

## **Ajinomoto Foundation: Improving Child Nutrition through Social Business**

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### **【Company Profile】**

Name: Ajinomoto Foundation, Inc.

Establishment: August 2016 (authorized as a public interest incorporated foundation in April 2017)

Representative: Kaoru Kurashima

Head office location: Chuo-ku, Tokyo

### **【Case Overview】**

As a result of poor nutrition, one in every three children worldwide does not grow optimally. In particular, children who do not receive sufficient nutrition during the first critical 1,000 days - from when they are in the womb until their second birthday - often suffer irreversible long-term health problems. The Ajinomoto Foundation (TAF) is playing a key role in combating this problem in Ghana. Through the production and sale of a nutritional supplement called "KOKO Plus®", TAF aims to improve the nutrition of children from the time of weaning through a social business approach. This article highlights just how TAF is doing this.



## 1. Social Business

In recent years, social business, which uses business mechanisms to solve social issues such as poverty, food insecurity, and environmental degradation, has been attracting attention. Traditionally, solving social issues is not a priority of business entities; they are expected to be solved by policies of public organizations such as national governments, or by volunteers. Such approaches often rely on external funding sources such as taxes or donations, making them vulnerable to interruptions if those funding sources are disrupted. In contrast, social businesses address social issues by receiving payments for their own products or services to cover operating costs such as employee salaries. This makes it possible to continue activities without relying on external funding<sup>1</sup>.

Ensuring sustainability of social businesses is a difficult task. In practice, social businesses are not different from regular businesses in terms of relying on profit to remain operational<sup>2</sup>. If forecasts suggest reasonable profits, social businesses would be considered viable, as is the case in regular businesses. The fact that there is still a mountain of unresolved social issues in the world without a corresponding number of, or interest in, social businesses points to the difficulty of that endeavour.

TAF is tackling this problem head-on, aiming to address a major social problem of malnutrition among children in Ghana aged six months and above through the social business of producing and selling KOKO Plus<sup>®</sup>.

## 2. Nutrition Challenges Faced by Children Worldwide<sup>3</sup>

### Children's Food and Nutrition

Globally, while the number of children surviving after birth has increased, many still fail to achieve their optimal growth and development. Many children suffer from three forms of malnutrition: undernourishment, hidden hunger, and overweight, due to a lack of sufficient food, inadequate intake of appropriate foods, or inability to make good use of the food they consume (Table 1).

===Table 1===

Child malnutrition worldwide

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<sup>1</sup> This means that the ultimate goal is to sustain the operations without relying on external funding. It does not imply non-reliance on external funding at start of the activity.

<sup>2</sup> Although the pursuit of profit is the same between a regular business and a social business, how profits are used differs greatly between the two. In the former, profits are returned to investors, while in the latter, profits are reinvested to further solve social issues.

<sup>3</sup> The descriptions in this section are primarily based on the UNICEF (2019) report "The State of the World's Children 2019: Children's Food and Nutrition - Growing well in a changing world."

Region	Population <sup>a</sup> (million)			Annual population growth rate (%)		Under-five mortality rate (deaths per 1,000 births)			Malnutrition in children under 5 years of age <sup>c</sup>		
	Total	Under 18 years old	Under 5 years old	2000	2018	1990	2000	2018	Stunting (%)	Wasting (%)	Overweight (%)
				- 2018	- 2030 <sup>b</sup>						
East Asia and Pacific Countries	2,363	558	157	0.7	0.4	57	40	15	8	3	6
Eastern Europe and Central Asia	423	104	31	0.4	0.2	46	36	13	9 <sup>d</sup>	2 <sup>d</sup>	15 <sup>d</sup>
Western Europe	496	92	25	0.4	0.1	10	6	4	–	–	–
Latin America and the Caribbean	642	190	52	1.2	0.8	55	33	16	9	1	7
Middle East and North Africa	448	156	50	2.0	1.5	65	42	22	15	8	11
North America	364	81	21	0.9	0.6	11	8	6	3 <sup>e</sup>	<1 <sup>e</sup>	9 <sup>e</sup>
South Asia	1,814	619	168	1.5	1.0	130	94	42	34	15	3
Eastern and Southern Africa	561	268	85	2.6	2.4	164	136	57	34	6	4
Western and Central Africa	520	263	87	2.8	2.6	197	170	97	34	6	4
<b>World</b>	<b>7,631</b>	<b>2,331</b>	<b>676</b>	<b>1.2</b>	<b>0.9</b>	<b>93</b>	<b>76</b>	<b>39</b>	<b>22</b>	<b>7</b>	<b>6</b>

a: Data of 2019. b: Based on medium fertility rate estimates. c: Moderate and severe values for the most recent annual data available from 2013 to 2018. d: The population groups under study were small and should be considered as such in data interpretation. e: Based on U.S. data only.

Source : UNICEF (2019) “The State of the World’s Children 2019. Children, Food and Nutrition: Growing well in a changing world”

These three forms of malnutrition are intertwined such that any two may occur at one or several phases of a child's life. All three may also occur at the same time, although to

varying degrees individually. The extent to which they occur depends on such factors as diet quality as well as social problems such as availability and affordability of food.

### **Under-nutrition**

Under-nutrition is a condition in which a child lacks the necessary nutrients, such as protein and energy, to maintain health. Children who do not obtain adequate nutrition during the first critical 1,000 days from the time they are in the womb until their second birthday have stunted growth, resulting in short stature for their age and inadequate cognitive development of the brain (this is called stunting). This condition affects learning and, in adult life, productivity at work. Thus, a child who is stunted in infancy may carry the aftereffects of stunting for the rest of their life and never reach full physical and intellectual potential.

Globally, the number and the proportion of stunted children under the age of five is declining. From 2000 to 2018, the number of stunted children shrank by a quarter, to 149 million. However, despite the overall global decline, the number in many regions of Africa has increased, as the continent's population grew rapidly. In fact, from 2000 to 2018, the number of stunted under-five children increased by 1.4 million in Eastern and Southern Africa and by 6.5 million in Western and Central Africa.

Additionally, under-nutrition may result in a condition in which the affected child has too little weight for height (a condition called wasting), resulting in a weakened immune system, which is caused by either extreme under-nutrition or disease, or both, and is often accompanied by a recent loss of weight. The number of children with wasting can change frequently and rapidly in response to factors such as seasonal changes in food availability and epidemic patterns of diarrhea and malaria.

Unlike stunting, wasting has not yet shown a downward trend globally: in 2018, nearly 50 million children under the age of five were threatened with wasting. In some parts of South Asia, 15.2% of children under the age of five suffer wasting, which is the highest number globally.

### **Hidden Hunger**

Hidden hunger is a deficiency of micro-nutrients (vitamins, minerals, and other nutrients that are required in minute amounts but necessary for human growth). Unlike under-nutrition, hidden hunger is difficult to observe, thus in most cases, it is too late to recognize and take action. The variety of dietary items consumed is a criterion for determining whether required micro-nutrients are being consumed. Therefore, hidden hunger can occur in both traditional and modern diets if the variety of dietary items is

insufficient. Even in developed countries, hidden hunger can be a serious problem when the diet is unbalanced.

Specifically, the traditional diet may consist of only a few staple foods such as grains and potatoes, with little opportunity for more nutritious foods such as fruits, vegetables, meat, fish, eggs, and dairy products. On the other hand, processed foods in the modern diet can be fortified with essential vitamins and minerals, but may have them in insufficient amounts or even often lack them. In addition, processed foods such as inexpensive instant noodles and cookies can increase satiety and suppress children's appetites for nutrient-dense fruits and vegetables.

The global extent of hidden hunger is not known accurately due to the difficulty of estimating it. The United Nations International Children's Emergency Fund (UNICEF) estimates that there may be more than 340 million children under the age of five with hidden hunger in 2019. This number is an underestimation because only the number of children with vitamin A and iron deficiencies is included in the estimates.

### **Overweight**

Overweight is a condition in which children are too heavy for their height, putting them at risk of a variety of medical conditions, including gastrointestinal complications, orthopedic complications, early type 2 diabetes, and physical and mental abnormalities (depression, low self-esteem, etc.). In addition, childhood obesity often continues into adulthood and can cause serious health and economic problems. Overweight (and its more severe manifestation, obesity), is traditionally considered a symptom of affluence, now increasingly occurring in the poor. This is due to the global proliferation of foods high in fats and sugars, and the increased availability of inexpensive calories.

The number of overweight children continues to rise worldwide, especially in low- and middle-income countries, and is spreading rapidly. Up to 40.1 million children under the age of five were overweight in 2018, almost half of them in Asia and a quarter in Africa. In Africa, the number of overweight under-fives increased by about 44% from 2000 to 2018.

## **3. Child Nutrition and Food in Ghana**

### **Ghana**

Ghana is located in West Africa, facing the Atlantic Ocean, and is known as the country closest to the "world's navel" where latitude 0° and longitude 0° intersect. With an area of 238,000 square kilometers, it is about two-thirds the size of Japan. Its population in

2020 was approximately 31.07 million, 37% of whom are under 15 years of age<sup>4</sup>. In addition to English as the official language, various local languages are spoken by different regions and ethnic groups. The 2020 Gross Domestic Product (GDP) was \$68.53 billion, and Gross National Income (GNI) per capita was \$2,340, making it a lower-middle income country according to the World Bank classification. Ghana's economy is typically commodity-dependent, relying on agriculture and mining. Gold, oil, and cocoa beans are the top exports, and agriculture, the major industry, accounts for about 20% of GDP and half of employment<sup>5</sup>.

During the 25 years from independence in 1957 to the inauguration of the Rawlings government in 1981, there were frequent changes of government, including four coups. In 1990s, democratization progressed and the country enjoyed a long period of political stability under the lead of President Rawlings. President Rawlings complied with the constitutional prohibition against a third term in office and did not run in the 2000 presidential elections, which brought the first peaceful transition of power between the ruling and opposition parties in Ghana's history<sup>6</sup>.

Ghana, based on its non-aligned neutrality, emphasizes relations with neighboring countries<sup>7</sup>, while strengthening its ties with Japan and other developed countries such as the United Kingdom, the United States, and France. In particular, as a major member of the African Union (AU) and the Economic Community of West African States (ECOWAS), Ghana actively contributes to peace and stability in the African region as a whole. Various social sectors, including UN agencies and international NGOs, use Ghana as a base for their activities in West Africa.

Ghana's relationship with Japan began in 1927 when Dr. Hideyo Noguchi arrived in Accra, British Gold Coast (now Ghana) to conduct research on yellow fever<sup>8</sup>. In 1979, in commemoration of Hideyo Noguchi's achievements, the Noguchi Memorial Institute for Medical Research was established to conduct research on infectious diseases. Presently, it is one of the leading research institutes on infectious diseases in Africa. The total Japanese aid to Ghana amounted to 281.2 billion yen by 2014, making Ghana the second largest recipient of Japanese ODA in sub-Saharan Africa, after Kenya<sup>9</sup>.

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<sup>4</sup> The World Bank (<https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS?locations=GH>)

<sup>5</sup> Ministry of Foreign Affairs of Japan, "Republic of Ghana - Basic Data." (<https://www.mofa.go.jp/mofaj/area/ghana/data.html>)

<sup>6</sup> Ministry of Foreign Affairs of Japan, "Republic of Ghana - Basic Data."

<sup>7</sup> Ministry of Foreign Affairs of Japan, "Republic of Ghana - Basic Data."

<sup>8</sup> Hideyo Noguchi died of yellow fever at a hospital in Accra in 1928.

<sup>9</sup> Ministry of Foreign Affairs of Japan (2016) "Japan's International Contribution Data by Country/Region (Sub-Saharan Africa)"

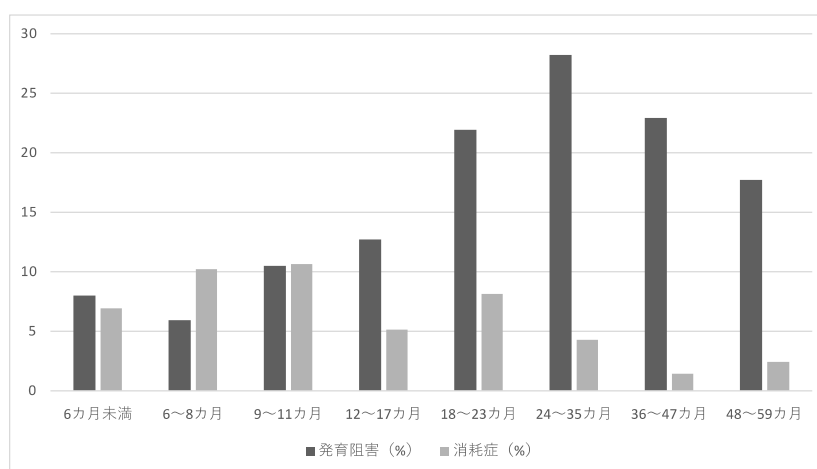
## Child Malnutrition

Ghana ranks 133rd (in 2021) out of 191 countries in the Human Development Index (HDI)<sup>10</sup>, which is published annually by the United Nations Development Programme (UNDP). In 2021, Ghana's life expectancy at birth was 63.8 years, which is below the world average of 71.4 years. In addition, the under-five mortality rate (deaths per 1,000 live births) was 48 in 2018, and although it has been improving in recent years (127 in 1990 and 99 in 2000), it remains above the world average (39)<sup>11</sup>.

One of the causes of these high mortality rates is child malnutrition, especially stunting during weaning: while only 5% and 3% of children under five suffer from wasting and overweight, respectively, 19% suffer from stunting and 25% of these children are in the bottom 20% of income<sup>12</sup>. The percentage of stunting by child age (Figure 1) was low, which is 5.9% at age of 6 to 8 months, but increased significantly during the weaning period to 21.9% at age of 18 to 23 months and to 28.2% at age of 24 to 25 months. Furthermore, only 13% of children between the ages of 6 and 23 months received the minimum acceptable diet<sup>13</sup>.

==Figure 1==

Stunting and wasting in Ghanaian children



Note: Weaning begins around 6 months of age

Source: Compiled from the Ghana Demographic and Health Survey 2014

<sup>10</sup> United Nations Development Programme (2022) "The 2021/2022 Human Development Report."

<sup>11</sup> UNICEF (2019) "The State of the World's Children 2019. Children, Food and Nutrition: Growing well in a changing world." (UNICEF (2019) "World Children's White Paper 2019: Food and Nutrition for Children - Growing Up Healthy in a Changing World")

<sup>12</sup> UNICEF (2019) "The State of the World's Children 2019. Children, Food and Nutrition: Growing well in a changing world." (UNICEF (2019) "World Children's White Paper 2019: Food and Nutrition for Children - Growing Up Healthy in a Changing World")

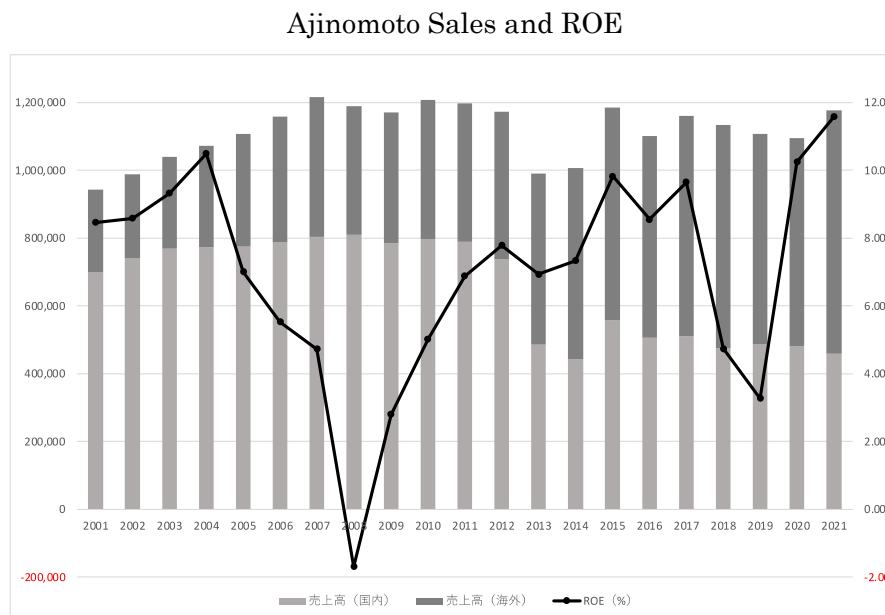
<sup>13</sup> Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF International. 2015. "Ghana Demographic and Health Survey 2014."

## 4. Ghana Nutrition Improvement Project

### Organizational Structure

In 2009, Ajinomoto Co., Ltd. launched a joint project in Ghana with the University of Ghana and the Nevin Scrimshaw International Nutrition Foundation (INF) to improve child nutrition during the weaning period. Since it developed its flavor enhancer AJI-NO-MOTO®, also used as the company name, in 1909, Ajinomoto has been operating globally, mainly in the food domain (Figure 2). Ajinomoto aims to solve food and health issues through the action of amino acids, and in its medium-term management plan (2014-2016) announced in 2014, the company introduced the concept of ASV (Ajinomoto Group Shared Value)<sup>14</sup>. ASV states that "A company should not only pursue its own sales and profits, but should also create social value by addressing social issues and problems through the company's business, and create economic value as a result". The evolution of ASV will lead to the realization of the company's vision<sup>15</sup>.

==Figure 2==



Source: Prepared from Ajinomoto's annual securities reports for each year.

<sup>14</sup> ASV is derived from Creating Shared Value (CSV) proposed by Michael E. Porter and Mark R. Cramer, which is defined as an approach where economic value is created at the same time as social value is created by addressing society's needs and problems. For more information, see the following paper: Porter, M.E. & Kramer, M.R. 2011. Creating Shared Value, Harvard Business Review, 89, 1-2 (January/February): 62-77.

<sup>15</sup> Ajinomoto "What is ASV? Initiatives for the future promoted by the Ajinomoto Group" (<https://story.ajinomoto.co.jp/report/083.html>)



Since the 1990s, Ajinomoto has conducted field studies on nutritional improvement using lysine, an essential amino acid, in developing countries and regions such as Pakistan, China, and Syria, finally demonstrating that a small amount of lysine taken with daily meals can improve symptoms of malnutrition. On the occasion of the 100th anniversary of the company's founding, this project was initiated in Ghana, where field studies had been conducted since 2007<sup>16</sup>.

This project is an attempt to solve the social issue of child malnutrition through social business. Initially, Ajinomoto was involved in this project as part of its own business, but the project was transferred to the Ajinomoto Foundation, a public interest incorporated foundation established in 2016 and accredited as a public interest incorporated foundation in 2017<sup>17</sup>. The change in the governing organization to a public interest incorporated foundation has made it possible to ensure the public interest of the activities externally. Social contribution activities through food, including the Ghana Nutrition Improvement Project, were transferred to TAF, and the Ajinomoto Group, led by Ajinomoto, is now indirectly involved in this project through its support to TAF<sup>18</sup>.

TAF has also been involved in the Health and Nutrition Seminar Project (providing information and hands-on learning opportunities in the areas affected by the Great East Japan Earthquake in order to improve people's lives from the perspective of food and nutrition), the Food and Nutrition Support Project (providing financial grants and know-how support to organizations implementing projects to improve food and nutrition in developing countries), and the project to establish a dietitian system (establishing a dietitian system with the Vietnamese government, developing and providing nutrition education and nutritionally well-balanced menus). Its largest project has been the Nutrition Improvement Project for Low-Income Countries (Ghana Nutrition

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<sup>16</sup> The following is a detailed account of the events leading up to the initiation of this project. Yokoyama, Keiko (2019), "BOP business and corporate social entrepreneurship: perspectives on social business and legitimating behavior," *Organization Science*, 53(2), 57-70..

<sup>17</sup> A public interest incorporated foundation is an incorporated foundation that conducts business for the public interest and is authorized as a public interest incorporated foundation under the Public Interest Incorporated Association and Public Interest Incorporated Foundation Authorization Law. Public interest incorporated foundations must conduct one of the 23 public interest purpose businesses stipulated in the Public Interest Incorporated Foundation Authorization Law, such as the promotion of academics, science and technology, and the improvement of public health. While a general incorporated foundation can be established only by registering with the Legal Affairs Bureau, a public interest incorporated foundation cannot be established unless it is authorized as a public interest incorporated foundation by an administrative agency, either the Prime Minister or the prefectural governor.

<sup>18</sup> Since 2015, Ajinomoto has been promoting improved nutrition through ASV in the Republic of Malawi through the development of a therapeutic nutritional diet for children with wasting syndrome. For more information, please refer to the following website. Reverse University Dictionary "Let's contribute to the earth with "delicious" technology and amino acids ([https://www.gyakubiki.net/sdgs/03/article\\_02.html](https://www.gyakubiki.net/sdgs/03/article_02.html))

Improvement Project) (Table 2).

==Table 2==

TAF (Public Purpose Activities) Ordinary Revenue and Expenses by Business		2016	2017	2018	2019	2020	2021
Ordinary Revenue							
Subsidy received		-	8	0	-	-	-
Donations received		8	303	316	342	265	282
Total ordinary revenues		8	311	316	342	265	282
Ordinary Expenses							
Nutrition Improvement Program for Low-Income Countries (Ghana Nutrition Improvement Project)	Operating Cost	-	-	108	151	122	147
	Labor costs, etc.	-	-	50	39	32	32
Health and Nutrition Seminar Project to Support Reconstruction of Disaster Areas	Operating Cost	-	-	70	74	28	32
	Labor costs, etc.	-	-	20	18	21	20
Food and Nutrition Support Program	Operating Cost	-	-	34	30	27	27
	Labor costs, etc.	-	-	9	8	12	11
Project to establish a dietitian system	Operating Cost	-	-	18	15	11	1
	Labor costs, etc.	-	-	8	7	12	11
Total ordinary expenses		8	311	316	342	268	282
Increase (Decrease) in Current Ordinary Income		0	0	0	0	0	0

(Unit: Million yen)

Source: Compiled from TAF's Statement of Net Assets Increase/Decrease and Business Report for each year.

In 2019, as the project moved from the research phase to the social business phase, the organizational structure was reviewed and a non-profit organization, KOKO Plus Foundation (KPF), was established in Ghana. Until then, the University of Ghana, the local project entity, had been the main implementing entity, but with its establishment, KPF became the main entity in Ghana, and is currently responsible for local management.

## Product

In Ghana, a porridge made from fermented corn called *koko* is the commonest traditional weaning food (Figure 3). However, *koko* lacks not only sufficient energy and protein, but also the required micro-nutrients for child growth. This is a major cause of growth retardation in children in the weaning period. Therefore, Ajinomoto, together with the University of Ghana and INF, developed KOKO Plus®, a nutritional supplement, to be added to traditional weaning foods<sup>19</sup>. (Figure 4).

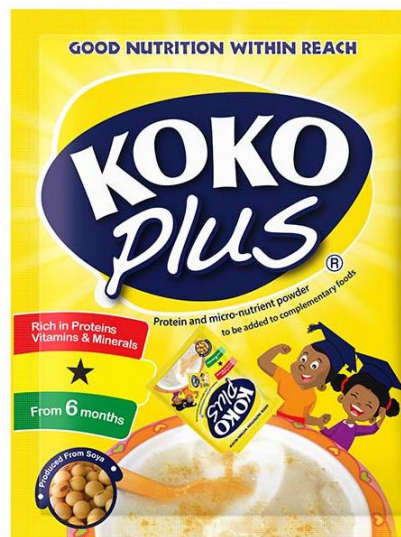
=== Figure 3 · 4 ===

koko



Source: Ajinomoto Foundation

KOKO Plus



Source : KOKO Plus Foundation Website (<https://kokoplus-foundation.org/index.php>)

<sup>19</sup> When the product was first developed, it was not added to baby food, but bottled nutritional beverages were considered..

KOKO Plus® is a powdered 15 grams sprinkle containing soy, sugar, micro-nutrients, palm oil, and lysine. It is intended to be mixed with *koko* and other weaning foods to provide nutritional balance for children while respecting the local food culture. The product does not require cold storage (shelf life is one year), and is packaged for serving a sachet per meal. Although the price has been raised several times in local currency terms in response to the weak exchange rate and high prices of raw materials, the price has been kept at about 10 yen per bag per day<sup>20</sup>, which is affordable for poor families (those living on less than \$1.90 per day)<sup>21</sup>.

KOKO Plus® has been developed as a supplement to meet the World Health Organization's complementary diet guidelines, and the addition of KOKO Plus® to *koko* can meet almost all the recommended total energy requirements, total protein requirements, and 65% of total fat requirements. In addition, KOKO Plus® provides amino acids and micro-nutrients. An evaluation of amino acid and micro-nutrient composition indicates that KOKO Plus® meets the full (120-160%) daily requirement of essential amino acids and 50-150% of micro-nutrients<sup>22</sup>.

In 2012, an efficacy study was conducted to verify the nutritional effects of KOKO Plus®. Specifically, the nutritional supplement was added to baby foods for one year for infants aged 6 until they turned 18 months, and the effects on growth and health were examined. The results showed that KOKO Plus® was effective in preventing short stature (stunting), anemia, and acute infection<sup>23</sup>. In 2018, the United Nations World Food Programme (WFP) recognized the nutritional benefits of KOKO Plus® as a nutritious powder and included it in its Food Basket for Ghana.

## Production

The production of KOKO Plus® is outsourced to a local food company, Yedent Agro Group of Companies (Figure 5). In 2012, Ajinomoto led the establishment of a KOKO

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<sup>20</sup> Price as of December 2022. In local currency, the price is about 1 Ghanaian cedi.

<sup>21</sup> In 2015, the World Bank revised the international poverty line from \$1.25 to \$1.90 per day based on 2011 purchasing power parity (PPP).

<sup>22</sup> Tano-Debrah, K., et al. (2019) "Development and sensory shelf-life testing of KOKO Plus: A food supplement for improving the nutritional profiles of traditional complementary foods. *Food Nutr Bull.* 40(3): 340-356.

<sup>23</sup> The study is divided into three groups of 970 subjects: KOKO Plus® + nutrition education (322 subjects), micronutrient administration + nutrition education (n=329), and nutrition education only (319 subjects). See below for details. Ghosh, S. A., et al. (2019) "A macro-and micronutrient-fortified complementary food supplement reduced acute infection, improved haemoglobin and showed a dose-response effect in improving linear growth: a 12-month cluster randomised trial." *Journal of Nutritional Science* 8.

Plus® production plant within Yedent's factory premises in the midwest of Ghana, and production began. In 2017, an automatic packaging machine was installed and the plant moved into full-scale production. Although initially in the red, the company improved production efficiency by reviewing its cost structure and restructuring its production system, resulting in a return to profitability on a gross profit basis.

== Figure 5==

Yedent's factory



Source: Ajinomoto Foundation

The company not only outsources production to local companies, but also procures most of the raw materials from local suppliers . Specifically, the company imports premixes (micro-nutrient powders) and essential amino acids (lysine), which cannot be procured locally, from overseas, but sources the main ingredients (soybeans, sugar, and oil) from local suppliers.

### **Marketing**

Since 2017, TAF has been working with the Ghana Health Service (GHS) to promote behavioral change among mothers through nutrition education. At GHS health centers where caregivers (typically mothers) regularly visit for child health and growth reviews, nurses record information on children's nutritional status in a maternal and child health record book. Using educational materials produced in a collaboration between TAF and GHS (Figure 6), the nurses explain the importance of child nutrition and encourage mothers to feed their children nutritious foods, as well as recommend KOKO Plus® as a good product for improving nutrition (Figure 7).

== Figures 6 • 7==

Nutrition awareness poster developed in collaboration with GHS

 **RECOMMENDED COMPLEMENTARY FEEDING PRACTICES** 

AGE	RECOMMENDATIONS				Variety
	Frequency (per day)	Amount of food (per meal)	Texture (thickness/consistency)		
Start complementary foods					
<b>At 6 months</b>	2 to 3 meals plus frequent breastfeeds	2 to 3 tablespoons Start with 'tastes' and gradually increase amount	Thick porridge		Breast milk
<b>6 up to 9 months</b>	2 to 3 meals plus frequent breastfeeds Give 1 to 2 snacks	2 to 3 tablespoons per feed Increase gradually to half (1/2) 250 ml cup/bowl	Thick porridge Mashed/pureed Family foods	<b>Carbohydrate (Energy)</b> Staples <b>Protein (Body building)</b> Legumes & Seeds <b>Vitamins &amp; Minerals (Conditions)</b> Fruits & Vegetables <b>Animal Source Foods</b>	
<b>9 up to 12 months</b>	3 to 4 meals plus breastfeeds Give 1 to 2 snacks	Half (1/2) 250 ml cup/bowl	Finely chopped Family foods Finger food Sliced foods		
<b>12 up to 24 months</b>	3 to 4 meals plus breastfeeds Give 1 to 2 snacks	Three-quarters (3/4) to 1 250 ml cup/bowl	Sliced foods Family foods		
					<b>"KOKO Plus" can help you!!!</b>  <b>Add it to your Babies' Foods!!</b>

Source: Ajinomoto Foundation

Nutrition education by nurses



Source: Ajinomoto Foundation

Mothers are informed that if their children are fed a nutritious diet with KOKO Plus®, based on the knowledge gained from nutrition education and counseling from nurses<sup>24</sup>, they can feel the effects of the program at the next checkup through the changes in their children's nutritional and health status. Such education is expected to increase their motivation to improve their children's nutritional status. However, in general, human behaviour change is a difficult task. Mothers who receive nutrition education and then purchase KOKO Plus® do not necessarily continue to use the product. Through regular visit to health centers for checkups, repeated nutrition education, counseling with nurses on the nutritional status of their children, and repeated confirmation of the effectiveness of KOKO Plus®, mothers gradually come to understand the importance of child nutrition and change their behavior (Figure 8). Therefore, it is necessary to continuously involve mothers in this series of engagements to achieve behavior change.

=== Figure 8 ==

Counseling by a nurse

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<sup>24</sup> According to a study by the Ajinomoto Foundation, nurses are more familiar and trusted by mothers in Ghana than university professors, pharmacists, nutritionists, and other professionals.



This TAF-GHS education program was initially introduced in one region as an experiment in 2018. For this activity, TAF signed a memorandum of understanding with GHS. The collaboration activities were found to be effective in increasing caregiver's nutrition knowledge and their awareness of child nutrition needs, thus leading to behavior change. As a result, it is now possible to expand this nutrition education for mothers. Since the conclusion of the memorandum of understanding, the collaboration with GHS increased in coverage from one region to 40% of the total area of Ghana as of 2021.

In addition to the collaboration with GHS, TAF also conducts nutrition education activities for mothers through an NGO called Experiential Social Marketing Foundation (ESM). ESM is the public interest organization of a local marketing company called EXP. Specifically, ESM conducts face-to-face nutrition education for mothers near retail stores, and also uses advertisements on TV, FM, and community-based media stations (Information Centers) for the same purpose.

### **Distribution**

TAF outsources the distribution of KOKO Plus® to ESM, which in turn supplies KOKO Plus® to local distributors and retailers. In urban areas, KOKO Plus® is distributed preferentially to retail outlets (kiosks) near GHS health centers so that mothers who have received nutrition education from GHS health centers can immediately purchase the product (Figure 9). This is an easily accessible and financially sustainable method for beneficiaries. In rural areas, on the other hand, village-based activities such as village savings and loan associations are used to provide both nutrition education and distribute KOKO Plus®. However, due to low population density, distribution by this approach is not yet financially sustainable.



== Figure 9==

Kiosk



Source: Ajinomoto Foundation

In areas with high poverty and in refugee camps, KOKO Plus® is distributed on the premise of subsidies. There, mothers receive KOKO Plus® either free of charge or through redeemable vouchers used in WFP-supported subsidy programs, or in-kind donations through the GHS and/or the International Food Policy Research Institute (IFPRI). While this model is profitable and provides rapid improvements in nutrition, it relies heavily on philanthropic and public funding.

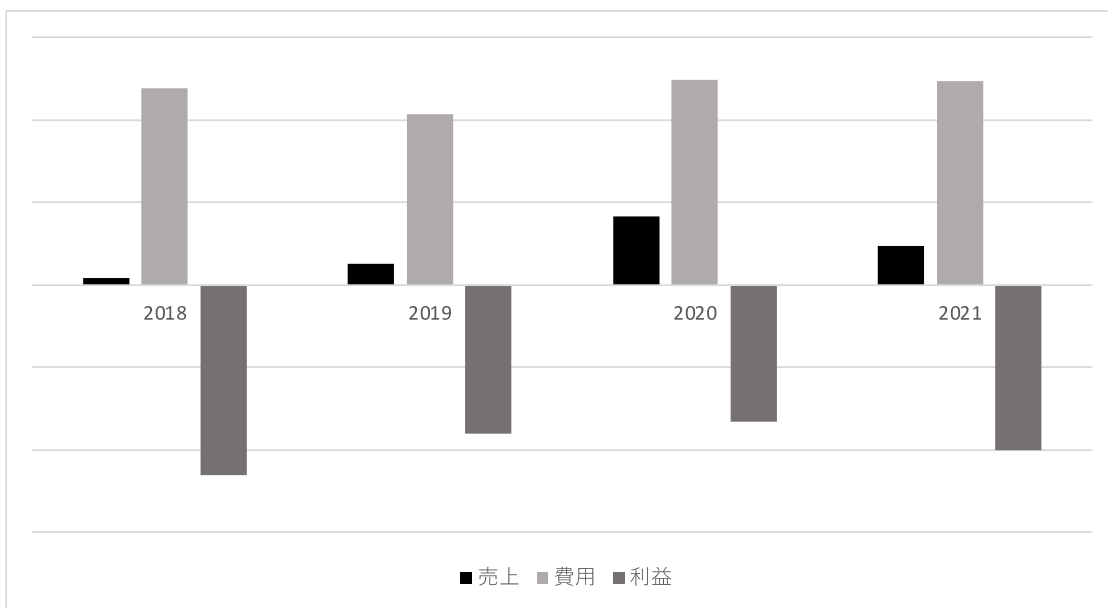
## 5. Looking Ahead

### Current Status and Challenges

The business performance of KOKO Plus® in 2021 was a dramatic improvement of the situation in 2017 (Figure 10). However, it is taking time to expand the scale of the business compared to the level initially set. Additionally, although the company is profitable on a gross profit basis, it is still in the red on an operating profit basis when sales and administrative expenses are deducted, and is thus yet to achieve improvement of profit sustainably.

=== Figure 10===

Project Achievements



Source: Ajinomoto Foundation

In order to ensure financial sustainability, it is necessary to increase sales of KOKO Plus® and reduce the cost at the same time. To achieve the project's goal of reducing the number of stunted children, it is necessary to stimulate demand by encouraging behaviour change among caregivers. Based on that, sales will increase, and economies of scale will enable reductions in production and marketing costs per unit. For example, if the number of beneficiaries increases from approximately 90,000 (2020 actual) to approximately 400,000, with an increase from 57 areas (2020 actual) to 150 areas in collaboration with the GHS, production and marketing costs per unit will be reduced to a financially sustainable level<sup>25</sup>.

Currently, many Ghanaian families do not fully understand child malnutrition during the weaning period, nor the importance of a nutritious diet for healthy growth in children, which is no doubt a serious problem. However, it is not easy to make mothers and caregivers understand and change their behavior over the medium to long term if they cannot see the effect of feeding their children a nutritious diet. To ensure financial sustainability in the future, it is essential not only to set affordable prices and improve distribution so that KOKO Plus® can be purchased at local retailers, but also to provide effective and efficient nutrition education to mothers so that they will be convinced of the value of KOKO Plus® and purchase it continuously for their children.

<sup>25</sup> Benhayoune, S & Toride, Y. 2022. Ghana Nutrition Improvement Project: Co-designing a PACT to tackle infant malnutrition.

## Digital Transformation (DX)

In 2022, TAF, together with medical equipment manufacturer Sysmex Corporation and electronics manufacturer NEC Corporation, launched a co-creation project to improve the health and nutritional status of mothers and children in Ghana<sup>26</sup>. This project is in line with the Memorandum of Cooperation signed between Japan and Ghana to realize the "Universal Health Coverage Expansion and Africa Health Initiative" proposed during the 7th African Development Conference in 2019<sup>27</sup>. Malnutrition not only causes stunting in children, but also anemia, which increases the risk of severe malaria, the leading cause of death in Ghana<sup>28</sup>. Malaria also reduces food intake, destroys red blood cells, and increases the risk of malnutrition and anemia even after recovery. Infants under five years of age and pregnant women are especially vulnerable to the health risks associated with malaria. Therefore, an integrated approach that considers nutrition, anemia, and malaria issues simultaneously is needed<sup>29</sup>.

Considering the problems mentioned, this project will build on the foundation of public-private partnerships that TAF has established through the Ghana Nutrition Improvement Project by adding Sysmex's simultaneous blood cell count, malaria diagnosis equipment and NEC's ICT tools to the existing public-private partnerships. NEC will develop a mobile application and provide tablets to health center staff, to enable them to provide mothers with easy-to-understand health checkup results. Then, depending on the nutritional status of mother and child, the staff recommend the purchase of KOKO Plus®, or testing at a hospital with Sysmex diagnostic equipment. In this way, prevention of malnutrition and anaemia can be achieved whenever possible. Through this collaboration with Sysmex and NEC, we aim to effectively and efficiently promote behavioral change in mothers and children by digitizing a series of activities and supporting nurses<sup>30</sup>.

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<sup>26</sup> AFPBB News, "Save Ghana's Mothers and Children - Co-Creation Project of Three Different Industries Aims to Improve Health and Nutrition for Mothers and Children" (<https://www.afpbb.com/articles/-/3407484>)

<sup>27</sup> Cabinet Secretariat (2019) "Signing and Exchange of Memorandum of Cooperation on Healthcare in Ghana."

<sup>28</sup> Malaria is a disease transmitted by the bite of a mosquito carrying *Plasmodium falciparum* malaria parasites, and is widely prevalent in tropical and subtropical regions of the world. Along with tuberculosis and AIDS, malaria is one of the world's three major infectious diseases as defined by the World Health Organization (WHO). According to the WHO World Malaria Report 2021, the number of patients and deaths in 2020 is estimated to be about 240 million and 627,000, respectively.

<sup>29</sup> These are serious problems in Ghana and throughout Africa. See below for more information. African Union & African Development Bank Group. (2019). "The continental nutrition accountability scorecard"

<sup>30</sup> In particular, (1) health center staff use tablets equipped with NEC's app to illustrate medical checkup results and clearly communicate to mothers the gap between the actual condition and the

## **Nutrition Creates Healthy Societies**

The whole world is united in efforts to provide equal opportunities. But this unity and its related efforts will remain superficial if 25% of the world's children continue to suffer stunting, because by the time they reach the age of five, the consequences of inequality would have caused irreparable damage to their brains. The only way to declare that equal opportunity has actually been achieved is to reduce stunting to zero (Jim Yong Kim, former President of the World Bank) <sup>31</sup>

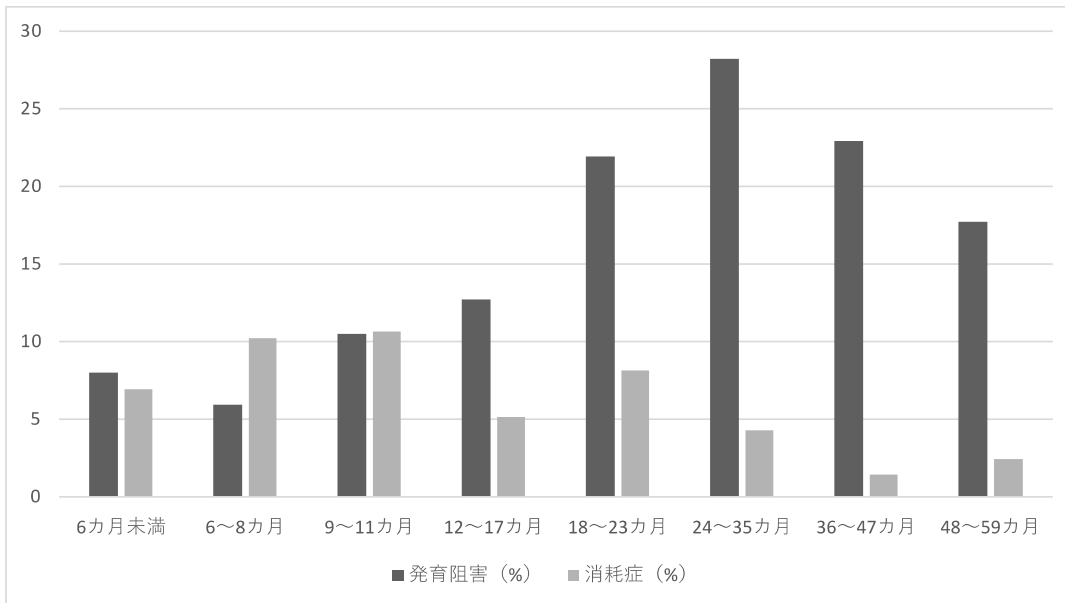
Malnutrition has a critical impact on a child's future. Children who are stunted in infancy may not take full advantage of educational opportunities due to delayed physical or brain development, illness, or a lack of readiness to learn. The effects can last a lifetime and limit their career choices. Furthermore, even after they become parents, their children could be similarly stunted due to poverty (arising from low economic productivity), thereby creating a negative cycle. Therefore, efforts to improve child nutrition are not only essential for the eradication of child malnutrition, but also for the realization of equal opportunity, economic development, and self-reliance of developing countries. In this sense, the Ghana Nutrition Improvement Project is not only a means to securing child nutrition, but also to the realization of a healthy society in which all children have equal opportunities. Although much support has been provided, including free provision of nutritious food, child nutrition remains unresolved. We are resolute in our march toward a healthy society built on good nutrition that is delivered through a sustainable social business.

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desired condition, (2) achieve more reliable follow-up by identifying and listing cases such as malnutrition, severe anemia, and not receiving medical checkups on schedule. (3) Based on the measurement results and the results of interviews regarding dietary habits, iron intake, etc., the optimal assessment contents to be presented by health center staff can be displayed on a tablet, thereby promoting behavioral change in mothers and children and contributing to nutritional improvement. In addition, by uploading data to the cloud, the government can accurately grasp the daily situation and make policy decisions based on the actual situation through health checkup data DX.

<sup>31</sup> Boseley, S. (2016). 'World Bank to name and shame countries that fail to prevent stunting in children', The Guardian, London, 30 September. (<https://www.theguardian.com/global-development/2016/sep/30/world-bank-name-and-shame-countries-fail-stunted-children>)

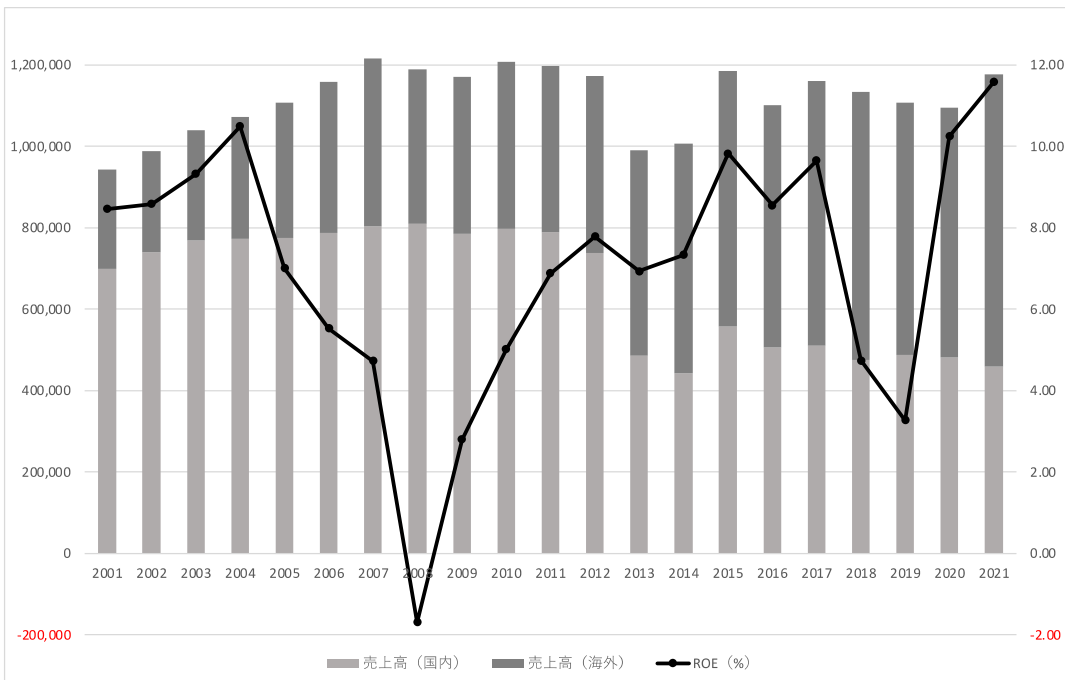
**Figure 1: Stunting and wasting in Ghanaian children**



Note: Weaning starts at around 6 months of age.

Source: compiled from Ghana Demographic and Health Survey 2014.

**Figure 2: Sales and ROE of Ajinomoto Co.**



Source: prepared from Ajinomoto's annual securities reports for each year.

Figure 3. koko



Source: Ajinomoto foundation.

Figure4. KOKO Plus



Source: KOKO Plus Foundation website (<https://kokoplus-foundation.org/index.php>)

Figure 5: Yedent's factory.



Source: Ajinomoto foundation.

Figure 6: Nutrition awareness posters developed in collaboration with the GHS


**RECOMMENDED COMPLEMENTARY FEEDING PRACTICES**


AGE	RECOMMENDATIONS				Variety
	Frequency (per day)	Amount of food (per meal)	Texture (thickness/consistency)		
<b>Start complementary foods</b>  <b>At 6 months</b>	 2 to 3 meals plus frequent breastfeeds	 2 to 3 tablespoons Start with 'tastes' and gradually increase amount	 Thick porridge	 Breast milk	
 <b>6 up to 9 months</b>	 2 to 3 meals plus frequent breastfeeds Give 1 to 2 snacks	 2 to 3 tablespoons per feed Increase gradually to half (1/2) 250 ml cup/bowl	 Thick porridge  Mashed/pureed Family foods	 <b>Carbohydrate (Energy)</b> Staples	
 <b>9 up to 12 months</b>	 3 to 4 meals plus breastfeeds Give 1 to 2 snacks	 Half (1/2) 250 ml cup/bowl	 Finely chopped Family foods Finger food Sliced foods	 <b>Vitamins &amp; Minerals (Conditions)</b> Fruits & Vegetables	
 <b>12 up to 24 months</b>	 3 to 4 meals plus breastfeeds Give 1 to 2 snacks	 Three-quarters (3/4) to 1 250 ml cup/bowl	 Sliced foods Family foods	 <b>Protein (Body building)</b> Legumes & Seeds Animal Source Foods	


**"KOKO Plus" can help you!!!**  
**Add it to your Babies' Foods!!**

Source: Ajinomoto foundation.

Figure 7: Nutrition education by nurses



Source: Ajinomoto foundation.

Figure 8: Counselling by nurses



Source: Ajinomoto foundation.

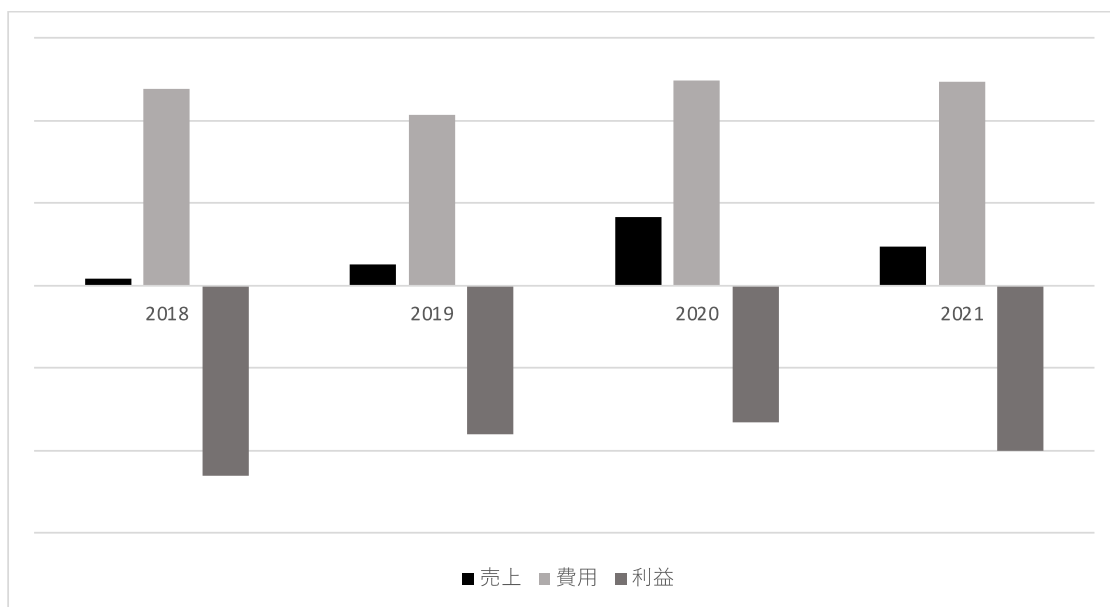


Figure 9.Kiosk.



Source: Ajinomoto foundation.

Figure 10.Project results.



Source: Ajinomoto foundation.

**Table 1: Child malnutrition worldwide**

Region	Population a (million)			Annual population growth rate (%)		Under-five mortality rate (deaths per 1,000 live births)			Malnutrition in children under 5 years c		
	Overall	Under 18	Under 5	2000 – 2018	2018 – 2030 <sup>b</sup>	1990	2000	2018	Stunting	Wasting	Overweight
									(%)	(%)	(%)
East Asian and Pacific countries	2,363	558	157	0.7	0.4	57	40	15	8	3	6
Eastern Europe and Central Asia	423	104	31	0.4	0.2	46	36	13	9 <sup>d</sup>	2 <sup>d</sup>	15 <sup>d</sup>
Western Europe	496	92	25	0.4	0.1	10	6	4	–	–	–
Latin America and the Caribbean	642	190	52	1.2	0.8	55	33	16	9	1	7
Middle East & North Africa	448	156	50	2.0	1.5	65	42	22	15	8	11
North America	364	81	21	0.9	0.6	11	8	6	3 <sup>e</sup>	<1 <sup>e</sup>	9 <sup>e</sup>
South Asia	1,814	619	168	1.5	1.0	130	94	42	34	15	3
Eastern & Southern Africa	561	268	85	2.6	2.4	164	136	57	34	6	4
Western & Central Africa	520	263	87	2.8	2.6	197	170	97	34	6	4
<b>World</b>	<b>7,631</b>	<b>2,331</b>	<b>676</b>	<b>1.2</b>	<b>0.9</b>	<b>93</b>	<b>76</b>	<b>39</b>	<b>22</b>	<b>7</b>	<b>6</b>

a: data for 2018. b: based on medium fertility estimates. c: most recent annual data available for 2013-2018, with medium and heavy figures. d: caution in interpretation due to the continued small size of the population groups studied. e: based on data for the United States only.

Source : UNICEF (2019) “The State of the World’s Children 2019. Children, Food and Nutrition: Growing well in a changing world”

**Table 2.Recurrent income and recurrent expenses by business line for TAF (public purpose projects)**

		FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
Ordinary income							
Subsidies received		-	8	0	-	-	-
Donations received		8	303	316	342	265	282
<hr/>							
Total ordinary income		8	311	316	342	265	282
<hr/>							
Ordinary expenses							
Nutrition improvement projects in low-income countries (Ghana Nutrition Improvement Project)	Project costs	-	-	108	151	122	147
	Personnel and other costs	-	-	50	39	32	32
Support for reconstruction of disaster-affected areas	Project costs	-	-	70	74	28	32
	Personnel and other costs	-	-	20	18	21	20
Health and nutrition seminar projects	Project costs	-	-	34	30	27	27
	Personnel and other costs	-	-	9	8	12	11
Food and nutrition support project	Project costs	-	-	18	15	11	1
	Personnel and other costs	-	-	8	7	12	11
<hr/>							
Project to establish a dietitian system		8	311	316	342	268	282
<hr/>							
Change in recurring profit for the year		0	0	0	0	0	0

Unit: millions of yen .

Source: prepared from TAF's statements of changes in net assets and business reports for each year.