

Role of infrastructure/skill investment and enabling environment to speed up digital adoption/integration

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APEC PUTRAJAYA VISION 2040

"We will strengthen digital infrastructure, accelerate digital transformation, narrow the digital divide, as well as cooperate on facilitating the flow of data and strengthening consumer and business trust in digital transactions."

AOTEAROA PLAN OF ACTION

"Cooperate to accelerate digital transformation, including by supporting the digitalisation of industries such as services, manufacturing and agriculture"

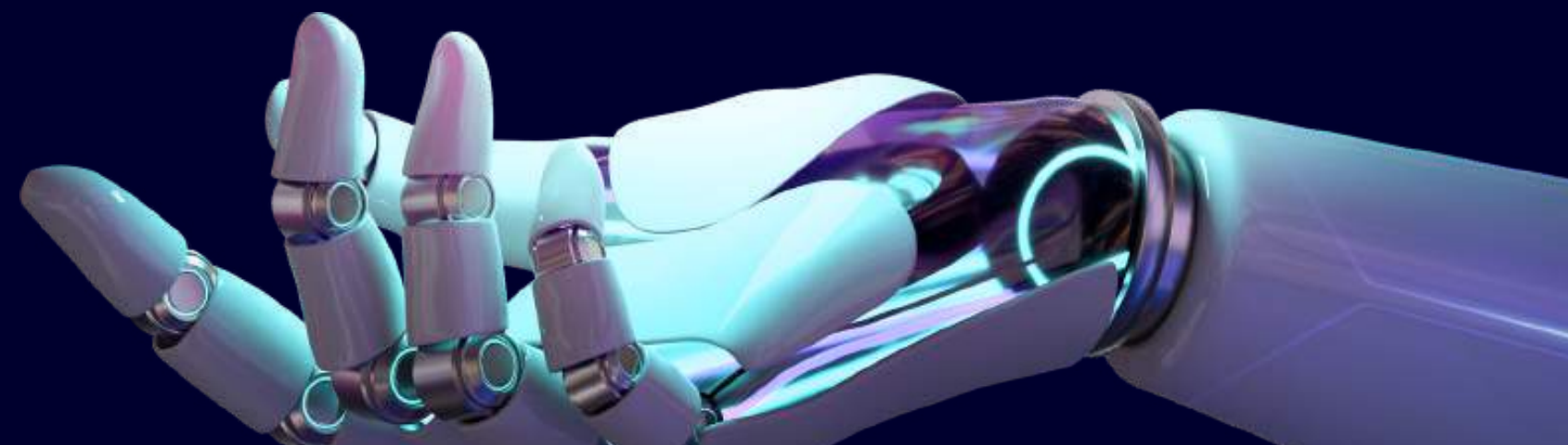
IMPLEMENTATION PLAN OF THE FOOD SECURITY ROADMAP TOWARDS 2030

"To provide capacity building and best practice-sharing workshops to align with the UN Sustainable Development Goals 12.3 with specific indicators based on each economy's respective situation. Promote public-private investment in infrastructure and cold chain to reduce the current levels of food loss and waste (FLW) and review progress by 2025."

APEC and Digitalization and Innovation

FOOD SECURITY ROADMAP TOWARDS 2030

"e) Provide capacity building and best practice sharing workshops to support member economies' individual and collective efforts to align with the UN Sustainable Development Goals 12.3 "by 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses," with specific indicators based on each economy's respective situation such as measured by the UN/FAO Food Waste Index (FWI) or other appropriate index. And promote public-private investment in infrastructure and cold chain to reduce the current levels of food loss and waste and review progress in this area by 2025."





Technology Trend of FLW

UPSTREAM

Automated Machinery for precision harvesting

Harvesting robots are designed to harvest crops such as fruits and vegetables. They **use sensors and cameras to detect when the crops are ready to be picked**, then use robotic arms or other tools to carefully harvest them without damaging the produce.





Artificial intelligence

The Agrobot SW 6010 strawberry harvesting robot uses artificial intelligence to recognise strawberries that are ripe for picking. The machine is equipped with 30 robotic arms, on which cameras are mounted. The cameras are able to capture between 10 and 30 images per second and **can analyse whether the strawberries meet the right requirements in order to be picked, taking into account parameters such as size and colour.** -Platform of food loss data collection

MIDDLE STREAM



DAY 5



Apeel (@apeel_sciences) is a completely **natural coating** that can be applied to fruits and vegetables to improve their freshness. The coating is made of materials found in peels, seeds, and pulps and acts as an invisible and edible layer of protection that keeps moisture in and oxygen out. **Produce with this coating are able to maintain their freshness, nutrition, and taste for twice as long as food grown without it.**



This is how a strawberry ages with and without Apeel coating

Using AI for predicting the shelf-life



OneThird

Since one-third of the world's food goes to waste, OneThird is aptly named. The company provides suppliers (including growers, retailers and distributors) with cloud-based software and handheld produce scanners to predict the shelf life of produce using AI. They also provide quality assessment to help suppliers make better decisions when it comes to reducing waste.

The company prides itself in being highly accurate in its shelf-life prediction (using data analysis and other techniques) to ensure products are delivered on time, from farm to fork.

Suppliers can use their handheld scanners as well as AI-based quality-inspection cameras, and finally a data-sharing platform.



Smart Packaging for extended shelf-life

Many modern advancements in technology allow for solutions that can prevent, track, and eliminate food waste. Whether **it's a method of preservation**, a way to share, or an ability to decompose waste, there are many options that increase awareness and help our planet.





GET THE MOST
OUT OF A HARVEST

SIGN UP

Food Establishment (Restaurants/Kiosk/ Food Truck)

Full Harvest (@fullharvesttech)

is an **online marketplace** for businesses looking to **source surplus and imperfect produce**. Farmers can list any produce they have that would otherwise go to waste, and business owners are able to see their options and make a purchase. The company has also introduced the Full Harvest Verified Rescued Produce seal, which informs customers that the products they're purchasing were rescued by the business and are helping minimize food loss as a result. Produce, data, and documentation all in one place. Let technology make things easier.

Downstream

Winnow (@winnowsolutions)

is an **AI-powered system that's designed to minimize food wastage in restaurant kitchens.** Winnow uses smart technology to track the food being thrown away and generates analytics that is allowing restaurants to see what is being wasted the most and how much money is being lost. This allows them to make smarter decisions when it comes to purchasing ingredients and their freshness.



**50% reduction
of food waste**
across all IKEA stores

powered by **winnow**



Wasteless (@wastelessltd)

is a **platform that allows supermarkets and online grocers to prevent food waste by monitoring buying trends.** The Wasteless Pricing Engine monitors shelf life and buying habits to determine how best to price items, helping businesses get their products off the shelf for a maximum profit. Markets are able to better stock their shelves to improve their revenue while also helping minimize food waste.

It's an AI-powered pricing solution for grocery stores that tracks consumer buying habits to help sell items for a maximum profit.



Consumer

Automated alarming
for shelf-life of Food in refrigerator

FridgeCam

Smarter's FridgeCam is designed to be a low-cost way to **help consumers permanently alter their habits and start using up what they already have.**

The wireless camera can sit inside any fridge, and takes a photo every time you close the fridge door. **You can then see the contents from anywhere via a mobile app. This allows you to more easily plan meals and shopping based on what you already have at home.** The app also allows you to make inventories and shopping lists, and track best-before dates, giving you the knowledge to plan for a food-waste free lifestyle.





Extending produce shelf-life in the refrigerator

Bluapple

Most people know that storing Bananas with other fruits and vegetables is a bad idea if you—that's because our yellow friends release large amounts of ethylene gas—a signal to rapidly ripen.

Bluapple is a blue, **apple-shaped product that sits in your refrigerator and absorbs ethylene gas, allowing consumers to store fresh produce for longer.** It lasts for three months before it needs a refill, and is capable of extending produce shelf life by up to three times.

Household food waste decomposer into organic fertilizers

The kitchen appliance that gives back to the planet in a positive way. This electric composter is able to **decompose food scraps and organic waste and turn it into nutrient-rich dirt**, which can be used for composting or planet-friendly disposal. This is especially helpful for those wanting to compost in an apartment which can produce dirt that can be used in your garden.



FLW Policy Approach



FLW POLICY APPROACH

- Promoting R&D on Food loss and waste technology with affordable prices for farmer and consumer.
- Promoting public-private partnership for infrastructure improvement for food loss and waste management
- Raising public awareness on food waste education at consumption level;

At schools, universities, public and private agencies



A person is shown from the side, wearing a grey hoodie, typing on a laptop. The laptop screen displays a complex digital interface with various data visualizations, including bar charts, line graphs, and circular gauges. The interface is overlaid with a futuristic, glowing blue and white digital aesthetic, featuring circuit-like lines and hexagonal patterns. The background is a dark blue gradient with light blue bokeh effects. The text "Digital adoption/integration" is prominently displayed in white, bold, sans-serif font across the center of the image, partially overlapping the laptop screen and the digital interface elements.

Digital adoption/integration



Introduction of Agrobot Technologies in Rural Areas:

- Agrobot technologies **increase the attractiveness of the farming business** by introducing innovative and advanced methods.
- The use of agrobots **creates new opportunities for entrepreneurs and innovators** to support small industries and businesses in the agricultural sector.
- **Agrobots offer a platform for entrepreneurial ventures in rural areas**, allowing individuals with knowledge and capital to invest in this technology and provide hire services.
- The adoption of agrobots opens doors for rural entrepreneurs to specialize in operating and maintaining the equipment, **providing valuable services to farmers without the need for significant equipment investments.**

Key Factors for Successful Adoption of Agrobots in Developing Countries:

- **Affordable solutions:** Designing agrobots that are affordable for farmers in developing countries.
- **High impact:** Agrobots should significantly improve crop yield, reduce labor costs, and enhance farm operations.
- **Weeding and input efficiency:** Prioritizing simple weeding agrobots and technologies that improve input use efficiency.

Potential and Challenges of Agricultural Robots:

- **Potential and challenges:** Agricultural robots have potential to improve crop production and livelihoods, but face technical and socio-economic challenges.
- **Capacity building:** Building knowledge and skills is crucial for effective use of agricultural robots.



Thank you