Value Foods. About Us. http://4u2u.in/nutrition/.
61. Office of the Supreme Court Commissioners. (2012). Report of our Principal Adviser, Biraj Patnaik, with reference to SLP (Civil) No. 10654 of 2012 in the matter of Vyankateshwar Mahila Auyodhigik Sahakari Sanstha v. Purnima Upadhyay and Others listed along with Civil Writ Petition 196 of 2001 (PUCL v. UOI).
62. Key Informant Interviews, May 2018
63. Adapted from: ICDS, POSHAN Abhiyaan. (2018). Supplementary Nutrition. Presented on May 2nd, 2018.