

ISSUES IN THE DESIGN & DELIVERY OF INTERVENTIONS TO IMPROVE RURAL DIETS IN LOW- AND LOWER-MIDDLE-INCOME COUNTRIES

ISSUE VI: TRADE-OFFS



GAIN Convening Paper n°19

March 2025

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Recommended citation

Hague M, and Deo A. Issues in the design and delivery of interventions to improve rural diets in Low- and Lower- Middle-Income Countries. Issue VI: Trade-offs. Global Alliance for Improved Nutrition (GAIN). Convening Paper #19. Geneva, Switzerland, 2025. DOI: <https://doi.org/10.36072/cp.19>

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Acknowledgements

We gratefully acknowledge the financial support of the Dutch Ministry of Foreign Affairs for support for this work. We also acknowledge the invaluable support of Wellspring Development Capital Ltd (Wellspring), who organised and documented the meeting and undertook a literature review which contributed to the selection and articulation of the topic.

We thank the meeting participants for making time to attend and contribute to the sessions. We also thank Eva Monterrosa from GAIN for a thorough review of the early draft.

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SUMMARY

The Global Alliance for Improved Nutrition (GAIN) and Wellspring Development designed and hosted a series of in-person and online consultations with partners of the Dutch Ministry of Foreign Affairs to examine challenges in improving the quality of diets of population groups living in rural areas of Low and Lower-Middle Income countries. These groups still largely consume nutrient-inadequate, even unhealthy, diets and face heavy burdens of malnutrition. This sixth and final paper considers how to recognise and manage trade-offs that inevitably emerge in large scale programmes. The discussions focused on how to identify when trade-offs occur and possible ways of addressing these using coordination or orchestration techniques discussed in the previous paper.

The bulk of the discussion reflected in this paper is from an online meeting held on 5th December 2024, with the participation of GIZ, the Netherlands Food Partnership, and SNV.

KEY MESSAGES

- Large and complex programmes required to improve rural diets at scale often face difficult choices between competing goals/benefits or having to accept negative consequences as a result of the programme.
- Whilst this is in many instances unavoidable, it is important to make these trade-offs visible/explicit to ensure that as many outcomes as possible are considered during programme design and implementation.
- It is possible to take steps through coordination and orchestration to address some trade-offs, but not all can be avoided entirely. Mitigating actions can include careful sequencing, investing additional resources or using new information discovered during implementation.

BACKGROUND AND OBJECTIVE

The challenge of improving the diets of rural populations in Low- and Lower-Middle-Income Countries

Despite decades of rapid urbanisation, it is still the case that 42% of the world's population—3.4 billion people—live in rural areas (1). In lower-middle-income countries, this proportion is somewhat higher (56%), and in low-income countries, nearly two-thirds of the total population live in rural areas. There are 2.4 billion people living in rural areas in these two groups of countries.

Healthy diets are the foundation of all nutrition outcomes—from undernutrition and micronutrient deficiencies to obesity. Many rural households struggle to access a nutritious diet, even though they live close to the land. Globally, and in almost all regions, rural households are more likely than urban households to report severe or moderate food insecurity (2). In Sub-Saharan Africa, the average prevalence of severe/moderate food insecurity is 60% in rural areas (2) and the cost of a healthy diet is no cheaper (or barely cheaper) in rural compared to urban areas (3). Throughout Sub-Saharan Africa, the value of food consumed from own production never exceeds 50% for rural households (4). As a result, African rural households are vulnerable to high food prices, perhaps counter to common perceptions. And in the 85 countries around the world for which the Global Diet Quality Project has collected data on dietary patterns (5), the average percentage of rural dwellers consuming all five major food groups on a given day is just 30%. Indicators of malnutrition in children are consistently worse in rural than in urban areas (6).

Over the last few decades, there has been a renewed focus on the critical role of agriculture and rural development in supporting adequate nutrition by way of promoting healthier diets. In the wake of the food price crisis in the early 2000's (7), 'community development' and 'integrated rural development' agendas both mobilised significant funding over many years. 'Food and nutrition security' has been an important theme and 'nutrition-sensitive agriculture' (8) has become a recognised priority for development. At the same time, many governments have developed national multi-sectoral nutrition plans, policies, and strategies that include or prioritise rural populations, and numerous international development partners have supported project and programme implementation in these areas.

Today we have a better understanding of what works for improving rural diets (9). However, while these approaches have achieved notable nutrition outcomes, evidence of large-scale, sustainable improvements in rural diets remains limited. Looking ahead, large-scale development projects may benefit from placing greater emphasis on dietary outcomes, rather than focusing solely on downstream health metrics for specific target populations.

CONVENING SERIES WITH PARTNERS OF THE DUTCH MINISTRY OF FOREIGN AFFAIRS

The Global Alliance for Improved Nutrition (GAIN), supported by Wellspring Consulting, designed and hosted a series of in-person and virtual meetings with a range of partners of the Dutch Ministry of Foreign Affairs, including: Bopinc, CARE Netherlands, East-West

Seeds, the Netherlands Food Partnership, One Acre Fund, and Wageningen University & Research. The aim of these meetings was to share experiences and insights on the most pressing issues that complicate the design and implementation of initiatives to improve rural diets and thereby to guide more impactful and sustainable project design and implementation in the future. The in-person meeting was held in May 2024 in Utrecht. The list of topics to be explored was developed by GAIN and Wellspring based on a preliminary non-systematic literature review and the initial in-person meeting; topics for which the evidence is weak or non-existent were prioritised for exploration. The selected topics, all of them referring to rural populations in low- and lower-middle-income countries, were:

1. **Dietary quality.** What does improving quality of diets mean in practice; specifically, what constitutes a meaningful increment in dietary quality in this context?
2. **Segmentation.** How can we define and understand the needs of different segments / groups of rural populations?
3. **Markets.** What are the different types of markets and their role in improving incomes, supply of nutritious foods, and quality of diets?
4. **Scale.** What does large-scale mean, and what is the role of financial viability / sustainability in such large-scale efforts?
5. **Orchestration.** Why is coordination (or orchestration) of different programme components and multiple partners so critical? How can it be done better?
6. **Trade-offs.** What are the synergies and trade-offs involved in combining different programme components? How can these be managed?

At least one detailed case study was presented in each meeting, and participants were invited to share other case studies and references. There was no attempt to force consensus around pre-determined or emerging conclusions. To produce the resulting convening papers, the transcripts of the discussions were synthesised and analysed using Artificial Intelligence (Claude 3.5), with output subsequently checked and editorialised by the paper's authors, who take responsibility for the final content.

TOPIC VI: TRADE-OFFS

The session opened with a recap of previous modules on segmentation, markets, scale, and coordination & orchestration. The topic of trade-offs was introduced, noting that decisions in programme implementation often involve balancing competing priorities and mitigating negative effects. When designing programmes that focus on a specific objective, it can be easy to not fully identify or elaborate the trade-offs that will inevitably occur because of the intervention. Programme sponsors may worry that exposing these trade-offs can introduce questions on the validity of the intervention. Research to identify and value trade-offs can be expensive and consequences of actions may not become apparent until the programme is underway or even completed.

A discussion paper (annex 1) formed the basis of this session. In comments on the paper, it was noted that animal welfare was an important missing consideration.

Trade-offs can be defined in a number of ways – from the ‘balancing of factors all of which cannot be achieved at the same time’ (10) to a balancing of two opposing situations or qualities, both of which are desired’ (11). **In economics, a trade-off implies that something**

must be given up to achieve what is desired. In essence, it can be taken to mean the need for compromise. For example, we desire the increased production of nutritious foods, but we also desire that rivers remain clean and free from effluent linked to growing these foods. The purpose of this session was to discuss how trade-offs might occur when looking to improve nutrition outcomes for rural populations and offer suggestions on how coordination or orchestration could mitigate some of the negative effects from these.

An example of a fundamental trade-off was provided: increasing food availability while achieving environmental and climate impacts. For example, agricultural intensification can deliver higher crop yields but requires increased use of resources that could adversely affect the environment, such as through fossil fuels and land conversion. Moreover, there is evidence of strong trade-offs between food and water, with increased crop production through irrigation methods risking reduced availability of water for other uses and making it more difficult to maintain other ecosystem services (12).

Two examples from India were shared:

1. A Gates Foundation project that successfully increased soybean farmer incomes but led to a 900% increase in pesticide use and increased groundwater extraction through bore wells. The trade-off here is between economic development on the one hand and sustainable but less intensive agricultural development. In this instance, the negative effects from the intensification were recognised and expected, but that the economic benefits were seen to outweigh them.
2. A backyard poultry programme for landless women that improved incomes but faced criticism because families sold rather than consuming the eggs and meat produced.

The trade-off between scale and effectiveness was also discussed, noting that small-scale programmes can maintain high quality implementation, but effectiveness often decreases when scaling up. This can create tensions in nutrition interventions aiming for large scale impact, if there is no willingness to accept some dilution in quality.

Household decision-making needs to be understood as it may not align with the priorities of rural diet improvement programmes. For example, households may prefer to convert resources into income rather than consume them to improve diets. Taking a systems approach that considers how households will use programme resources is better than trying to change household priorities to fit the demands of the programme.

It is important to have clear governance arrangements among partners and ensure communities also have a voice in decisions when identifying and quantifying the impacts of trade-offs. Bebbington and Batterbury (13) outline there to be a consensus in the academic literature that local communities cannot be understood independently of the programmes impacting them. Trade-offs often have unequal impacts, with vulnerable groups bearing more of the negative consequences while others capture the benefits. Top-down design of programmes can easily crowd out the voices of local people or marginalised groups, especially where there are context specific issues such as, for example, cultural differences between decision-makers and beneficiaries.

The importance of focusing on programme-level trade-offs rather than theoretical discussions was highlighted, stressing the need to focus on what programme

implementers can actually change rather than trying to solve every challenge. Management bandwidth and resource for implementation are limited and sequencing helps manage complexity and allocates resources effectively. For example, sequencing can start with clear primary objectives, such as income improvement to build trust and demonstrate value, and then follow with secondary objectives like environmental protection. An example was given of One Acre Fund where the nutrition work must fit within the primary income generation goals and if it could not generate income then it would be dropped.

Trade-offs require listing various important goals and then deciding/ prioritising which one is more important because constraints like time, money, and personnel will not allow fulfilment of all of these goals. Moreover, not all goals are valued equally. Adams and colleagues (14) outline that the threshold for accepting the costs that come with trade-offs will vary for different organisations and actors. An example was provided of a past decision at GAIN to end a post-harvest loss programme due to limited evidence of nutrition impact, acknowledging this may have undervalued important environmental benefits.

It was noted that the challenge regarding which goals should be valued depend on institutional agendas, and possibly vested interests, as some stakeholders may try to direct resources to particular groups or agendas.

LEARNINGS FOR DEVELOPMENT PARTNERS

At the strategic level:

- Programmes must balance multiple goals: nutrition, income, environmental sustainability, and social equity. However, programmes must also take care to not be utopian and be all things to all people.
- Scale vs effectiveness emerged as a fundamental trade-off – it is often difficult to replicate success at a small scale in larger programmes because it is more difficult to effectively capture common household and community values at scale.
- Income generation and nutrition benefits may conflict at the household level, as seen in the backyard poultry example where families prioritised selling eggs over consumption.

Implementation approaches to manage trade-offs:

- Sequencing interventions rather than trying to achieve everything simultaneously
- Starting with clear primary objectives (e.g., income improvement) before addressing secondary concerns
- Using pilot programmes to identify potential trade-offs before scaling
- Building in monitoring systems to catch unintended consequences early

Dealing with different stakeholders to properly value trade-offs:

- Power dynamics significantly influence who bears the costs of trade-offs - vulnerable groups often experience negative impacts (who are not always honest brokers) while others capture benefits
- Government priorities and constraints can force unexpected compromises

How to mitigate the impacts of trade-off decisions:

- Maintaining open communication channels with affected communities to inform them of the decision-making process and identify emerging issues
- Developing specific mitigation plans for known negative impacts
- Working with external actors through orchestration to resolve programme issues
- Using coordination among programme actors to develop solutions

Aspects of programme governance that can impact how trade-offs are identified and decisions made:

- Importance of community voice in programme design and implementation
- Challenge of working within existing government systems

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ANNEX 1: DISCUSSION PAPER ON TRADE-OFFS

Trade-offs

When implementing intervention policies, such as programmes to improve the quality of rural diets, decisions will have a range of consequences. Providing support to one sector, institution or group of beneficiaries is often likely to reduce other positive outcomes that could be achieved with different decisions. Trade-offs are the need to balance between different positive outcomes that cannot be achieved simultaneously. The purpose of this paper is to highlight trade-offs that occur when looking to improve nutrition outcomes for low income households and offers suggestions of how coordination or orchestration could mitigate some of the negative effects from these. It is important to note the difference between trade-offs (alternative positive outcomes) and consequences (negative outcomes that need to be mitigated)

Crop production

Crop specialisation improves production and potentially income, but crop diversity generates co-benefits for diet and climate

Economic trade-offs: Favouring diversity at the on-farm, landscape, national and/or global level is counter to trends over past decades to prioritise crop productivity from a small number of crops, indicating that under current models of development there may be some trade-offs involved. Crop diversification requires a range of production, harvesting and processing skills and equipment, as well as different markets, that add cost and complexity to farming systems that may be difficult for smaller producers to implement

Coordination solution: producers collaborate through cooperatives or producer marketing organisations to aggregate and share downstream costs such as processing and marketing. This allows both increased crop specialisation at the landscape level but also benefits of crop diversity at the farmer level.

Climate trade-offs: Commercialisation of agriculture which brings economic development creates risks for climate and environment. Agrobiodiversity benefits biodiversity, which in turn helps benefit climate change and other environmental goals. Crop diversification improves farmer resilience to a changing climate but may reduce the overall farm production and income that comes with specialisation.

Orchestration solution: bring in government to provide subsidies for the public good component (improved resilience of food production) to offset the negative income trade-offs from introducing diversity into farm production.

Animal production

Investing into large-scale animal source food production increases production and reduces prices and can also increase farmer incomes, but may begin to exclude small scale farmers who cannot afford the capital required for scale. It can also have environmental consequences at both global and local levels

Economic trade-offs: Industrial-scale operations can catalyse markets for inputs and services, potentially bringing benefits to smaller farms in proximity to large-scale farms. They may also generate employment. However economic trade-offs emerge if they displace smallholder livestock and poultry producers and those producers cannot diversify into other economic activities.

Coordination solution: Develop sustainable business models, using regulation or subsidies as necessary, that integrate smallholder animal producers into value chains.

Climate trade-offs: There are a range of complex trade-offs between livestock and poultry production and climate, primarily linked to scaling operations in specific contexts. Climate

adaptation measures and mitigation to climate disruptions and consideration of the broader environmental impact would need to be built into all livestock and poultry investments. Although they tend to emit proportionately less greenhouse gases (GHGs) than smaller operations owing to enhanced efficiencies, industrial-scale operations still release GHGs, and create other environmental risks (e.g. soil and water pollution) and risks to the spread of animal and human disease.

Orchestration solution: support engagement with partners offering abatement services such as waste treatment and biocontrols of GHG production (low methane foods for cattle) to reduce GHG emissions and mitigate immediate environmental consequences of production for all farmers, including smallholder farmers.

In low-income rural settings, household ownership of livestock and poultry increases consumption by women and children in the household and enhances women's economic empowerment.

Economic trade-offs: Livestock/poultry development contributes to poverty reduction both at household and community level as it can increase income of low-income households. There can be nutrition trade-offs if economic benefits accrue from selling livestock rather than using them for household consumption.

Coordination solutions: improved market information enables farmers to produce what markets demand, thereby limiting unnecessary production and minimising the associated negative trade-offs

Climate trade-offs: There are a range of complex trade-offs between any livestock/poultry-related project and climate, principally around the direct or indirect generation of climate impacting gasses from increased production of livestock, as well pollution of waterways for high intensity production. More intensive production can better control overall climate and pollution impacts but this reduces income earning and nutritional benefits for smallholder producers who are competed out of production

Orchestration solutions: regulations on minimising GHG generation and pollution can act to limit negative trade-offs along with compensatory and offset measures aligned to the investments made by farmers seeking to scale in animal production.

Market Linkages

Invest in storage technologies effective for nutritious perishables

Climate trade-offs: Improved storage can reduce food losses, which have significant environmental implications from the wasting of resources (e.g. needless production of carbon emissions), meaning there is a potential synergy with climate change mitigation. For cold storage, the trade-offs are the alternative uses of the energy used for producing foods that never reach the consumer because of mismatches in demand and supply.

Coordination solutions: improved market information ensures only high value crops are stored in expensive storage and maximises production efficiency of farmers to the demands of the market.

Orchestration solutions: subsidising emerging clean energy solutions such as solar cooling supports the development of new technologies that can lead to sustained reduction in climate related trade-offs from some energy intensive storage solutions.

Investing in transportation infrastructure that directly links producers of perishable nutritious foods to markets for low-income consumers

Economic trade-offs: Improved transport infrastructure can improve market access for low income consumers to nutritious foods. Potential trade-offs include market penetration from imported nutritious foods that out compete locally produced culinary and culturally appropriate nutritious foods because they are cheaper, more palatable or more available. Reducing transport costs can also increase the availability of calorie dense, processed foods that replace locally produced nutritious foods in diets.

Climate trade-offs: As for storage, improved transport can reduce food losses, creating a synergy with climate change mitigation. Potential trade-offs with environmental impacts of transport should be assessed.

Coordination solutions: improving market information to improve production efficiencies to minimise climate trade-offs; technologies to improve logistics management ensures that transport efficiencies are maximised

Orchestration solutions: subsidies to support the use of clean energy vehicles to offset GHG generation and allow the emergence of new technologies and business models. Support for local producers to improve quality/volumes/demand to enable localised competition against imported nutritious foods.

Support farmers in engaging with public procurement to institutions providing healthy diets to low-income children

Economic trade-offs: Linking with school food programmes reduces uncertainty and risk for producers engaging with markets. The World Food Programme have proposed that home grown school feeding is beneficial for climate change, on the basis that short food chains reduce lengthy transportation, reduce food waste and can stimulate the adoption of climate-smart agricultural practices. They also have the potential to catalyse investment in commercialisation investments by giving security of offtake. However, centralised procurement is likely to favour scaled intermediaries providing lowest cost inputs that has the potential to undermine local producers.

Coordination solutions: support local businesses to scale and/or improve quality or collaborate to enable them to effectively compete for local tenders.

Support growth of formal and informal suppliers of nutritious processed foods which enhance convenience and affordability to low- income consumers

Economic trade-offs: Providing support for innovative food businesses to produce nutritious processed foods has the potential to generate business growth. However, there can be a trade-off for affordability of the products for low-income households and commercial viability.

Coordination solutions: support the utilisation of second quality (but still meeting human consumption standards) nutritious food sources for local consumption/processing to lower cost of foods for the benefit of low income households

Climate trade-offs: Food processing may increase the use of energy in manufacturing, through this could be mitigated by reduced energy use by households for cooking the same food. Commercial processing of beans for example can be more efficiently undertaken at industrial rather than at household level – and without attendant indoor air pollution and drudgery impacts – but only where energy at the household level is bought in. Most low income households use firewood that is collected by household members and therefore has a low economic cost.

Orchestration solutions: provision of targeted subsidies to vulnerable households to enable them to purchase otherwise expensive nutritious foods. Subsidise producers to provide specific products targeted at low income households. Support information campaigns to raise awareness of the benefits of nutritious foods and therefore increase demand amongst even low income households.

Cross border trade

Focus inter- and intra-regional trade on nutritious foods while managing benefits and risks for diet in both exporting and importing countries

Economic trade-offs: Whilst local trade supports farmer livelihoods, is culturally appropriate and building local market systems, it is vulnerable to seasonal availability, quality issues and frequently higher costs that can be overcome by greater focus on trade. Imports of nutritious foods often have standardised quality and lower cost as well as enhanced reliability of supply. The risks from this trade-off are currency fluctuations,

transportation delays as well as vulnerability to tariff and non-tariff barriers being put into place by trading nations if local politically important agriculture is seen to be undermined.

Coordination solutions: information systems to link markets and producers to improve production efficiency and prevent dumping that stimulates trade barriers. Strengthening of local production for imported products where there is not clear comparative advantage between production and consumption regions.

Orchestration solutions: navigate the political level to pre-emptively identify and manage trade risks to ensure effective and sustained trade arrangements can be maintained.

Food processing

Support improvements in availability and affordability of appropriate packaging technologies that increase safety, affordability, and desirability of nutritious foods for low-income consumers

Economic trade-offs: Packaging assists with availability, affordability, marketing and distribution of nutritious foods. Availability and use of packaging products and services enables increased processing and value-adding in food systems, which can support economic development. But improved packaging and labelling (including the costs of compliance) can increase production costs and therefore reduce profitability or increase prices, which may make them unaffordable for low-income households or producers.

Coordination solutions: Establish packaging standards that are appropriate for a wide range of producers in the market to ensure that all can meet them. Support the establishment of market intermediaries that provide packaging services whilst farmers retain ownership, such as producer marketing organisations.

Only invest in ultra-processed foods if health and nutrition risks can be managed

Economic trade-offs: Ultra-processed food businesses may generate jobs and economic development. Measures that affect profitability of existing products may create economic trade-offs if those producers go out of business as a result.

Consider reconceptualising and re-pricing nutritional risk into investments

Economic trade-offs: Many products associated with negative dietary outcomes (e.g. ultra-processed foods) are the most profitable for food processors and small-scale food vendors and kiosks. Therefore, promoting nutritious foods over these foods could lead to reduced profits or alternatively high levels of subsidy needed to dissuade retailers to stock them.

Societally, there are financial costs in ignoring nutrition. The Blended Finance Taskforce estimates there are US\$4.5 trillion in hidden nutrition costs (malnutrition and obesity) in the US\$10 trillion global food system.

Orchestration solutions: working with government to develop subsidies for nutritious foods, taxation for foods with negative dietary outcomes and information campaigns to educate consumers can all help to offset the negative trade-offs by promoting the demand for nutritious foods whilst other products remain in the market.

Low income households

Research and improve effectiveness and reach of technology for nutrition education and nutrition advisory to increase consumer demand for nutritional produce amongst low-income consumers

Economic trade-offs: Behaviour change can be a costly and uncertain intervention, not necessarily providing the best value for money in comparison to other nutrition-pathways.

Orchestration solutions: integrating/mainstreaming nutrition behaviour change education into broader health communications can spread the costs over different institutional bodies, increase reach and strengthen confidence in the messaging for consumers.

Digitalisation

Promote use of technology to capture data and monitor population- level shifts

Economic trade-offs: Gathering of data can be relatively inexpensive, whilst the potential to safeguard loss of income through forewarning of weather events or disease in livestock can protect farmer livelihoods. The effectiveness of these measures, especially towards low income rural households, is less clear given the levels of investment and literacy needed.

Orchestration solutions: bundling nutrition research into broader social studies and analysis can help to defray costs of data gathering whilst at the same time raising the profile of the nutrition conversation with policymakers, service providers and consumers.

Public Finance

Support effective design and implementation of agricultural subsidies to enhance diets, environment, and economy

Economic trade-offs: Agricultural subsidies have major implications for public finances. Although agricultural subsidies are minimal in low-income compared to higher-income countries, they represent a large share of public budgets. Since subsidies are considered to contribute to higher food prices for a healthy diet, there is potentially a synergy between repurposing subsidies. Subsidies are frequently political tools meaning that support can cause market distortions that have negative effects to both the target communities and other groups.

Agricultural subsidies may affect greenhouse gas emissions by promoting certain crops or farming techniques over others, such as promotion of cattle production. Reducing producer support could reduce greenhouse gas emissions.

Orchestration solutions: effective orchestration across the policy environment is essential to ensure that government interventions align and mutually reinforce each other, are based on sound economic logic and societal evidence and are effectively enforced. This will minimise costs of subsidies of public goods whilst maximising the benefits achieved.

Agricultural Policy

Invest in technical capacity and advocacy for the development of healthy food environment policies, and their implementation and evaluation

Economic development is directly associated with rising intakes of unhealthy fats, sugars, salt, and ultra-processed foods. These foods generate profits for food businesses. Implementing healthy food environment policies could thus be viewed as negative economic trade-offs for food businesses, as indicated by opposition from food businesses on the basis they will lead to job losses. However, healthy food environment policies act to level the playing field for competition between food businesses, potentially incentivising them to compete for healthier foods. Policies could thus create economic/healthy diet synergies if the policies unleash creative innovation towards healthier foods.

Universal targeting of a whole population with nutrition messages or more direct support reduces stigma, is simpler to administer and is more likely to have broader political support. The trade-offs are that it will have a higher cost and need to spread resources more thinly than focused assistance that targets specific needy groups. Focusing on specific individuals can be effective at addressing community or even household level nutrition challenges in a cost effective manner but has the potential to generate stigmatisation for the target groups and relies on accurate identification of beneficiaries, which may be difficult in rural contexts.

Orchestration solutions: aligning government policies towards nutrition and other affected sectors (transport, agriculture, energy etc) is essential to ensure complementary and minimise distortionary effects.



ABOUT GAIN

The Global Alliance for Improved Nutrition (GAIN) is a Swiss-based foundation launched at the UN in 2002 to tackle the human suffering caused by malnutrition. Working with governments, businesses and civil society, we aim to transform food systems so that they deliver more nutritious food for all people, especially the most vulnerable.

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