



PROJECT IMPLEMENTATION PLAN

20 June 2018

1. **Project Code** 18-AG-23-GE-DLN-A-04
2. **Title** Self-learning e-Course on Future Food: Exploring Business Opportunities
3. **Reference** Project Notification 18-AG-23-GE-DLN-A dated 9 January 2018
4. **Time and Duration** 1 November 2018– 30 April 2019 (six months)
5. **Implementing Organizations** APO Secretariat and National Productivity Organizations (NPOs)
6. **Number of Participants** Minimum of 400 participants
7. **Self-registration** Self-registration opens from 10:00 AM Japan Standard Time on 1 November 2018 on the eAPO web portal:
<http://eAPO-tokyo.org>

Note: Participants can register directly from this portal on the APO website. Those who are already registered can access the course by using the assigned username and password. If you have forgotten your username and password, please refer to the help page on the home page of the portal.

8. Objectives

The course aims to build knowledge of alternative food sources, collectively called “future food,” to meet the demand for global consumption. It will provide a chance to expand the scope of innovative business opportunities involving future food for APO member countries. At the end of the course, the participants will:

- a. Understand the global and regional challenges in food availability, accessibility, and affordability, and the importance of developing alternative food;
- b. Grasp the concept of and trends in future food;
- c. Be familiar with recent innovations in future food and the potential for future food commercialization; and
- d. Be able to develop novel ideas for alternative food sources to take advantage of business opportunities in the blue ocean industry as applicable to APO member countries.

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9. Background

In 2016, about 815 million people, or 11% of the world population, were undernourished. Although advanced food and agriculture technologies have eased hunger issues, warnings of food shortages have escalated recently for the following reasons. First, the world population is projected to grow from today's 7.6 billion people to 10 billion by 2050. If that rate of growth continues, food production will not be able to keep up with consumption. Second, rapid urbanization has created an unprecedented expansion of the middle class who can afford high-quality fresh food. To meet that demand, intensive farming has become more widespread with increasing amounts of chemical inputs like pesticides.

In this context, potential food sources must be identified to satisfy future demand sustainably. With a shared understanding of the potential food shortage, many startups are jumping into the future food industry for commercialization. Food enterprises are turning their attention to alternative sources as a new growth engine with a blue ocean strategy. According to a 2016 report by Boston-based Lux Research, the market size for alternative protein is estimated to expand by at least 14% annually up to 2024.

One possible future food source is insects. Globally, there are 1,700 edible insect species, and more than 2 billion people already consume insects. Countries in the Asia-Pacific region like Thailand and PR China eat insects as part of the traditional diet. The insect food market in North America, led by the USA, is also growing as consumer awareness and acceptance are gradually increasing. Most insect food is richer in protein and lower in carbohydrates compared to meat. Furthermore, raising insects requires fewer expenditures on transportation and facilities than conventional agricultural production, which lowers entry barriers for developing countries. In addition to insects, clean food produced in an eco-friendly, sustainable manner includes "vegetarian meat." Algae and seaweed are also being promoted as food sources.

Despite the benefits of those alternative sources, perceptions of future food vary in APO member countries. For example, insect food might not be allowed for religious and cultural reasons. Lab-cultured meat is often associated with artificial or chemical substances that humans should not consume. Therefore, increasing awareness of alternative food and ways to bring it to the kitchen table is another challenge.

10. Scope and Methodology

Scope

The tentative course structure is as follows:

Module 1: Global food crisis and world hunger

The current status of global food security (food access, availability, and affordability); food insecurity issues in Asia and their impacts; effects of climate change on livestock farming, agricultural cultivation, and environmental protection; carbon and water footprints of conventional food production; and the need for new food sources for food security.

Module 2: Introduction to alternative food sources

Overview of alternative food; types of innovative food sources; global status of alternative

food development; awareness and acceptance of future food sources; success criteria for food on the market; and challenges and opportunities in commercialization.

Quiz 1 (for self-assessment based on questions from Modules 1 and 2)

Module 3: Future food—what to eat in the future

Concept of future food; insect food; types of edible insects; farm facilities for raising insects; insect food processing and manufacturing; supply chains for insect food; vegetarian meat; vegetarian meat sources; vegetarian meat processing and required facilities; cultured meat; status of the current market and opportunities; introduction to engineering cultured meat; sea-based alternative food; promotion strategies and packaging for novelty food; and market outlook and profitability for new food sources in future.

Module 4: Successful case studies of future food businesses

Overview of current and future market opportunities across supply chains; projections and pathways for market development; innovative products; successful business operation and management; innovative business models in the future food industry; offline/online startups and enterprises; future food businesses meeting multiple needs; and examples of selling products as well as delivering value for healthy diets and inclusive social development.

Quiz 2 (for self-assessment based on questions from Modules 3 and 4)

Model 5: Innovative production methods for future food

Food-engineering and -processing technologies across supply chains for insect food and other alternative food; high-tech and low-tech examples; scaling food technologies to meet customers' needs; and applicable production methods in Asian countries.

Model 6: Issues to overcome

Issues in promotion and sales of future food; safety and quality of future food; social acceptance and customers' awareness of unfamiliar food sources; religious and cultural issues; availability of future food products; pricing; targeting the right consumer segments; strategies for commercialization; and case studies of successful companies.

Module 7: Institutionalized systems to nurture experts in future food and associated businesses

Examples of legislation in different countries; private and public schemes and policies for promoting future food; systematic support in nurturing future food experts and entrepreneurs; accelerators for future food startups; and social safety nets for encouraging entrepreneurship.

Quiz 3 (for self-assessment based on questions from Modules 5, 6, and 7)

Module 8: Final examination

Methodology

Self-learning e-modules, additional study materials for participants, intermittent quizzes for self-assessment, assignments, and a final examination to qualify for the APO e-certificate.

11. Qualifications of Candidates

The target participants are farmers, rural leaders, entrepreneurs, and SMEs in primary industry who want to explore agricultural and sea resources for food businesses in future; and consultants, trainers, and professionals engaged in novel, innovative business development advisory services.

12. Eligibility for e-Certificate

A minimum score of 70% on the final examination is required to qualify for the APO e-certificate.

Note: Participants from nonmember countries are welcome to take the course for self-development, although APO e-certificates will not be provided.



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