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Original article

# Scope of Implementation of Food Environment Policy in Côte D'Ivoire and Prioritization of Actions Using the Healthy Food Environment Policy Index (Food-Epi)

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**Abstract.** *Background and aim:* The nutrition transition, characterized by evolving dietary habits, has negatively affected food systems in Côte d'Ivoire. This study evaluated existing public health nutrition policies and identified strategic interventions to foster healthier food environments. *Methods:* This study was conducted using the Food-EPI tool, developed by the INFORMAS network and adapted to the Ivorian context. The tool includes two core components (policy and infrastructure support), 13 domains, and 59 good practice indicators - including 12 newly developed indicators specifically addressing the double burden of malnutrition. *Results:* The implementation level of 59 policy indicators were rated as low (n=34), medium (n=24), and high (n=1). None were rated as very low. From the 115 identified actions, 20 were prioritized and recommended to the government for improving food environments. These priority actions focused particularly on school food environments, breastfeeding promotion, and nutrition financing. *Conclusions*: This study revealed low overall implementation of nutrition policies. Consequently, key priority actions were identified to strengthen food environments and effectively address the double burden of malnutrition in Côte d'Ivoire.

**Key words:** Food-EPI, public policy, level of implementation, healthy eating environments, Côte d'Ivoire

## Introduction

The double burden of malnutrition (DBM) poses a major health and economic issue for many African countries. In addition to the prevalence of chronic malnutrition and micronutrient deficiencies, rapid transformations within the food systems of several African countries have led to an increase in the overall prevalence of overweight, obesity and diet-related non-communicable diseases (NCDs) (1). In Africa, these transformations are caused by intensive agricultural industrialization, population growth, urbanization, climate change and technological innovations that favour a nutritional transition and a change in dietary habits. Côte d'Ivoire, like many African countries, is faced with the double burden of malnutrition, marked, on the one hand, by problems of under-nutrition and, on the other, by growing problems of overnutrition

and NCDs such as diabetes and hypertension. According to the nutritional status assessment survey carried out in 2019, the nutritional situation in Côte d'Ivoire is a cause for concern, with a national prevalence of global acute malnutrition (GAM) of 8.1% (2). However, since 2013, the nutritional situation has become a priority for the government of Côte d'Ivoire, as can be seen from its membership of the Scaling Up Nutrition (SUN) movement and he is positioning of nutrition at the Prime Minister's Office through the Executive Secretariat of the Conseil National pour la Nutrition, l'Alimentation et le développement de la Petite Enfance (SE-CONNAPE). It has also put in place numerous policies and institutions to take action against the double burden of malnutrition (3,4). The study of Tieissiehi et al. summarized policy documents relating to food environments in Côte d'Ivoire and highlighted the need to assess the degree of policy implementation in Côte d'Ivoire against international best practices to create healthy food environments (4). Indeed, the evaluation of public nutrition policies is essential for implementing effective public nutrition actions and creating healthy food environments (5,6,7,8). To this end, the INFORMAS network has developed several modules, including the Food-EPI tool, which is used in many countries to evaluate public nutrition policies (10). It underlines the crucial role that public authorities must play in creating healthy food environments, particularly through policies (11,12,13). In Côte d'Ivoire, studies on the evaluation of public nutrition policies are rare. Better still, no evidence-based study using the Food-EPI methodology has yet been conducted in the country. However, the implementation of the Food-EP tool in west African countries like Senegal and Ghana has demonstrated valuable in helping governments in identifying weaknesses in nutrition policies and develop recommended actions for their improvement (14,15). Therefore, as the first study to apply the Food-EPI methodology in Côte d'Ivoire, our work could be valuable research to assess and improve public food environment policies. Furthermore, in contrast to studies in Senegal and Ghana, our study includes 12 additional indicators (59 in total instead of 47) of Food-EPI tool, allowing for a more comprehensive assessment of micronutrient deficiency and undernutrition-related needs in African countries. The aim of our study is to assess the level of implementation of public policies relating to food environment in Côte d'Ivoire and to identify key priority actions to address the double burden of malnutrition, as well as to evaluate their effect on gender and sustainability of the food system.

## Methodology

### *Food-EPI Tool*

This study was based on the Food-EPI (healthy food environment index) tool and process developed by the INFORMAS (International Network for Research, Monitoring and Action on Diet and Obesity (11,13). The Food-EPI tool consists of a "policy" component and an "infrastructure support" component, comprising 7 and 6 domains respectively. The domains of the "policy" component address the key aspects of food environments that public authorities can influence to create healthy, easily accessible, available and affordable food choices, while those of the second component, "infrastructure support", address resources, policy development and implementation.

### *Adaptation of Food-EPI tool*

In its original version, the Food-EPI tool had 47 indicators focusing on the prevention of obesity and non-communicable diseases and mostly aimed at high-income countries (10). However, after its implementation in Ghana, Kenya, Senegal, Uganda and Tanzania, stakeholders involved in the assessment formulated key recommendations for adapting the Food-EPI indicators to the double burden of malnutrition (i.e. undernutrition, obesity and NCDs) and in sub-Saharan Africa (14,15).

### *Expansion from 12 to 59 Indicators in the Food-EPI Tool*

During the implementation of the Food-EPI tool in developing countries, particularly in Ghana and Senegal, two Francophone West African nations, experts highlighted the need to incorporate indicators related to the double burden of malnutrition (14,15).

Indeed, the initial 47 indicators primarily focused on obesity, diabetes, and non-communicable diseases. Consequently, 12 new indicators addressing the double burden of malnutrition were developed and integrated into the tool, which now includes a total of 59 indicators. The present study utilized the full set of 59 indicators in its implementation.

*Stakeholder engagement and policy assessment*

The Food-EPI process was implemented in four (4) main stages between 2021 and 2023. At every stage, the support of the Conseil National pour la Nutrition, l'Alimentation et le développement de la Petite Enfance (CONNAPE) made it possible to mobilize several nutrition stakeholders from various institutions. This mobilization was organized through their multisectoral platform of actors involved in nutrition (16). In Côte d'Ivoire, the Plateforme Nationale Multisectorielle d'Informations pour la Nutrition (PNMIN) was set up to facilitate multisectoral and multi-stake holder dialogue on nutrition. As the Executive Secretariat of CONNAPE is responsible for the strategic management of this platform, it is easier for it to bring together nutrition stakeholders in Côte d'Ivoire (17). Thus, each time there was an activity within the framework of this study, it sent letters to the heads of cabinet of the various ministries and to the heads of the institutions concerned with nutrition in Côte d'Ivoire to invite them to participate. For its part, the research team followed up the letters to ensure that the actors actually attended the activities. The first stage was realized between February and November 2021 and results were reported in the paper of Tieissiehi et al. (4). The last three stages were carried out between May 2022 and August 2023 through workshops with two expert panels from the multi-sectoral platform of stakeholders of nutrition: i) an independent group expert from universities, non-governmental organizations and civil society, and ii) a group expert from government institutions in Côte d'Ivoire. The second stage consisted of assessing the level of implementation of nutrition policies in relation to international best practices by the two groups of experts based on the evidence document and according to 59 indicators using Likert scale ranging from 1 to 5 points (4). The third stage enabled the two groups of experts to identify actions to address the gaps identified in the policy assessment, and then to prioritize them according to 5 criteria:

a. **Importance of action**: Impact of the action, its effects on equity and any other positive or negative effects on diet-related health inequalities.
b. **Achievability of action**: Action feasibility, level of acceptability of the action by government, the public, public health and industry, and affordability of the action (i.e. the cost of implementation).
c. **Potential effect of the action on the double burden of malnutrition (DBM)**: Capacity of the action to reduce or worsen DBM or beneficial and aggravating effects on all forms of malnutrition.
d. **Potential effect of the action on the gender:** Capacity of the action to reduce gender inequalities in nutrition and health, or to increase or worsen other forms of inequality, or beneficial and aggravating effects.
e. **Effect of the action on sustainability of food system**: Capacity to have a beneficial or harmful effect on food systems.

The final stage of the process involves disseminating the results to government and stakeholders.

*Statistical analysis*

Data entry and processing were performed using Excel and Epi Info 7.25.0 software. Descriptive results are presented in percentages or means. Inter-rater reliability (i.e. level of agreement between experts) was assessed for each group (independent experts and government experts) using GWET AC1 (first-order agreement coefficient) reliability analysis with AgreeStat360 application online. A value equal to or greater than 0.70 is considered acceptable. The mean level of implementation obtained using the Likert scale (1 to 5) per indicator was multiplied by 20 to rate and categorize the level of implementation against international best practices into *'high', 'medium', 'low'* or *'very little'* (13,15). For each component, the

individual averages of the criteria 'effect of the action on the double burden of malnutrition', 'effect of the action on gender' and 'effect of the action on the sustainability of systems' (y-axis) for the 10 recommended priority actions are plotted against the combined averages of the two criteria 'importance of the action' and 'capacity to carry out the action' (x-axis). This graph is an orthogonal representation, which means that the individual and combined averages must be placed on the same scale. The mean values were then assigned a score from 1 to 10 and the top-ranked action was rated accordingly with a score of 10.

## Results

*Description of the national expert panel*

The Food-EPI project in Côte d'Ivoire mobilized 18 government institutions, including 10 ministries, 9 civil society organizations, 5 UN organizations and 7 public universities. Through the multi-sectoral platform of stakeholders of nutrition, each institution delegated at least one expert to participate in all the processes of the study. A total of 59 experts were invited to take part in the evaluation workshop. Fifty-five (93.2%) took part in the policy assessment. The workshop on identification and prioritization actions was attended by 49 participants (81.7%) out of the 60 invited. In both workshops, the expert panels were dominated by men, 77.9% and 76.67% respectively in the first and second workshops (Table 1). The inter-rater reliability indicator represented by the GWET AC1 coefficient was (0.83) and significant ($p<0.001$) for the overall sample. For each expert group, the GWET AC1 coefficient was also significant ($p<0.001$) and was 0.23 for independent expert group and 0.28 for governmental group.

*Level of policy implementation*

The assessment of public nutrition policies in Côte d'Ivoire, conducted using the Food-EPI (Healthy Food Environment Policy Index) tool, revealed that among 59 good practice indicators, none were rated as very low, 34 as low, 24 as medium, and only one as high" for the implementation level. Specifically, 65.9% of the core Food-EPI indicators were rated as "low" compared to international best practices (Figure 1). In contrast, the new indicators related to the double burden of malnutrition were rated as "low" in 25% of cases and "medium" in 75% of cases (Figure 2). An analysis of the Food-EPI components showed that the "Policy" component had the highest proportion (75%) of indicators at a "low" implementation level. Under the "Infrastructure Support" component, 13 out of 31 indicators (41.9%) were rated as "low". All indicators in the "Food price," "Food retail," and "Food trade" domains, all belonging to the Policy component, were rated as "low." Meanwhile, the "Leadership" domain under the "Infrastructure Support" component received the highest ratings, with one indicator at a

**Table 1.** Description of participants in the National Panel of Experts

| | Assessment | | | | | | Identifying and prioritizing | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | | Men | | Women | | Total | | Men | | Women | |
| **Workshops participants** | **n** | **(%)** | **n** | **(%)** | **n** | **(%)** | **n** | **(%)** | **n** | **(%)** | **n** | **(%)** |
| Participation rates** | 55 | 93.2 | 40 | 72.7 | 15 | 27.3 | 49 | 81.7 | 33 | 67.4 | 16 | 32.7 |
| Government Experts | 26 | 47.3 | 19 | 73.0 | 7 | 26.9 | 24 | 49.0 | 15 | 62.5 | 9 | 37.5 |
| Independent Experts *(1) +(2)* | 29 | 52.7 | 21 | 72.4 | 8 | 27.6 | 25 | 51.0 | 18 | 72.0 | 7 | 28.0 |
| University experts and research institutes (1) | 17 | 30.9 | 12 | 70.6 | 5 | 29.4 | 15 | 30.6 | 10 | 66.7 | 5 | 33.3 |
| Experts from organizations and civil society (2) | 12 | 21.8 | 9 | 75.0 | 3 | 25.0 | 10 | 20.4 | 8 | 80 | 2 | 20.0 |

*Abbreviation:* n/a: Not applicable; * Experts invited at all workshops. ** experts who assessed policies, proposed and prioritized actions.


**Figure 1.** Implementation level of policies across the 47 core Food-EPI indicators in Côte d'Ivoire (2022)

"high" implementation level and the remaining seven at a "medium" level.

*Identifying and prioritizing actions*

A total of 115 actions were proposed by the panels of experts, including 71 actions for the policy component and 44 actions for the infrastructure support component. Ten actions per component were considered as priorities according to all the criteria to be recommended to the government of Côte d'Ivoire (Tables 2 and 3). The first five priority actions in the policy area aimed domains like food provision (3) and promotion (2). Actions recommended for these domains were: strengthening the implementation of the school feeding policy, making the National Committee for the Promotion, Protection and Support of Breastfeeding and Early Childhood Development operational, adopting a law on school and pre-school feeding, and strengthening the institutional and legal framework for breastfeeding (Table 2). With regard to the 'infrastructure support' component, the first five actions recommended focused on domains like leadership (2), monitoring and evaluation (2), and funding and resources (1). Recommended actions related to these domains were as follows: strengthen existing mechanisms and the operation of CONNAPE bodies in the various regions of the country, develop and implement a food safety monitoring plan, speed up the drafting of the new multisectoral national nutrition plan, strengthen current research funding initiatives and develop a food safety policy (Table 3). However, 'Food provision' in the policy component and 'Leadership' in the Infrastructure Support component represented domains with the most actions, with 4 out of 10 actions for each (Tables 2 and 3).

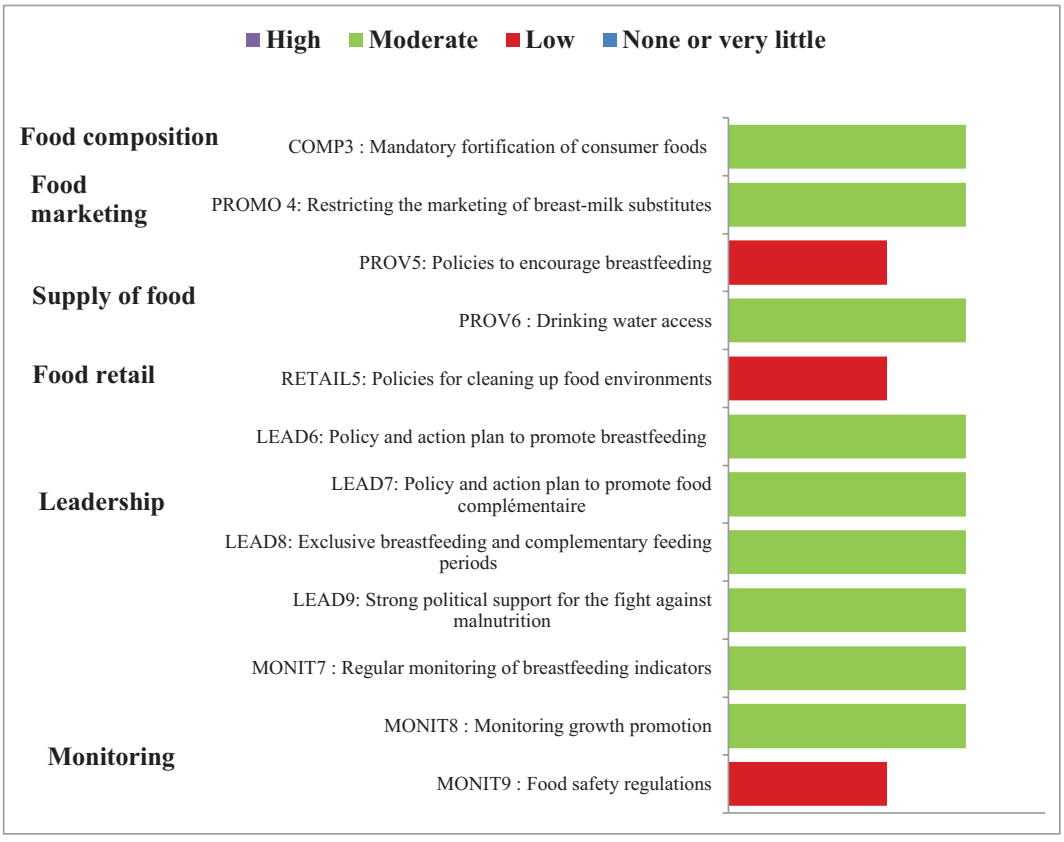


**Figure 2.** Policy implementation level for the 12 new Food-EPI indicators on DBM in Côte d'Ivoire (2022)

**Table 2.** Priority policy actions recommended to the government by local experts according to the five Food-EPI criteria, Côte d'Ivoire 2022.

| Rank | Domains | Priority actions recommended to the government |
|---|---|---|
| 1 | Food provision | Strengthening the school feeding policy (supply of schools by agricultural cooperatives, institutional financial and technical support, dissemination of the menu manual) |
| 2 | Food promotion | Make the National Committee for the Promotion, Protection and Support of Breastfeeding and Early Childhood Development (CNAPE) operational. |
| 3 | Food promotion | Introduce statutory regulations governing school and preschool nutrition to limit the marketing of unhealthy food products to children. |
| 4 | Food provision | Strengthen the institutional and legal framework for breastfeeding, for example by revising the labour code and increasing maternity leave. |
| 5 | Food provision | Raising awareness of good nutritional practices in schools |
| 6 | Food Composition | Training and raising awareness of good culinary and nutritional practices among catering staff |
| 7 | Food Labelling | Developing and disseminating balanced and nutritious recipe guides |
| 8 | Food promotion | Implement legislation to restrict the distribution of unhealthy food products in proximity to educational institutions |
| 9 | Food provision | Create a breastfeeding area (e.g. nursery, space set aside for breastfeeding) |
| 10 | Food pricing | Introduce incentives to facilitate the transport of healthy foodstuffs from the best-served regions to the least-served regions |

**Table 3.** Priority infrastructure support actions recommended to the government by local experts according to the five Food-EPI criteria, Côte d'Ivoire 2022.

| Rank | Domains | Priority actions recommended |
|---|---|---|
| 1 | Leadership | Strengthen the existing mechanisms and functioning of the bodies of the National Council for Nutrition, Food and Early Childhood Development (SE-CONNAPE) in the different regions of the country. |
| 2 | Monitoring | Develop and implement a food safety monitoring plan |
| 3 | Leadership | Speed up the drafting of the new multi-sector national nutrition plan (PNMN2021-2025) |
| 4 | Funding and resources | Strengthen current research funding initiatives (SE-CONNAPE/PNMIN, REPSAO, PASRES, FONSTI, etc.) |
| 5 | Monitoring | Developing a food safety policy |
| 6 | Health in all policies | Strengthening SE-CONNAPE's participation in the development of programs and strategies in nutrition-related sectors |
| 7 | Governance | Strengthening cooperation between research structures and policy coordination institutions to help guide policy strategies |
| 8 | Health in all policies | Drawing up a compendium of nutrition indicators |
| 9 | Leadership | Continue to advocate political support for actions to combat all forms of malnutrition (with an emphasis on the private sector) |
| 10 | Leadership | Accelerate the implementation of the breastfeeding strategic plan (ISSAB, PNMA) |

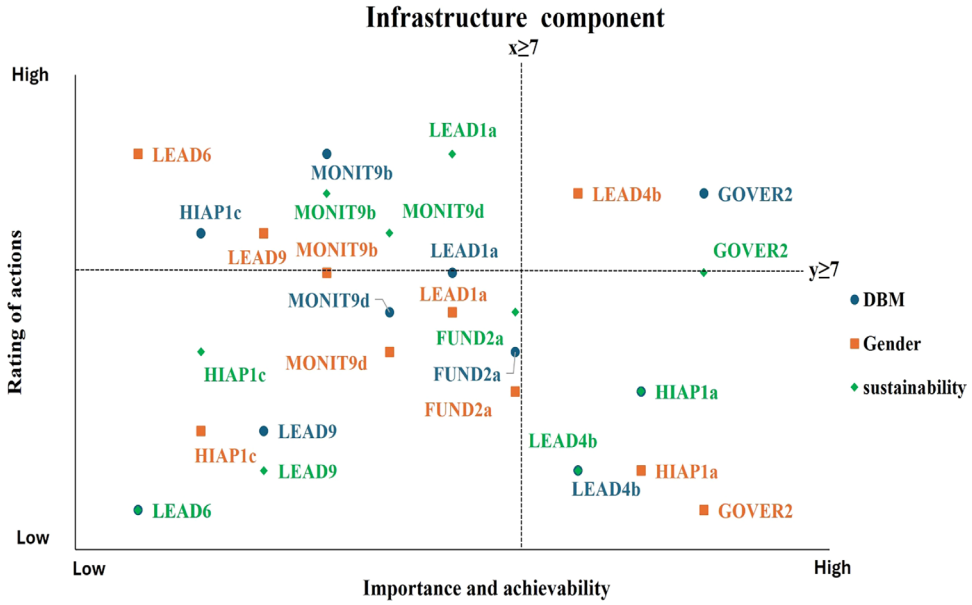


**Figure 3.** Policy action priorities (n=10) mapped by feasibility vs. DBM/gender/sustainability impact.

*Priority actions according to their effect of DBM, gender and sustainability*

Figure 3 and 4 presented the rank of priority actions combining the score of criteria importance and achievability according to the criteria 'effect of the action on the double burden of malnutrition (DBM)', effect of the action on gender' and 'effect of the action on the sustainability of food systems. Of these priority actions recommended to the government, four actions from the policy (PROMO3b and PROV1a) and infrastructure support (GOVER2, LEAD4b) components were the most important and achievable (x≥ 7) and the most likely to have a higher impact on the double burden of malnutrition, on gender and on the sustainability of food systems (y≥7). For policy component (Figure 3), the PROV1a action had a greater impact on DFM, gender and sustainability of food systems (y≥7). While PROMO3b, the effect was on the double burden of malnutrition and the sustainability of food systems. Concerning infrastructure support component (Figure 4), the GOVER2 action has a significant effect on the double burden of malnutrition and the sustainability of food systems, whereas the LEAD4b action has a significant impact only on gender. Of these actions, only GOVER2 was not among the 5 highest priority actions of infrastructure support (Table 3).

*Stakeholder capacity and knowledge enhancement assessment*

- **Understanding of Food Policy Environments**: All participating evaluators (100%) expressed either strong agreement or agreement that the initiative significantly enhanced their comprehension of food policy frameworks and nutritional environments.
- **Familiarity with contemporary best practices**: A near-unanimous majority of respondents (97.8%) reported substantially improved awareness of current international best practices and comparative government approaches through project participation.
- **Professional network development**: The evaluation revealed that 93.3% of participants acknowledged establishing new professional collaborations or strengthening existing partnerships as a direct outcome of the Food-EPI initiative.

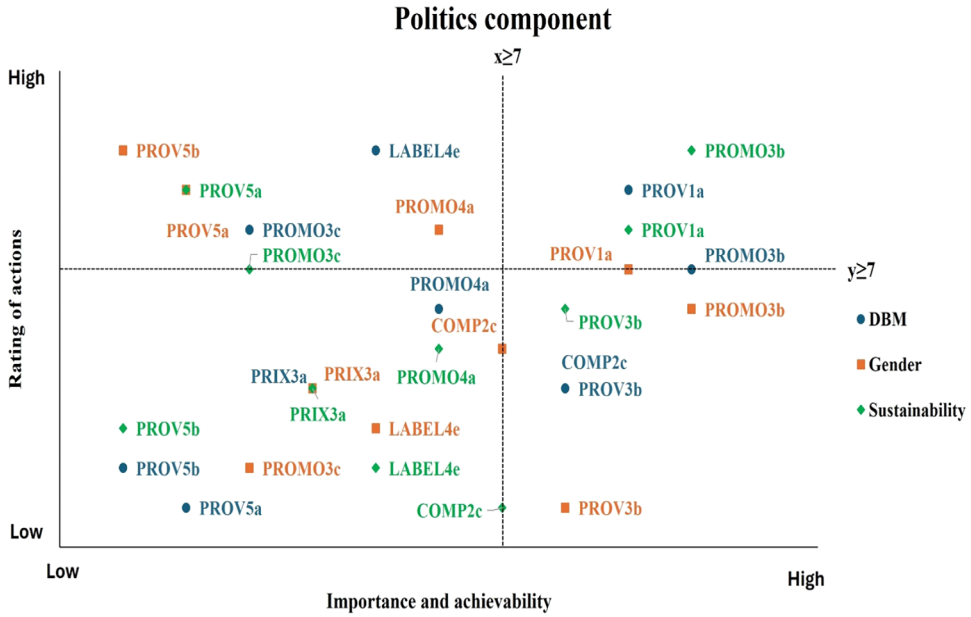


**Figure 4.** Importance and feasibility of 10 priority infrastructure support actions, mapped by their impact on DBM, gender, and sustainability

- **Potential policy influence**: Complete consensus was observed (100%) regarding the project's capacity to facilitate positive policy reform within Côte d'Ivoire's nutritional governance framework.
- **Recommendations on similar studies**: Almost all of the expert assessors (98.7%) strongly agreed or agreed that it would be important to repeat the study in order to monitor the government's progress.
- **Participant Engagement Continuity**: All surveyed experts indicated unequivocal willingness to participate in subsequent Food-EPI evaluation cycles, particularly if conducted within a 2-3year timeframe.

## Discussion

Evidence from our study demonstrates that the level of policy Implementation is low for more than half indicators of policy and infrastructure support components. National experts recommended 10 priority actions in each Food-EPI component (policy and infrastructure support). Among these actions, the greatest effect on double burden of malnutrition (DBM), gender and sustainability of the food systems were obtained in domains such as food provision, food promotion, leadership and governance. The action from food provision domain has a significant effect on double burden of malnutrition (DBM), gender and sustainability of the food systems. Actions from food promotion and governance domains are important to address DBM and the sustainability of food systems. Whereas the action with greatest effect on gender was identified within leadership domain.

### *Importance of national expert panel participation*

Our study involved a wide range of stakeholders from governmental and non-governmental institutions. With the participation rate over 80% for both workshops, our study suggests that National experts are a higher interest for the study of food policy in Côte d'Ivoire. This rate is higher than those of several countries that have conducted similar studies such as Australia, Canada, Thailand, New Zealand and England, which were 70%, 64%, 59%, 57% and 38%

respectively (18,13). In African countries that evaluated their policies with the same tool (Food-EPI), such as Kenya, Senegal and Ghana, participation rates were 36%, 50% and 46% respectively (19,14,15). The inter-rater reliability (0.83) of the Food-EPI evaluation process in Côte d'Ivoire was found to be very good (20). It is comparable to assessments carried out in countries such as Canada, New Zealand and South Africa (21,13). The results also appear similar for the scoring within the independent and governmental expert groups, but the level obtained was considered fair (<0.4) for both groups. The results therefore suggest that, overall, the independent and government expert groups seem to share the same perceptions and views regarding the assessment of the indicators. This was not the case in some countries, where government assessors tended to give more good marks to indicators than independent experts (13,22,15). According to the literature, it is important to highlight participation level of national experts in the multi-stakeholder processes like Food-EPI and their perceptions (similarities and divergences) regarding the reality of food policy (23). Since low participation and divergent perception and views create low trust in multi-stakeholder processes and ineffective action on improving food policy outcomes. Therefore, in Côte d'Ivoire, high participation of National expert and potential same evaluation regarding to the level of policy implementation and actions are advantages in which government must be capitalizing to food environment in Côte d'Ivoire. This higher participation also highlights corroborates the importance of organization like SE-CONNAPE in multi-stakeholder processes to bound and facilitate participation of experts from different institutions (23).

*Level of policy implementation and adaptation of Food-EPI tool*

Despite the large number of documents collected, the assessment of the national experts showed that the overall level of implementation of food policies in Côte d'Ivoire is low in both components of the Food-EPI (4). This poses a problem for the operationalization. The original 47 initial indicators of the Food-EPI tool are those with low levels of implementation, with 31 indicators out of 47, i.e. 66%. However, regarding the 12 additional indicators, only 25% had low levels of implementation. The other nine indicators (75%) were all assessed with 'medium' levels of implementation. This could mean that the Ivorian government has prioritized the fight against undernutrition and micronutrient deficiency. Indeed, in its National Development Plan for 2021-2025, the government has clearly defined its goal of reducing the undernourishment rate, particularly in rural areas, from 10.8% in 2018 to 9.5% by 2025 (24). To achieve this goal, the Ivorian government has targeted stunting, low birth weight and the rate of exclusive breastfeeding (25). Face to this evidence, our study helps to show that it was useful to adapt the Food EPI tool to the realities of African countries affected by the double burden of malnutrition (15). However, through to the indicator with the higher level of implementation (LEAD1), it seems that the fight against the double burden is also a priority. This indicator relates to leadership domain assesses the existence of strong and visible political support for improving the food environment and nutrition of the population, preventing diet-related non-communicable diseases (NCDs) and combating inequalities between them. In fact, several actions by the government have contributed to the indicator's score. These include: i) the creation of a National Nutrition Council directly attached to the vice-presidency and then to the prime minister's office of the Côte d'Ivoire; ii) the existence of numerous decrees aimed at combating micronutrient deficiencies, and the creation of school canteens; and iii) the national nutrition program existing since 2001 (4). But efforts must be improved regarding the food environment and the prevention of obesity and NCDs. Since areas of food prices, food retailing and health in all policies show a 'low' score for indicators after evaluation. The reasons for the shortcomings observed in these areas were not examined as part of this study. However, these deficits could be explained by the very limited number of policies and actions implemented by the State of Côte d'Ivoire in these areas. Yet it is recognized that food supply and pricing policies (subsidies for healthy foods and taxes on unhealthy foods) are an important lever for improving food environments (26,27,10). This is especially true considering that policies to tax unhealthy foods have proved

effective in some countries. This is notably the case in Hungary, where between 2012 and 2014, consumers reduced their consumption of energy drinks by 28% and their consumption of sugary soft drinks by 20%, after the government taxed products that were harmful to health (28). Better still, in Philadelphia (USA), two months after the sugary drinks tax came into force, the probability of consuming sugary sodas and energy drinks every day decreased by 40% and 64% respectively, while the probability of consuming bottled water every day increased by 58% (28). Indeed, having observed relatively low levels of implementation for the food retail domain in Chile, Vandevijvere et al. had suggested, as a solution, the adoption of a comprehensive set of policies in this domain. Regarding the area of health in the policy package, no documents in our possession at the time of conducting this study attested that population health had been taken into account during policy development (13).

*Priority actions and their effects on DBM, gender and sustainability of the food system*

The national stakeholders recommended priority actions to the Ivorian government to correct the shortcomings identified after the evaluation workshop. Indeed, the first policy recommended to the Ivorian government by experts was a school feeding policy through the implementation of an integrated school feeding program combining several strategies. Elsewhere, the study of Mahesh et al. shows that actions aimed at healthy eating in schools have a significant impact on improving nutrition in the population (12). However, a comparison with Ghana and Senegal, two West African countries, show that in addition to actions targeting school feeding, common actions for the sub-region relate to accessibility to drinking water for all, the development of a food-based dietary guidelines, the strengthening of a collaborative platform of nutrition stakeholders, the funding of nutrition-related research, and the strengthening or creation of a government body to promote policies in favour of nutrition (14,15). This shows that the countries of West Africa, all facing the double burden of malnutrition, have similar difficulties in terms of public nutrition policies. Finally, actions relating to breastfeeding and food safety are specific to Côte d'Ivoire. In addition to being important and feasible, some priority actions are likely to have a beneficial effect on the fight against the double burden of malnutrition, as well as on gender issues and the sustainability of food systems. Other actions are likely to have a positive effect on at least one of the above criteria. Hence the need for the Ivorian government to take them into account in order to improve food environments. After analyzing nutrition documents in Côte d'Ivoire, it was emphasized that the real challenge would be to prioritize activities and programs with a real impact on nutrition when allocating budgets (29). This is why this study is so important. Using an inclusive and multi-sectoral participatory methodology, it proposes priority actions capable of creating healthy food environments in Côte d'Ivoire. According to Laar et al., the adoption of collaborative research involving stakeholders from the private, public and civil society sectors is necessary to create synergies and better understand the challenges of the food environment (30).

*Political engagement*

One of the major challenges of this study in Côte d'Ivoire was to unite stakeholders from various sectors related to nutrition, as recommended by the Food-EPI methodology. This challenge was addressed through the mobilization and regular participation of stakeholders (public, private, academic, and civil society sectors) in the study. This approach reflects the multisectoral strategy advocated by the country's National Nutrition Strategy 2024-2030. Strengthening the knowledge and capacities of national stakeholders is a key factor in the development and implementation of public policies that promote healthy food environments. Indeed, enhancing the individual capacities of actors who participated in the Food-EPI implementation workshops could positively influence institutional and organizational capacities, with the long-term goal of improving public policy directions and nutrition practices for the benefit of the population (31). Specifically, building the knowledge and capacities of independent actors, such as academics and civil society, through this study could advance discussions on healthy and sustainable food environments in Côte

d'Ivoire (32,33). This has been demonstrated in other countries, where studies have shown that involving diverse stakeholders in nutrition policies has strengthened the integration of nutrition into sectors such as education, social protection (31), and the food industry (34). Furthermore, the institutional adoption of the project's findings by CONNAPE (National Committee for Food and Nutrition Policy), a key institutional body, will strengthen its organizational framework to better address major public nutrition concerns in the country. Finally, the professional relationships established by the majority of experts who participated in this study could strengthen interaction platforms for nutrition and promote multisectoral collaboration in the formulation, implementation, monitoring, and evaluation of food policies (35).

*Limits and recommendations*

Although the 12 additional indicators of Food-EPI tool allow assessing policies addressing undernutrition and micronutrient deficiency, several limits were identified during the process and recommendations were proposed by the National experts. Firstly, limits reported by the experts were related to the need to integrate food safety indicators in Food-EPI tool. Since food safety is a critical issue food environment in Côte d'Ivoire and French-speaking from West Africa countries, experts suggested that an adaptation would reinforce the tool's local relevance. They also highlight the absence or insufficient examples from African countries among of the best international practices which impeded to take in account context challenges in level of policies implementation. Secondly, recommandations were on the time needed to carry out workshops of the evaluation and priorisation of actions. They proposed extending the workshops from two days to four, as the additional time would allow experts to deepen their analyses and take decisions.

## Conclusion

The evaluation of nutrition policies in Côte d'Ivoire using the Food-EPI tool facilitated a participatory and inclusive process, engaging national stakeholders around critical issues of nutrition and public health. The findings revealed that national nutrition policies are weakly implemented compared to international best practices. These policies focus more on undernutrition than overnutrition. Recommendations stemming from a rigorous prioritization process were formulated to address these gaps. Despite its limitations, this pioneering study provides a strong foundation for guiding nutrition policies in the country and preventing future health challenges. Stakeholder feedback also highlights the need for methodological adjustments in future studies.

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