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# FOSTERING FOOD CULTURE WITH INNOVATION: OTOP AND THAI KITCHEN TO THE WORLD

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# ABSTRACT

Thailand is an agricultural country that is rich in food culture and agriculture-based product. Food and agriculture industry are the major economic sectors in Thailand. Thailand earns over US\$ 20 billion from exporting food and is also one of the world's leading rice exporters. In fact, Thai Government under Prime Minister Yingluck Shinawatra has a policy to promote "Thai Kitchen to the World," affirming Thailand as a major food export country that can contribute to food security under changing world condition, in which global warming and natural disaster may lead to food shortage. "Thai Kitchen to the World" project was started in year 2002 and aims to promote Thai food products creating awareness of food security and producing high-quality foods complying with international standards at competitive prices. Government's strategies are covering the whole process from finding materials to adding product value and assisting distribution. The main strategies of "Thai Kitchen to the World" include, (1) expanding agriculture and food business, (2) adding value to agricultural produce with high-technology production processes, (3) supporting cooperation at regional and international levels, and (4) supporting Thai investments abroad, especially in building a network of Thai restaurants and food markets overseas.

The strategies to lead Thailand as the "Kitchen of the World" are promoting the exports of raw materials, processed foods (Ready-to-cook, Ready-to-eat, sauces or seasoning), and non-food products such as decorations for Thai restaurants and skilled personnel for working overseas, as the first target of the policy. The government plans to increase the number of Thai restaurants overseas, which could help to boost the annual export of Thai food industry. This "Kitchen of the World" campaign strategy would not merely accelerate Thailand's plan to be one of the major food exporters, but also it would be a spearhead on the export of OTOP (One Tambon; village; One Product policy) products, which are prepared from very small scale food enterprises. At the same time, the most important mission of this "Kitchen to the World" strategy is to ensure Thai food products to meet the safety and hygiene standards required by international regulations. Throughout these strategies, Thailand aims to act as a real "kitchen" to serve for the world food consumption. Therefore, the issues of food safety and authentic Thai food are very important for Thai food industries to go to the world level.

Thai food is one of the world's best known cuisines as seen from more than 10,000 Thai restaurants located in many countries. However, it is found that the flavors of Thai food in many standalone restaurants and hotels abroad are different from the authentic ones and do not meet the demands of foreign markets which result in the oversupply of raw materials. To solve these problems and promote Thai food industry for its sustainable growth, "Thai Delicious" is established according to the government's policy with the integration of Home Economics, Food Science and Technology, and Sensory Science. It will also provide food innovative services and generate business models and networks. The goals of "Thai Delicious" are to collect and develop Thai standard recipes by applying the science of Home Economics, Food Science and Technology and Sensory Evaluation, develop equipment to measure and analyze flavors of Thai food for a restaurant that would like to meet "Thai Delicious" standard, develop institutional food (or ready-to-cook product) based on the standard recipes to serve the demand of Thai food in foreign countries, and provide food certification service and training for local and foreign chefs who would like to work in Thai restaurants.

Generally, the food taste measurement often involves the sensory evaluation (taste, smell, color and texture). This assessment is usually carried out in a conventional way by trained participants. The condition of the product to be tested and minds of the examiners are important for them which can influence the measurement, and the test results can turn out to be inaccurate. To reduce this inaccuracy, e-Delicious is developed as an equipment that imitates human's tongue and nose to measure the tastes of Thai food which are sourness, sweetness, saltiness, spiciness, or other significant parameters. "e-Delicious" will

support “Thai Delicious” certification service. If the tested recipes meet “Thai Delicious” standards, the restaurants will be certified with a “Thai Delicious” logo.

OTOP is promoted as a national policy since year 2002. Now, its volume of sales has increased by more than 80% and value more than US\$ 3,000 million. The export value is predicted to increase more than 100% in the next few years. A main booster of export volume and sales is government’s policy that tries to push SME and OTO to the world market and AEC (ASEAN Economic Community). Besides that, food science and technology as well as innovation is also reinforcing the sustainability of OTO by assisting product development, packaging design, shelf-life stability, processing technology and food safety in parallel with Government’s policy.

OTO products are originated from local food and agriculture products using traditional local processing that could be improved to make the products into a level of high quality, safety and standard. The role of research institutes and universities is to help local manufacturers to meet international food standards in order to export to world markets by providing assistance in research and development. An example of a success story of one OTO product is banana products from “Banana Society,” which is a society and community of farmers who grow banana. Traditional banana products include sun dried banana and seasoning banana chips. However, there were problems of unstable quality, shelf-life stability and safety of these traditional products. Food research institutes and universities came in to establish simple and appropriate products and process development as well as market channels by using science, technology and innovation processes. Now, the banana society products have markedly increased in volume of sales and number of products as well as worldwide markets.

In addition to the policy of “Thai Kitchen to the World” and OTO/SME, Thai Government also launched a “Thailand Food Valley” (TFV) project under the action of Minister of Industry to promote linkage between food producers in all levels (SME, OTO and industry) with researchers to strengthen food production stability including value adding and increased export quality of food products.

In conclusion, Thailand so far is fostering food culture with innovation by promoting the policy of “Thai Kitchen to the World,” OTO/SME and “Thailand Food Valley.” This Government’s policy is a national policy and has been well supported by research institutes and universities to help reinforce the sustainability of “Thai Kitchen to the World” and OTO by science, technology and innovation. The benefits from this fostering policy will lift up the level of Thai food standard for exporting to ASEAN countries and the world market as well as promoting sustainable business and tourism activities.



## KEYWORDS

OTO/SME, Thailand Food Valley, Kitchen to the World, Innovation





**Fostering Food Culture with Innovation:  
OTOP and Thai Kitchen to the World**

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### Outline of the presentation

- ▶ Introduction
- ▶ OTOP
- ▶ Thai Kitchen to the World
- ▶ Thai Delicious
- ▶ Fostering food culture with innovation to ASEAN from Thailand experience
- ▶ Final remarks





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### Introduction

- ▶ Thailand has more than 38% of its area for agriculture production.
- ▶ The main exported agriculture products are rice, tapioca, rubber, frozen prawn & chicken and cooked food products.
- ▶ The growth of Thai food and agriculture industry is gradually increased.
- ▶ Government has a strong supporting policy by using different levels of fostering Thai food culture.
- ▶ From OTOP -> Thai Kitchen to the World -> Thai delicious



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### Government policy

- ▶ The main strategies of Thai Kitchen to the World
  - (1) expanding agriculture and food business
  - (2) adding value to agricultural produce **with high-technology production processes**
  - (3) supporting cooperation at regional and international levels
  - (4) supporting Thai investments abroad, especially in building a network of Thai restaurants overseas




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### OTOP = One Tambon One Product Policy

- ▶ OTOP started in 2002
- ▶ Idea is originated from OVOP, OITA, Japan

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### Local Product

- ▶ Product story, community based history or knowledge
- ▶ **Rural Product to Product Development**
- ▶ **Product Quality and safety**
- ▶ **Packaging**
- ▶ **Marketing**
- ▶ **Standard**



How food science and technology and innovation help local products??

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## Product Development

- ▶ Rural communities get technical support from academic such as universities, research institutes and government agencies.
- ▶ Research and set up funding is supported by the government.
- ▶ Technical support includes product, process, packaging, quality and safety to meet the standard as well as marketing support.
- ▶ To obtain sustainability of community products and quality, training, technology transfer and networking among OTOP are regularly supported.
- ▶ OTOP product champion is classified in 5 star levels i.e. 1\*, 2\*, 3\*, 4\* and 5\*.



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## Criteria for classification

- ▶ Product story, community based history or knowledge
- ▶ **Product Development**
- ▶ **Product Quality and safety**
- ▶ **Packaging**
- ▶ **Marketing**
- ▶ **Standard**



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## Steps for OTOP Product Promotion

- ▶ For OTOP products that is in 4\* and 5\* will be promoted as high quality products and having a potential for export market.
- ▶ Any product in 4\* and 5\* levels that can export their products to international markets, the government will award the product to "premium OTOP product."
- ▶ Government will promote "premium OTOP products" in international trade expos or any international trade levels, and all will be supported by the government.



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## An Outcome of OTOP Classification

- ▶ **Increase competition** among OTOP products in terms of quality, safety and variation of products.
- ▶ Products which do not meet the standard will be **screened out** from the market, for example, traditional fermented rice wine (Ou, Sato).
- ▶ **High quality and safety OTOP**

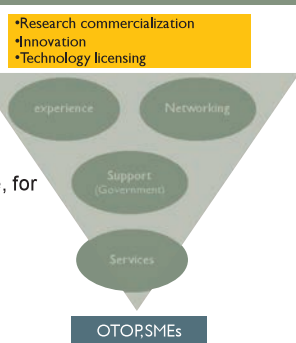


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## Innovation for "Smart OTOP-Creative SMEs"

- ▶ Using innovation to change ordinary OTOP to Smart OTOP by Creative SMEs
- ▶ Government agencies that are responsible for this are, for example; National Innovation Agency (NIA), Thailand Research Fund (TRF), Ministry of Industry



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## Banana Society

The example of a success story of one OTOP

- ▶ "Banana Society" which is a society and community of farmers who grow bananas.
- ▶ Traditional banana products include sun dried banana and seasoning banana chips.
- ▶ Problems of unstable quality, shelf-life stability and safety of these traditional products.
- ▶ Food research institutes and universities come in to establish simple and appropriate products and process development as well as market channels by using science, technology and innovation processes.
- ▶ Now, banana society products have markedly increased in volume of sales and the number of products as well as worldwide markets.

Solar Dried Banana



Banana SYRUP



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## Routes of banana products

- ▶ Traditional banana products
  - ▶ Natural sun-dried banana
  - ▶ Deep-fried banana
  - ▶ Banana paste
- ▶ Process improvement
  - ▶ Drying process improvement – Parabola drying dome, temperature, humidity and airflow control
  - ▶ Vacuum frying
- ▶ Product development
  - ▶ Chocolate coated natural sun-dried banana
  - ▶ Seasoning deep-fried banana
  - ▶ Banana syrup
- ▶ Packaging development
  - ▶ Individual packing, improving outlook and graphic design, bio-plastic packaging for dried banana

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## Banana Photos



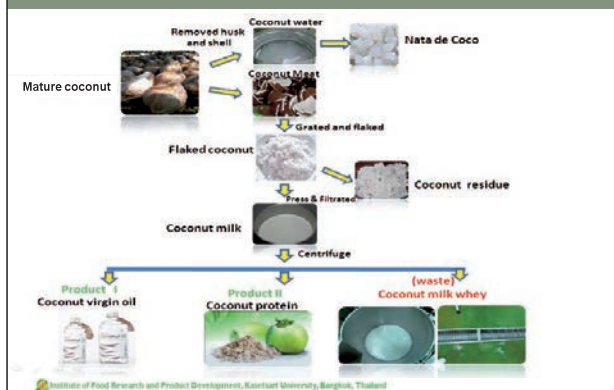
Parabola drying dome



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## Innovative Coconut Milk Whey Products



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## Innovative Coconut Milk Whey Products



Coconut milk whey composition	
Fat, %	5.50
Protein, % (factor 5.90)	2.75
Total sugars, g/100g	0.50
Total Soluble Solid (TSS), °Brix	3.0

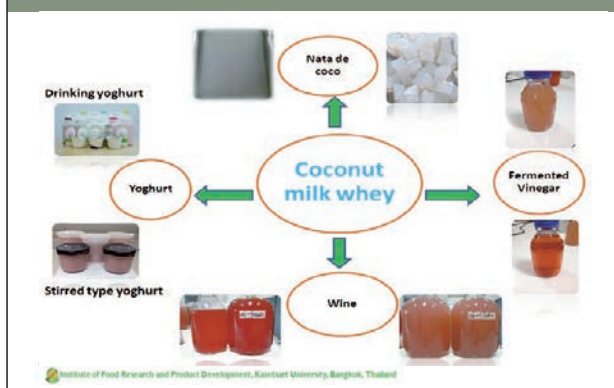
Coconut milk whey's products with microbial application :

- ▶ Yoghurt : *Lactobacillus bulgaricus* and *Streptococcus thermophilus*
- ▶ Nata de coco : *Acetobacter xylinum*
- ▶ Fermented vinegar: *Acetobacter aceti*
- ▶ Alcoholic drink (Wine) : *Saccharomyces cerevisiae*

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## Innovative Coconut Milk Whey Products



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## Thai Kitchen to the World

- ▶ Thai Government under Prime Minister Yingluck Shinawatra has a policy to promote "Thai Kitchen to the World," affirming Thailand as a major food export country that can contribute to food security under changing world condition, in which global warming and natural disasters may lead to food shortage.
- ▶ "Thai Kitchen to the World" project was started in year 2002 and aims to promote Thai food products, create awareness of food security and produce high-quality foods complying with international standards at competitive prices.
- ▶ Government's strategies are covering the **whole process** from finding materials to adding product value and assisting in distribution.

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## Thailand as “Kitchen to the World”

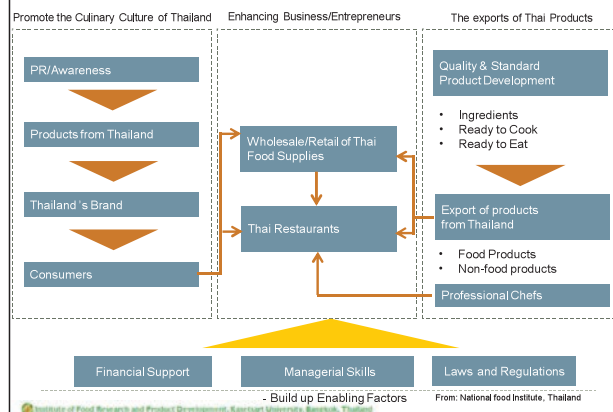


- ▶ To be one of the **major food exporters**
- ▶ Promote the **export of OTOP**
- ▶ To ensure Thai Food products to the **safety and hygiene standards** by international regulations

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## Thai Kitchen to The World



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## Thai Delicious

- ▶ Thai food is one of the world's best known cuisines as seen from more than 10,000 Thai restaurants located in many countries.
- ▶ Thai food in many standalone restaurants and hotels abroad are different from the authentic ones and do not meet the demands of foreign markets which result in the oversupply of raw materials.
- ▶ To solve these problems and promote Thai food industry for its sustainable growth, **Thai Delicious** is established according to the government's policy with the **integration of Home Economics, Food Science and Technology, and Sensory Evaluation**.



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## Thai Delicious – Framework and Roles



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## Thai Delicious

- ▶ It will also provide food innovative services and generate business models and networks.
- ▶ The goals of Thai Delicious are to collect and develop Thai standard recipes by applying the science of Home Economics, Food Science and Technology and Sensory Evaluation; to develop equipment to measure and analyze flavors of Thai food for a restaurant that would like to meet Thai Delicious standard; to develop institutional food (or ready-to-cook product) based on the standard recipes to meet the demand of local and international markets. Food certification service is also provided by using accurate and reliable equipment with scientific process.

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## Innovative Thai Kitchen to the World

### Product and Technology ( e-delicious )



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### Thai Delicious


- Generally, food taste measurement often involves sensory evaluation (taste, smell, color and texture).
- This assessment is usually carried out in a conventional way by trained participants.
- The condition of the product to be tested and minds of the examiners are important for them which can influence the measurement, and the test results can turn out to be inaccurate.
- To reduce this inaccuracy, e-Delicious is developed as equipment that imitates human's tongue and nose to measure the tastes of Thai food which are sourness, sweetness, saltiness, spiciness, or other significant parameters as an artificial intelligence (AI), E-Nose and E-Tongue.
- "e-Delicious" will support Thai Delicious certification service. If the tested recipes meet Thai Delicious standards, the restaurants will be certified with a Thai Delicious logo.

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### Fostering food culture with innovation to ASEAN from Thailand experience

- In addition to the policy of Thai Kitchen to the World and OTOP, Thai government also launched a "Thailand Food Valley" (TVF) project under the action of Minister of Industry to promote linkage between food producers in all levels (SME, OTOP and industry) with researchers to strengthen food production stability including value adding and increased export quality of food products.
- Using Thailand model to foster ASEAN food supply chain by using academic networking, research institutes, government organizations and private sectors.



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### Final Remarks

- Thailand so far is **fostering food culture with innovation** by promoting the policy of **Thai Kitchen to the world and OTOP**.
- This **government's policy** is a national policy and has been well **supported by research institutes and universities** to help reinforce the sustainability of Thai Kitchen to the World and OTOP by **science, technology and innovation**.
- The **benefits** from this fostering policy will **lift up the level of Thai food standard** for exporting to ASEAN countries and to the world market, as well as promote **sustainable business and tourism activities**.

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### Thank You for Your Kind Attention



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**Chair Nakahara:** We would like to go ahead to the second speaker, from Thailand, Dr. Warunee Varanyanond. She will present about some activities, challenges in Thailand. And Dr. Warunee Varanyanond holds a PhD degree from Thailand, from Japan, and she used to work in the Food Institute under Kasetsart University in Bangkok, Thailand. Please start.

**Dr. Warunee Varanyanond:** Thank you, Mr. Chairman. And also, before I start my presentation I would like to thank JIRCAS for inviting me and all the hospitality during my stay in Japan. Thank you very much.

My topic today is “Fostering Food Culture with Innovation,” with related to OTOP and Thai Kitchen to the World.

The outline of my presentation will be the introduction of Thai OTOP and Kitchen of the World, and then if you go deeply to OTOP and Thai Kitchen to the World, and Thai Delicious is one of the activities of Thai Kitchen to the World, and how to foster food culture among our ASEAN countries which have the same culture in food and agriculture, and finally for the final remarks.

Thailand has more than 38 percent of its area for agricultural production, and the main exported agricultural product is rice, I hope so right now, maybe tapioca, rubber, frozen prawn, chicken, and cooked food products. The growth of Thai food and the agricultural industry has increased gradually. The government has a strong supporting policy by using different levels of fostering Thai food culture, from traditional products like OTOP to Thai Kitchen to the World and also upcoming Thai Delicious.

The main strategies of Thai Kitchen to the World are expanding the agriculture and food business, adding value to agricultural produce with high-technology production and processes, supporting cooperation at the regional and international levels, supporting Thai investments abroad, especially in building a network of Thai restaurants overseas.

OTOP stands for One Tambon One Product Policy. We started OTOP in 2002, and the idea is originated from OVOP, One Village One Product, that's from OITA, Japan, and the OTOP, or One Tambon One Product, had the objective to initiate this project starting from the poverty of the community and encouraged the community to mobilize the economy with the goal to optimize their local resources with self-reliance community, this is a very important one. The rural community development mechanism is supported by the government policy by allocating capital and finances for local business management and organizing local community level cooperatives and leveling a community business to be a community industrial business. This is the objective of the Thai government policy.

But as far as our lessons learned from OITA, from OVOP to OTOP, there is something different from the administration and management. Thai OTOP is a top-down scheme directed by the central government, but the Japanese OVOP is bottom-up, initiated by the community with the support of local government. So this is the different, actually the objectives are the same but their outcomes will be different according to the management system.

How food science, technology and innovation can help the local products? All the government sectors have to support and involve to help OTOP, we started and learned from the product story, community-based history or knowledge from the traditional product to product development, and we have to concern with the quality, safety, packaging, and also marketing. This order will be the pattern to make the product into an international level.

The rural community gets technical support from academics, such as universities, research institutes, and other government agencies. Research has been set up by researchers, not by the community. This is the difference between OVOP and OTOP. And the government will be funding and support the research. Technical support

including product process, packaging, quality and safety to meet the standards, as well as the marketing. To obtain the sustainability of the community product, quality, training, technology transfer and networking among OTOP are regular supported. Then after, for several years, the government approaches the OTOP community and makes the OTOP champion and classifies the quality of product champions into five star levels, from one star to five stars.

The criteria for classification depends on the product story, community based on history or knowledge, product development, including quality and safety, packaging, marketing, and all the products have come up as the standard of Thai FDA.

And from the government, to increase the competition among the OTOP products in terms of quality, safety, and variation of the products which do not meet the standards will be screened out from the market. For example, most of the traditional fermented rice products such as Ou or Sato. Those local products were produced by a small group of farmers with traditional process. Most of these products have lower standard of quality as well as safety. The products will be screened out and further development of the process, quality and safety will be done.

Supporting OTOP by using innovation to change the ordinary OTOP to Smart OTOP by creative SMEs. The government agency that is responsible for innovation are National Innovation Agency, Thailand Research Fund will support technical arm to SME by networking among the technical people and SMEs.

One successful example is Banana Society. Banana Society is the society and community of the farmers who grow bananas. The traditional banana products, including sun-dried banana and seasoned banana chips with the problem of instability of quality and the shelf life and safety. The problem have been solved by food research institute and university came in to establish a simple and appropriate product and process development, as well as marketing channels, by using science, technology, and innovation processes.

Now Banana Society products have markedly increased in volume of sales and number of products, as well as the worldwide market. The routes of banana products that have been developed from traditional banana products are natural sun-dried banana, deep-fried banana and banana paste. The process improvement by drying process has been created using a parabola drying dome that can control the temperature, humidity, and airflow, and also using vacuum frying instead of deep frying. Some product development of bananas has been produced by chocolate-coated natural sun-dried banana or seasoned deep fried banana, and banana syrup.

Packaging development also proceeded, like individual packaging, improving the outlook and graphic design, using bioplastic for packaging of dried banana. These are examples of success developments of Banana Society Products.

This is a picture of the parabola drying dome that was designed and was used worldwide among the Banana Society. This is chocolate-coated dried banana. These are the traditional products of banana, and now we have another good look up of this product also.

Another example of innovative OTOP products is coconut milk whey products. This process is normally done by the coconut community. The mature coconut was removed the hulls and shells, the coconut water was used for producing nata de coco, and coconut meat was produced for coconut milk and coconut residue.

Virgin coconut oil was produced from coconut milk by using a centrifugation process. The wastes of this process are coconut protein and coconut milk whey. Coconut milk whey contains nutrients like fat, protein, and total soluble solids. To add more creative value product to coconut waste, some new products are developed as yogurt, nata de coco, fermented vinegar, and alcoholic drink.

Let's come to Thai Kitchen to the World and OTOP is one strategy of Thai Kitchen to the World. The Thai Kitchen to the World project was started the same year as OTOP, in 2002, and the aim is to promote Thai food products, create awareness of food security, and produce high-quality food complying with international standards, and at competitive prices. The government strategies are covering the whole process, from finding materials to add product value and also assist distribution.

Thailand as Thai Kitchen to the World is to be one of the major food exporters of Thai food products and also to ensure Thai food products to the safety and hygienic standards by international regulations.

Thai Kitchen to the World have the three main objectives.

First is to promote the culinary culture of Thailand by PR and to create awareness of product from Thailand and Thailand brands to consumers. How can we get these products to consumers?

Second is to enhance business and entrepreneurs as wholesale or retail of Thai food products. Thai restaurants in overseas are also business to promote Thai food to the world.

The third objective is to promote the export of Thai products to support the business and Thai restaurants.

Thai food is one of the world's best known cuisines as seen from more than 10,000 Thai restaurants are located in many countries. Thai food in many stand-alone restaurants and hotels abroad are different from the authentic ones and do not meet the demands of the foreign market which will result in the over-supply of raw materials.

To solve these problems and to promote the Thai food industry for sustainable growth were established according to the government policy with the integration of Home economics, Food Science and Technology, and Sensory Evaluation. "Thai Delicious Project" also provides food innovative services and generates business model and networks. Thai Delicious center are networking among Universities, Thai Chef Association, Thai Food Quality Agency, and Ministry of Science and Technology to work strongly for promoting Thai Kitchen to the World.

The goals of Thai Delicious are to collect and develop Thai standard recipes by applying the science of home economics, food science and technology, and sensory evaluation, develop equipment to measure and analyze flavors of Thai food for a restaurant that would like to meet the Thai Delicious standard, develop institutional food, ready-to-cook or ready-to-eat, based on the standard recipes to meet the demand of local and international markets. Food certification service is also provided by using accurate and reliable equipment with scientific process.

Innovative Product and Technology "e-Delicious" is developed under Thai Delicious. Generally, food measurement often involves the sensory evaluation (taste, smell, color and texture). This assessment is usually carried out in a conventional way by trained participants. The condition of the product to be tested and minds of the examiners are important to them which can influence the measurement and the test results and can turn out to be inaccurate.

To reduce the inaccuracy, e-Delicious is developed as equipment that imitates the human tongue and nose to measure the tastes of Thai food which are sourness, sweetness, saltiness, spiciness, and other significant parameters as an artificial intelligence (AI), or e-nose and e-tongue.

In addition to the policy of Thai Kitchen to the World and OTOP, Thai government also launched a Thailand Food Valley. Thailand Food Valley Project was learned the experience from the Netherlands. This project is under the action of the Ministry of Industry to promote the linkage between food producers in all levels, SME, OTOP, and industry, with the researchers to strengthen the food production stability, include value adding and

increasing export quality of food products.

Final remarks, Thailand so far is fostering food culture with innovation by promoting Thai Kitchen to the World and OTOP. The government's policy is national policy and has been well supported by research institutes and universities to help reinforce the sustainability of Thai Kitchen to the World and OTOP by science, technology, and innovation.

The benefits from this fostering policy will lift up the level of Thai food standards for exporting to ASEAN countries and the world markets as well as promoting sustainable business and tourism activity as well.

Thank you very much for your attention.

**Chair Nakahara:** Thank you very much.