

# BMF CP 74: Promoting Food Biofortification in Agricultural Sectors through School Meals Program

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“As the harvest is over, the Sparrows become even more famished. The grown-up Sparrows look haggard, while the little ones look malnourished, just skin and bones.”

–In “Food”; [The Kingfisher Story Collection](#).

[COLLABORATIVE PROJECT]

## 1. Project Description

### 1.1. Background

Science is working behind the scenes to make our food more nutritious through biofortification, which enhances the nutritional content of crops during their growth process via biotechnology, including conventional selective breeding and genetic engineering methods. This approach also helps combat climate change [1]. One standout product of biofortification is Golden Rice, engineered to produce beta-carotene, which the human body converts into vitamin A [2]. Physically, biofortification aims to address health issues such as weakened immune systems, stunted growth, and impaired cognitive development [3]. Socially, it helps rural communities meet their nutrient requirements,

especially when their staple foods are poor in micronutrients [4]. Biofortification also provides a valuable solution for communities with limited access to commercially fortified foods [5].

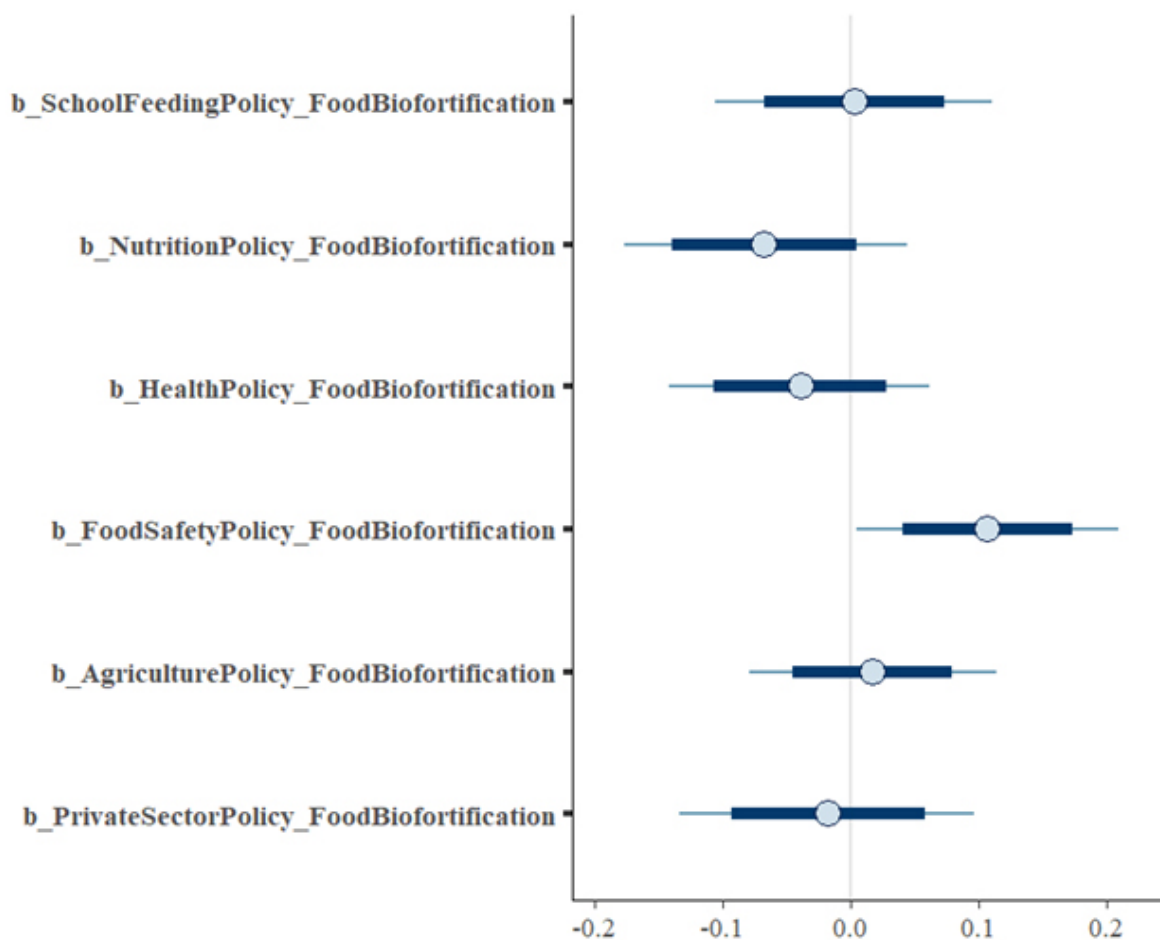
Globally, school meal programs aim to meet the nutritional needs of school-aged children, promising a better future for participating countries. However, the implementation of these programs varies among countries. In those with such programs, strong policy guidelines are essential to ensure their success. National policies related to school feeding, nutrition, health, food safety, agriculture, and the private sector play a crucial role in the effective implementation of food biofortification in the agricultural sector. This study aims to analyze how these various policies affect the implementation of food biofortification in countries with school meal programs. Enhancing and strengthening these policies could improve biofortification practices among farmers, increase their involvement, and upgrade the supply chain for school meal programs.

## ***1.2. Materials***

The granular interaction thinking of mindsponge theory [6] was used in study conceptualization, and Bayesian Mindsponge Framework (BMF) analytics was employed in statistical analysis on a dataset of 126 Ministry officers who managed large-scale school meal programs in 126 countries. This dataset originated from the 2021 Global Surveys, which can be accessed publicly at the GCNF Global Survey of School Meal Programs database [7]. The bayesvl package, aided by the Markov chain Monte Carlo (MCMC) algorithm, was employed in statistical analysis [8]. For more information on BMF analytics, portal users can refer to the following documents [9]. Data and code snippets of this initial analysis were deposited at <https://zenodo.org/uploads/12742823>.

## ***1.3. Main Findings***

The preliminary analysis revealed that food safety policy significantly influenced food biofortification practices in the agricultural sector. In contrast, the effects of school feeding policy, health policy, agriculture policy, and private sector policy on these practices were ambiguous. Additionally, nutrition policy had a negative impact on biofortification practices among farmers in countries with school meal programs. (see Figure 1).



**Figure 1:** Estimated coefficients

## 2. Collaboration procedure

Portal users should follow these steps for registering to participate in this research project:

Create an account on the website (preferably using an institution email), and then:

1. Place your name, affiliation, and desired role in the project in the comment box below this post.
2. Patiently wait for the AISDL mentor to give the formal agreement on the project.

If you have further inquiries, please get in touch with us at [aisdl\\_team@mindsponge.info](mailto:aisdl_team@mindsponge.info)

If you have been invited to join the project by an AISDL member, you are still encouraged to

follow the above formal steps.

All the resources for conducting and writing the research manuscript will be distributed upon project participation.

Project coordinator: ***Ni Putu Wulan Purnama Sari***.

The AISDL mentor for this project is Minh-Hoang Nguyen.

Other members who have joined this project: Quan-Hoang Vuong.

The research project strictly adheres to scientific integrity standards, including authorship rights and obligations, without incurring an economic burden at participants' expenses. Our philosophy embraces the fostering of humanistic values in conducting empirical investigations for sustainable and feasible solutions to real-world problems.

## References

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