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Thailand Post

# Postal Networks as an Asset for National Climate Priorities

**Bangkok, Thailand**

Day 2, 29 May 2025

# Welcoming Remarks



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**Thailand Post**

**Ms. Thapanee Amarinrat**

Senior Executive Vice President, International Business, Thailand Post

## Event Page



# Day 1 Review

What worked?

What needs to be clarified/more information?

Any questions/reflections from Day 1?

## Day 2 – Thursday, 29 May 2025

Morning Review

**Session 4**      **Circular Electronics Management and Reverse Logistics**

**Session 5**      **Green Transport and Renewable Energy Integration**

Day Review

# Learning Objectives

By the end of the session, participants should be able to:

- Discuss the advantages of a binding Extended Producer Responsibility (ERP) framework policy to improve e-waste management and govern reverse logistics for postal services.
- List potential incentives to support logistics and collection for postal services.
- Discuss technology integration needs to support reverse logistics and e-waste management for postal services.
- List at least 1 international and 1 national potential financing resources to support reverse logistics



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# **The case for Thailand Post to mobilise the reverse value chain for circular W/EEE management:**

Business models, technology enablers,  
financing

29 May 2025

# What we will explore:

1. What is the EEE reverse value chain and their environmental, business, and social cases for Thailand Post? What roles and entry points are there for Thailand Post? (findings from thought paper 1)
2. What are the technology enablers? (findings from thought paper 2)
3. What combined solutions for Thailand Post? – UPU Innovation Challenge 2025 outcomes
4. Money, money, money... Financing the EEE reverse value chain facilitated by Post



## **Paper 1 (Policy and business)**

Leveraging Postal Networks for the Circular Economy:

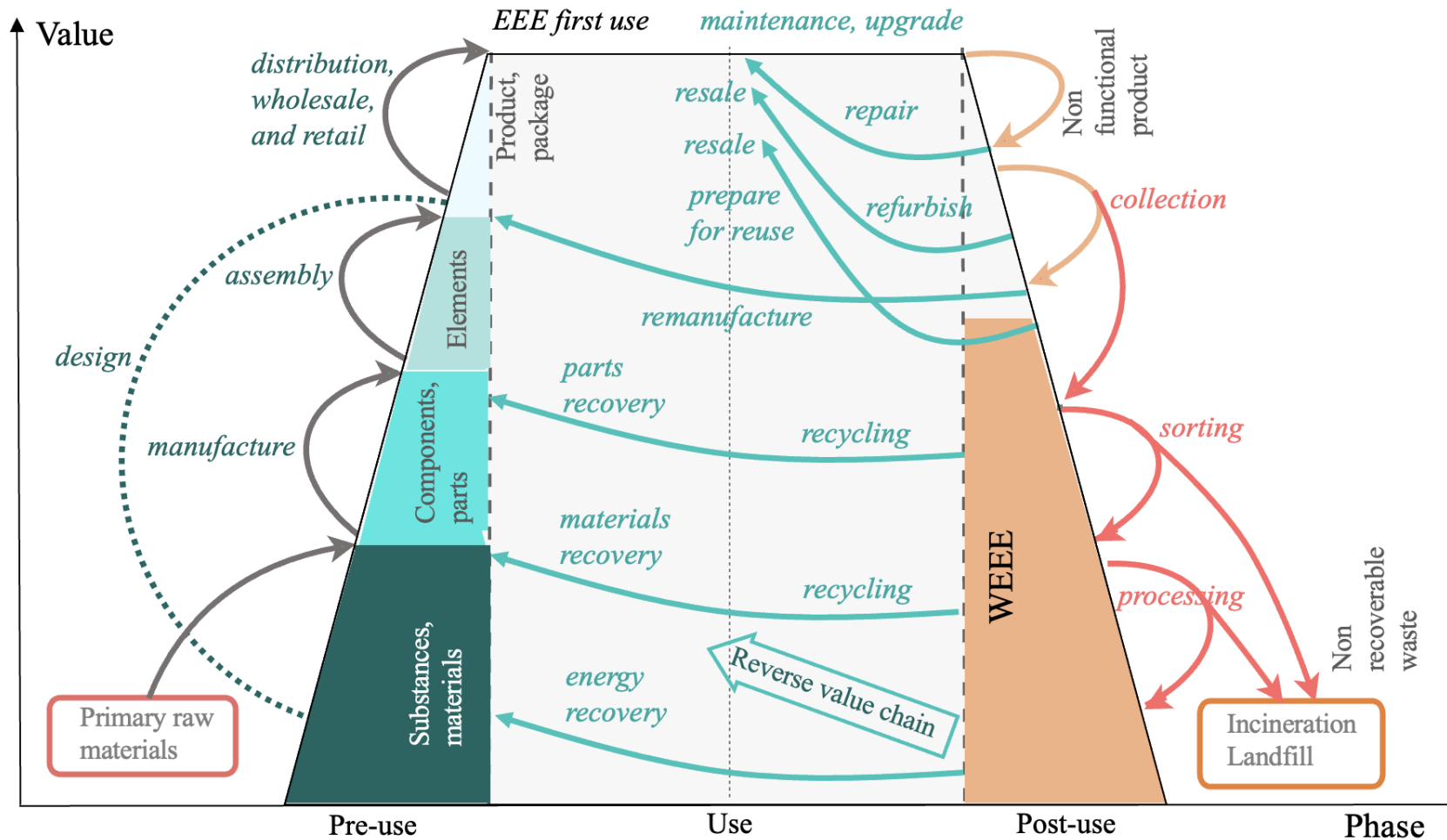
A preliminary study on viable policy and business actions for a collective implementation of the EEE\* reverse value chain

\*EEE: Electrical and electronic equipment

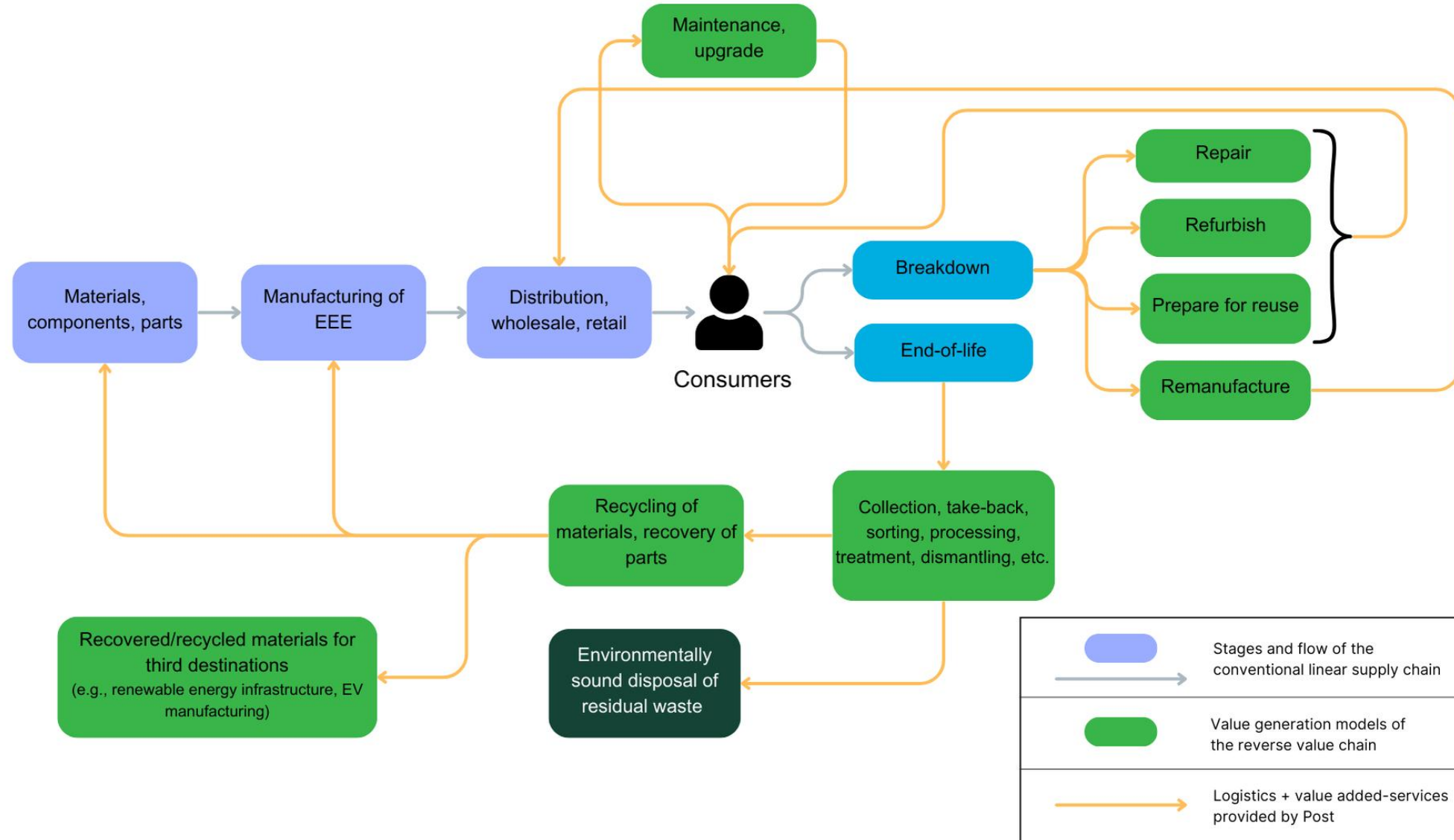
# What is the EEE reverse value chain?

- Quite literally– reversing the linear supply chain.
- At the same time, **not simply about product returns, re-commerce**, or the narrow definition of **reverse logistics** (they are all components).
- From **consumers** via **value recovery services**, back into the **economy**
- Return of products or materials back to **consumers** themselves (after repair or alike), **original producers and manufacturers**, or **third-party entities** with commercial interest in recovered materials
- Linear supply chain + reverse value chain = **circular flow and economy of electrical and electronic equipment (EEE)**

# How can we best retain EEE product value? – Value hill diagram



# EEE reverse value chain shown through value generation models



# How can Thailand Post facilitate the EEE reverse value chain?

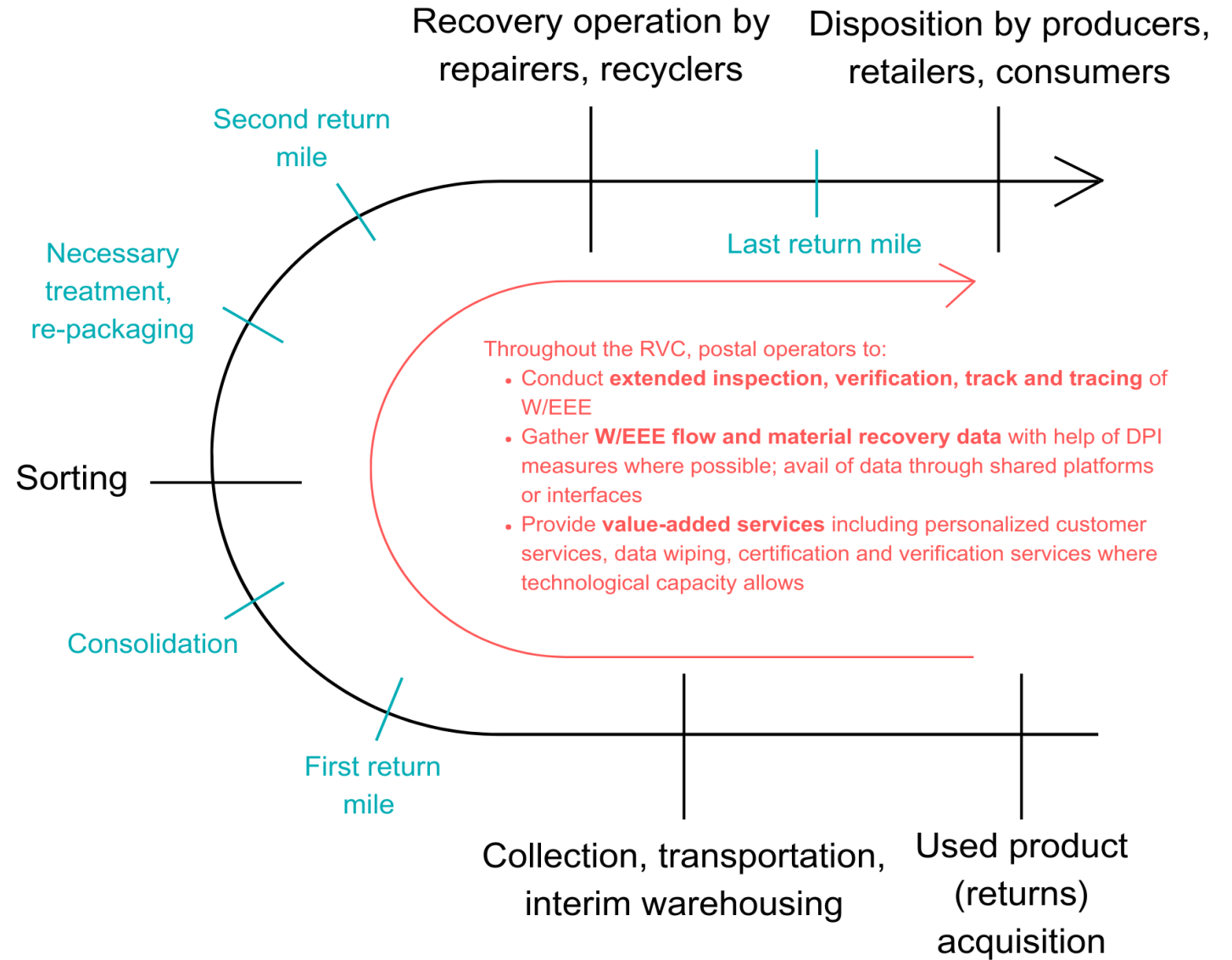
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**1. Baseline logistics:** Collection, first & last return-mile, transportation, consolidation, warehousing, sorting, treating, re-packaging, so on..

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**2. Value-added services:** drop-off points, multi-purpose post offices, customer services (e.g., on-demand pick-up service booking), track and tracing, product flow and recovery data compilation and sharing, device data wiping, verification and certification, among others.

# Reverse value chain demonstrated as specific services provided by postal operators



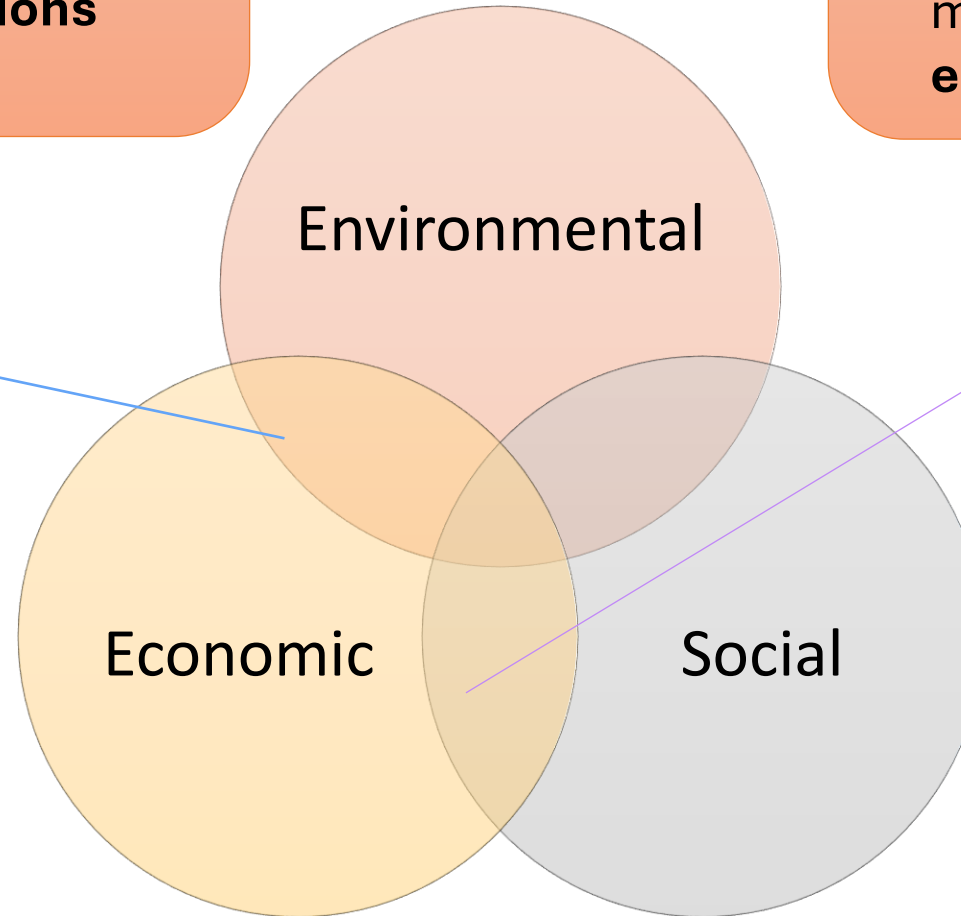
- Value recovery > fewer device replacement > EEE lifespan expansion > reduction in full device manufacturing
- Embodied **GHG emissions reduction**

## Incentives for Thailand Post

- WEEE reduction at source > **reduction of toxic chemicals use**
- Reduced needs for virgin materials mining > **reduced energy and water use**

Carbon asset generation, carbon border adjustment mechanism (CBAM), compliance and ESG reporting

- Expanding WEEE management and secondary EEE market
- Recovery of valuable metals, mineral > material cost savings
- Fiscal and financial incentives (e.g., EPR fee modulation, green finance)



Increased geographical coverage, **collection rates** > economies of scale

- Recognition, collaboration, and integration of informal workers
- Green jobs creation
- Ethical materials sourcing

# The “win-win” business case

Postal operators



Entering a fast-growing market (WEEE & second-hand EEE, e-commerce, recommerce)

Relative ease in disposition of returns inventory + economy of scale

Relative ease in synchronization and optimization of recommerce (e.g., public procurement)

Specialised logistics supported by tech solutions, enhancing efficiency and yielding higher revenue

Other RVC actors: **producers, retailers, refurbishment groups, consumers**

Repurposing postal collection and distribution infrastructure cost-efficient, trusted public service

Wide, far, and direct access to consumers

Overcoming counter-productive consumer behaviours and lack of awareness through:  
Diversification of consumer incentive schemes, personalized services (VAS), physical means for take-back and value recovery

Mutual interest in financial incentives + convenience + social responsibility



# What roles can THP play? Service diversification pathways

Stage in reverse value chain	Service diversification	Business modality	Possible revenue	Source of revenue
Product use stages	Using post offices as <b>drop-off points</b>	B2C	Collection and transport fees Repair, refurbishment, and resale	Product advanced recovery fee (ARF), government subsidies, Producers, retailers, refurbishment groups (through partnerships), other service users
	Using post offices or other physical spaces as <b>repair hubs</b> in collaboration with producers or third-party refurbishment groups	B2C	Collection, transport, facility rental fees	Product ARF, government subsidies, producers or retailers, refurbishment groups (through partnerships), other service users
	<b>(Personalised) pick-up and delivery service</b> for product repair or refurbishment	B2C, B2B	Collection, transport and delivery fees	Product ARF, service users, consumer incentive schemes
	Collection and delivery of <b>bulk products</b>	B2B	Collection, transport and delivery fees	Contracts with service users (businesses, governments, and any other entities that use procurement services)
	<b>Certification</b> of repair, refurbishment, or re-sale	B2C, B2B	Value-added service fee	E-commerce platforms, producers, retailers

Stage in reverse value chain	Service diversification	Business modality	Possible revenue	Source of revenue
End-of-life products (WEEE)	Operating <b>local WEEE drop-off points</b> (e.g., specialised post box, corner shops, parcel lockers, digital kiosks)	B2C	Collection and transport fees  Unboxing, sorting and treatment fees	Product ARF, producers/retailers, government subsidies
	Using <b>post offices</b> or any other physical space as drop-off points for WEEE collection	B2C	Collection and transport fees  Unboxing, sorting and treatment fees	Product ARF, producers/retailers, government subsidies
	Collection of <b>bulk products</b>	B2B	Collection and transport fees	Contracts with service users (offices, governments, and any other entities that use procurement services)
	<b>Certification</b> of secure data erasure and disposal	B2C, B2B	Value-added service fee	Product ARF, refurbishment groups (through or outside partnerships)
	<b>Transboundary movements</b> of WEEE for offshore recycling and environmentally sound disposal practices	B2B	“One-stop-shop” service that takes care of the Basel Convention processes, customs, and shipment	Product ARF, government subsidy, service users (exporters / importers)

Stage in reverse value chain	Service diversification	Business modality	Possible revenue	Source of revenue
Cross-cutting product flow optimisation and data management	<b>Identification and capture</b>  (process of accurately distinguishing an item and collecting associated data)	B2B	Service user fee, Subsidies, investment	Product ARF, subsidies  Public or private investments  Reinvestment of profit margins
	<b>Track and trace</b>	B2B, B2C	Service user fee, Subsidies, investment	Product ARF, subsidies  Public or private investments  Reinvestment of profit margins
	<b>Data generation and convergence</b>  (collection, product flow data complemented with specific product or materials data; e.g., DPP)	B2B	Subsidies, investment	Public or private investments  Reinvestment of profit margins
	<b>Data sharing and management</b> for compliance and reporting; market insights and corporate compliance	B2B	Subsidies, <b>data sales</b> , investment	Public or private investments  <b>Service users (producers, governments and regulators)</b>  Reinvestment of profit margins
	<b>Audit and verification of transactions</b> (e.g., W/EEE stocks, financial compensation)	B2B	Subsidies, investment	Public or private investments Reinvestment of profit margins

# Some entry-level considerations

## Know your locally available regulations, obligations and financing measures

- Evolving legislation, targets, EPR system, tax benefits or subsidies

## Narrow down, focus, and prioritise

- EEE or WEEE? What size, volume, and composition? What products can you seamlessly start servicing? What products need additional support? B2C or B2B?
- Domestic services before transboundary movements

## Never a cliché... know who your partners are (and who you share common interests with)

- PROs, producers, consumers, informal sector, social enterprises. In Thailand Post's case – who speaks to Pollution Control Department / Department of Industrial Works (DIW)?

## Putting consumers at the centre + knowing the end-users of your services and products

- Understand the unique advantage that comes from interacting with consumers directly
- Who are the end-users of products and materials after value recovery and lifespan extension? EEE users? Producers? Energy sector?



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## Paper 2 (Technology)

Digitalisation technology and standards for reverse postal logistics of W/EEE towards a circular economy

# Digitalisation enhances quality


- **Transparency** and **accountability**: visible information, sufficient details
  - *Details: on transport, items, asset, actor, safety, risks, handling, value*
- **Verifiability** and **trust**: verifiable evidence, *proofs across diverse actors*
  - *Evidence: identity check, documents, proofs, tamper-proof digital records*
- **Predictability**: anticipate, *such as volume, processing time, etc.*
- **Efficiency**: automation, *timeliness, cost saving, resource optimization*
- **Interoperability**: across actors, stakeholders, data exchange, coordination



# Digital tech and standards deliver quality

- Identification and capture: *find, who, which*
  - Track and trace: *what, where, who*
  - Data management and sharing: *what*
  - Data analysis and automation: *forecast, volume*
  - Audit: *check, who, what, which, value*
- 
- **Well-known postal tech and standards**
  - *New assets and integrated multi-stakeholder value chains require **additional** tech and standards*

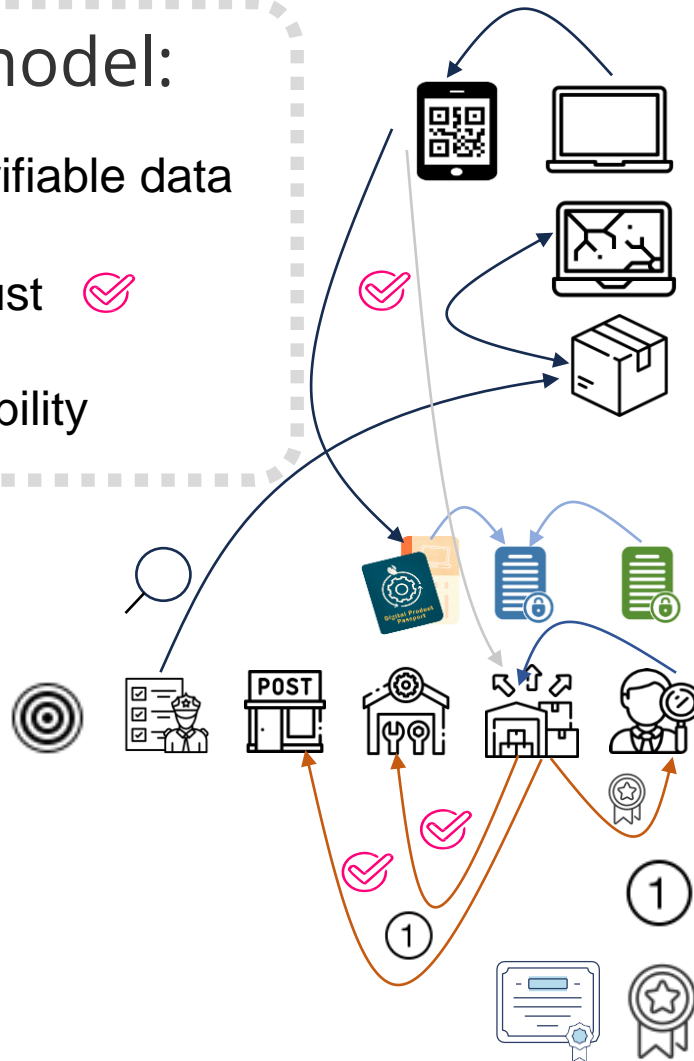
# Multiple flows, together

Open web model:

 Linked, verifiable data

 Identity, trust 

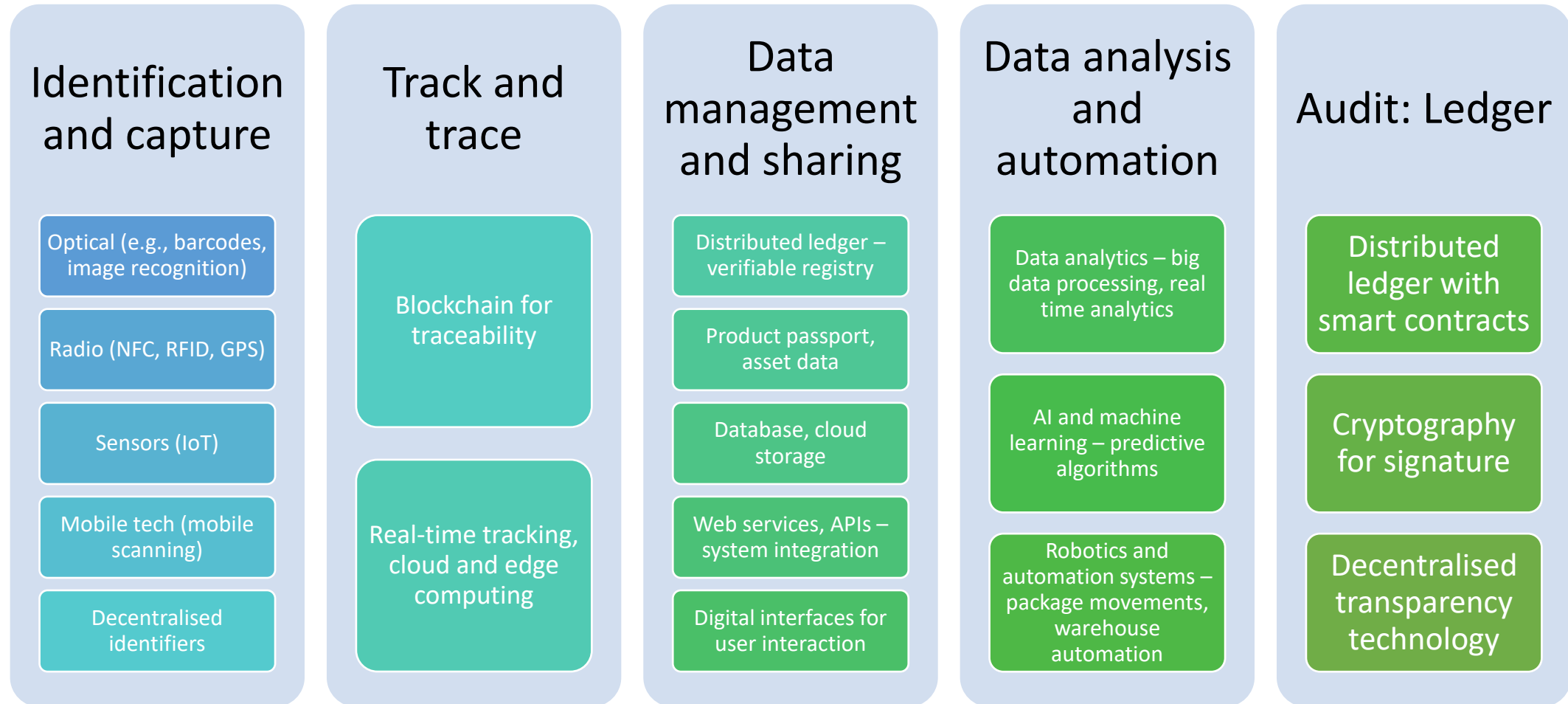
 Interoperability



- Physical objects – material flows:
  - W/EEE items
- Information flows:
  - Product identifiers, details,
  - Actors: identity, trust
- Financial flows:
  - “money”
  - non-financial: other incentives



# Technology solutions related to RVC functions





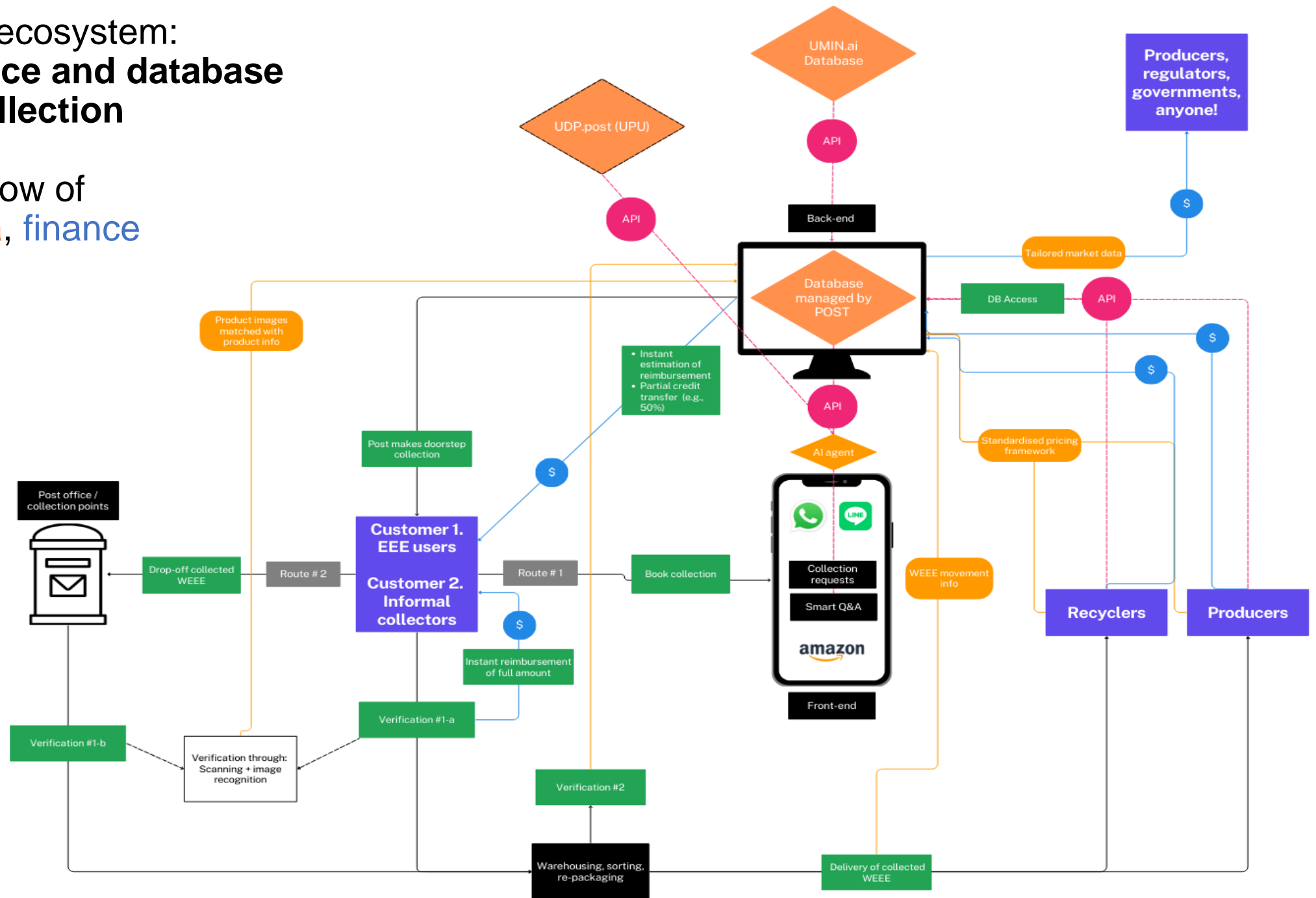
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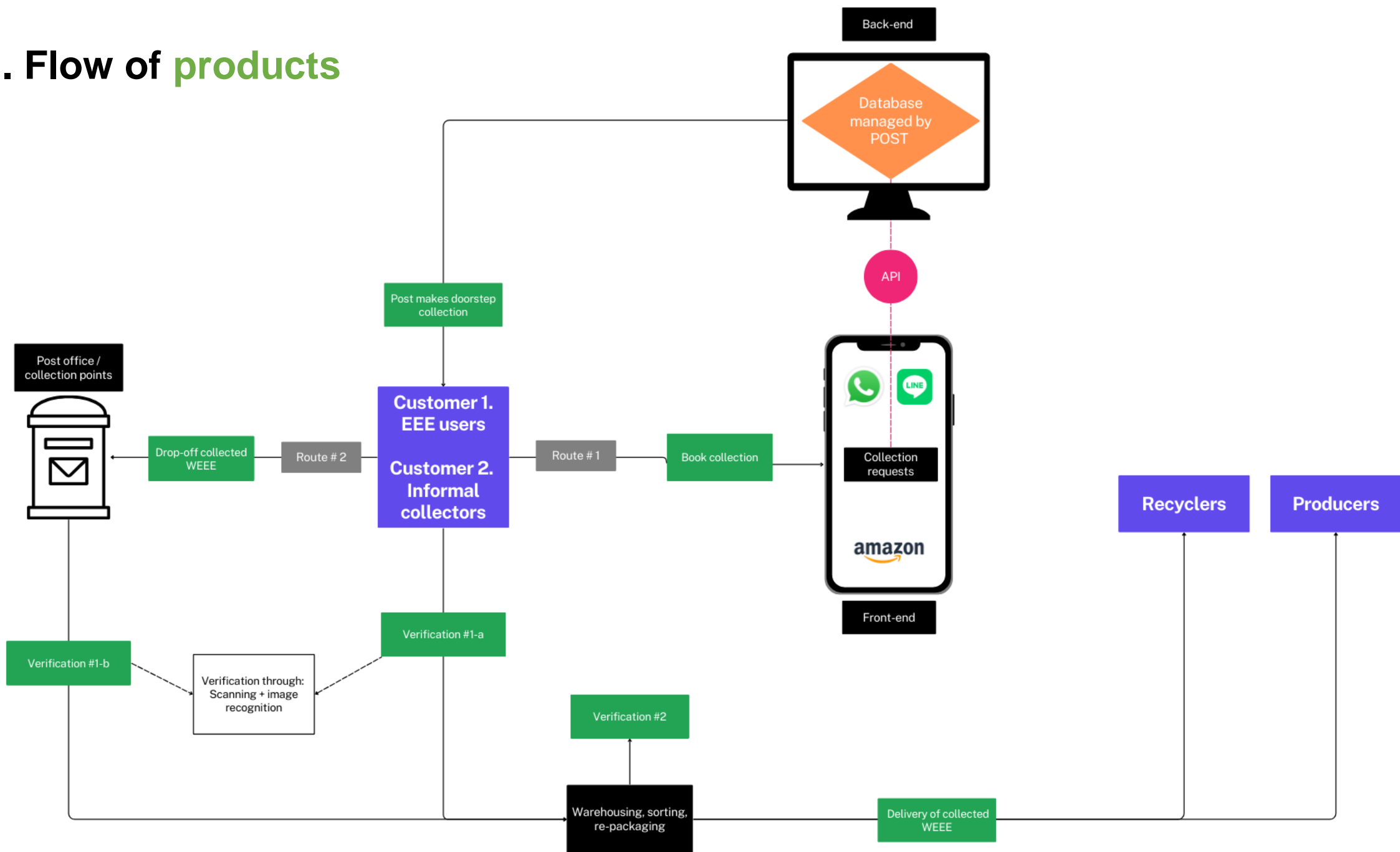
### **3. What combined solutions? Outcomes from the UPU Innovation Challenge 2025 with Thailand Post**

# The solutions ecosystem: Digital interface and database for W/EEE collection

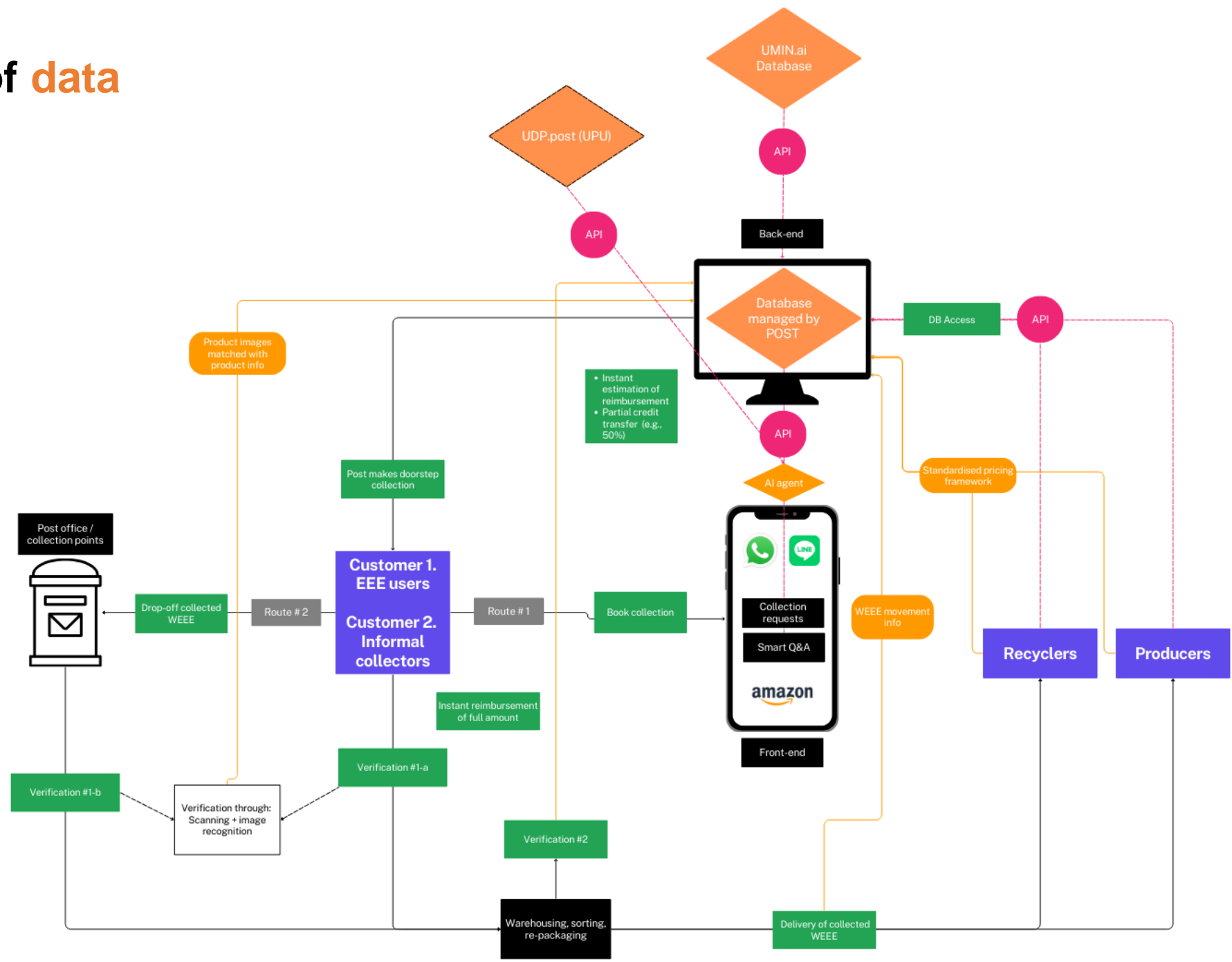
Enabling the flow of  
Products, data, finance



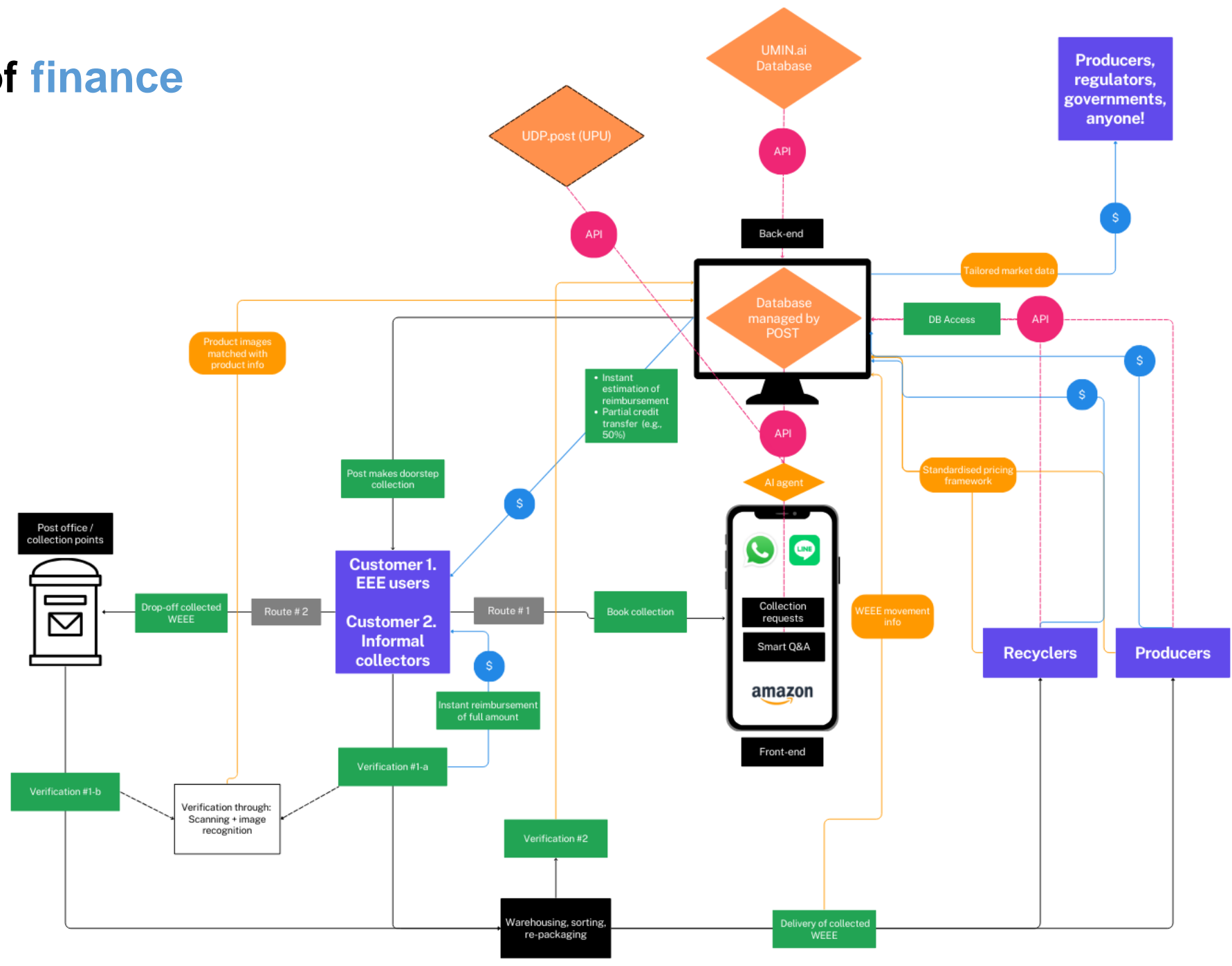
## 1. Flow of products



## 2. Flow of data



### 3. Flow of finance



# E-waste management and Reverse Logistics (Conceptual model)

A Sustainable practice initiated by Thailand Post: Upscaling the allocation of Smartphones via “Greenhub project”

## Overview

- In 2024, the reported number of smartphone units in Thailand was over **17 million unit purchased** with a compound annual growth rate (CAGR) of **3%**
- **Currently** THP has projected upscaling the recycling of 10,000 kilograms of e-waste (Smartphones approx. 1,000 units)
- **Partnering** with top telecommunication corporate THP handles these e-waste and collects logistical costs (AIS)

## Expected scenarios

- **THP** as a player within the reverse value chain & circularity by being directly involve with parties in the **Recycling, Refurbishment, Resale** sector of **smartphones**
- **Leverage** the existing infrastructure in efficiently manage the value chain in setting drop – off and scheduled pick up points for both public and private entities
- **Detach** from partnering with current partners (AIS) to grasp the overall reverse value chain of smartphones by utilizing our networks
- **Generating** new revenue streams from consolidating unused smartphones

## Targeted outcomes

10,000+ smartphones

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50,000+

Post offices

Forecasted  
returns

400,000 baht in recycling rev.

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1,000,000 baht in refurbish & resale rev.

## “Green hub+” Upscaling in promoting circular economy

### Acknowledge

Promoting the importance of sustainable practice among the public via **KOL** and other **reimbursement programs**

### Collection

Collect & Consolidate at each postal branch while assessing **repairability and safety** of transferring to regional hubs

### Distribute

Through our routed network THP will be the logistic provider in consolidating these smartphones directly to the recycling plants

### 3Rs

Repair, Recycle, and Resale through our direct partners within the business environment

Key resources

20,000+ Postmen

**GreenHub**  
Promote upscale project



## Method of Pick Up



POS



Postman



Recycling



Repair

2nd Hand Market

Dispose

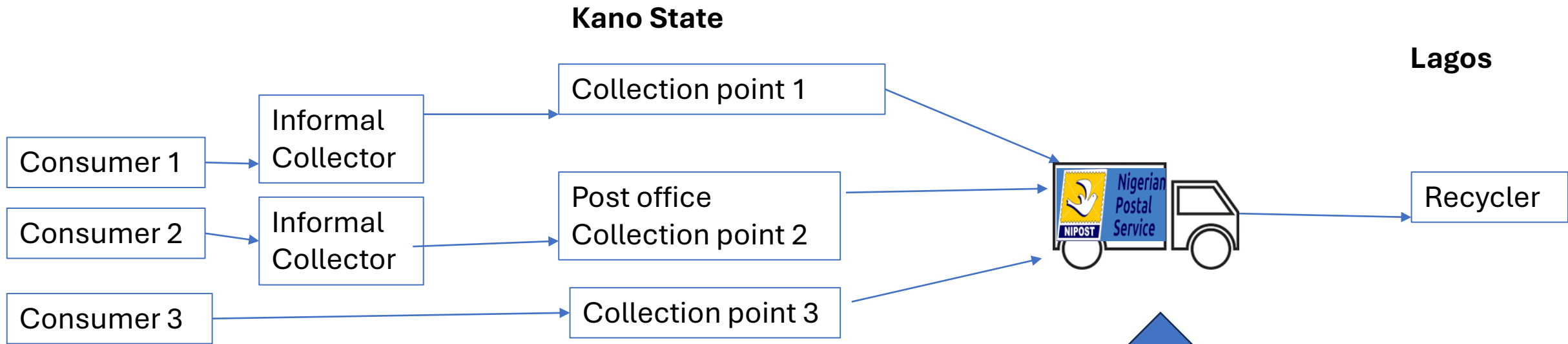
Circular economy





- Leverage NIPOST's Geographical Network using 725 post office as collection points and offering logistics service from the collection points to recyclers
- Create digital platform(web/mobile enabled) for giving up e-waste and payment– This enhances tracking and traceability and accurate quantification of materials flows
- Pilot in certain States ( Kano, FCT, Ogun and Lagos(different locations in Lagos)
- Provide data wiping service at post office for additional fee

Access to waste and collection /logistics fee for 1 tonne of screens from Kano to Lagos by the EPR system is \$531



### Motivation for Post offices

- Revenue from the use of post office as a collection point \$40/tonne of e-waste
- Revenue from offering data-wiping services, \$2/ device
- Revenue from logistics \$290/tonne/500km
- Revenue from data sales
- Data aggregation /payment platform as entry

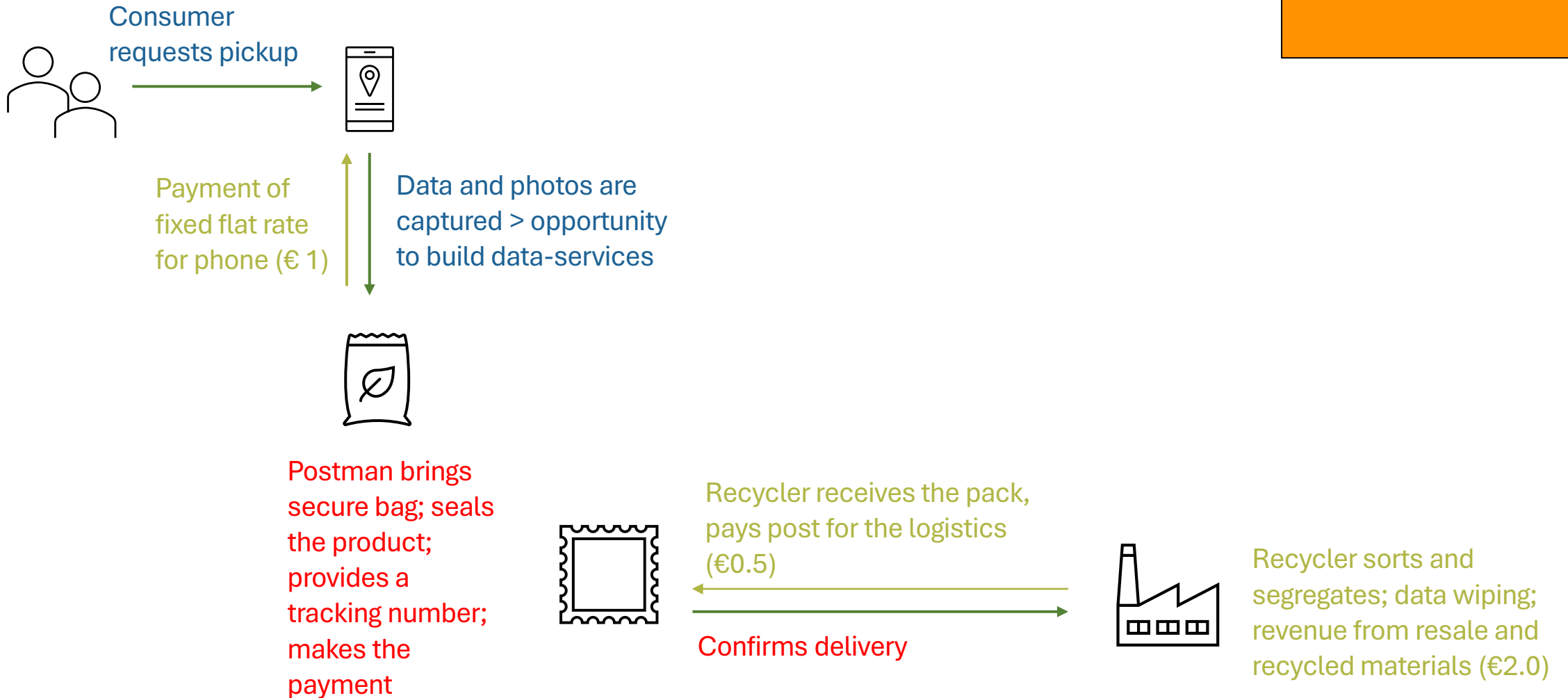
point to pay access to waste of \$200 /tonne of e-waste





# Business model

India's case



# Financing options for THP/Thai stakeholders for circular EEE projects

Stage	Funding type	Financing body/mechanism	Amount/terms	Requirements / notes
Inception	Public	<a href="#">Thailand Green Financing Facility (under NESDC/BoT)</a>	Low-interest loans up to THB 200 million	Projects with clear environmental impacts; THP can be implementer or partner.
	Public	<a href="#">Thailand Energy Efficiency Revolving Fund (EERF)</a>	Up to 70% of investment; capped at ~THB 50M	Requires a business case for energy/resource efficiency.
	Public	<a href="#">UNDP or UNEP-GEF Small Grants Programme (SGP) / 2024 updates</a>	Typically USD 50,000 – 250,000	Must highlight community and environmental benefits.
	Blended	PPP via Thailand's Public-Private Partnership Committee	Varies (flexible depending on structure)	Infrastructure-centric models; THP can co-develop with private tech/logistics firms.
	Public	<a href="#">ADB Technical Assistance / ADF Grant Window</a>	Grants and concessional finance up to USD 1M	Align with circular economy or green logistics themes.
	Private	Corporate CSR / Foundation-based seed funding	Typically USD 50K–500K	Samsung, LG, or TBCSD members may co-fund piloting as part of ESG strategy.
	Private	Angel/Impact Investors (e.g., Purpose Ventures, Beacon)	USD 100K–1M in equity or convertible notes	Require demonstrable pilot feasibility and scalable social/environmental ROI.

# Financing options for THP/Thai stakeholders for circular EEE projects

Stage	Funding type	Financing body/mechanism	Amount/terms	Requirements / notes
Mid-term	Public	National Innovation Agency (NIA)	Up to THB 5 million in co-funding	Innovation in circular logistics and waste tech welcomed.
	Public	<a href="#">European Union SWITCH-Asia Programme</a>	Up to EUR 3 million/project	Requires partnership with EU entity or alignment with SCP principles.
	Blended	<a href="#">Green Climate Fund (GCF) + Thai NDA Partnership</a>	USD 1–10M per project (grant/loan mix)	Environmental impact, national development alignment; THP can be executing entity.
	Blended	<a href="#">World Bank's Climate-Smart Urban Infrastructure Fund</a>	~USD 5–10M (loan/grant mix)	Urban waste management and digital inclusion focus.
	Private	Green/Sustainability Bonds (THAI market via SEC)	>THB 500 million (typical issue size)	Requires certification (e.g., ICMA, ASEAN green standards); THP may partner with banks or ThaiLife ESG funds.
	Private	Venture Debt (e.g., InnoSpace Thailand partners)	USD 1–5M per project	Requires business model validation, revenue visibility, IP/data components helpful.

# Financing options for THP/Thai stakeholders for circular EEE projects

Stage	Funding type	Financing body/mechanism	Amount/terms	Requirements / notes
Scaling	Public	Thailand's Circular Economy Action Plan (under MNRE)	Grants and subsidies – THB 10–200M	Targeting large-scale deployment, circular value chains, digital tracking.
	Blended	<a href="#">PPP under Eastern Economic Corridor (EEC) Framework</a>	Flexible depending on project structure	Tech-based infrastructure for logistics, data hubs. THP can anchor public partner.
	Private	Impact Investment Funds (e.g., <a href="#">Leapfrog</a> , Blue Orchard)	USD 1–20M, patient capital	Strong ESG narrative, data-driven outcomes, preferably revenue-stage.
	Private	Green Securitisation or Infrastructure Funds (via Thai BMA)	Custom-structured, institutional buyers	For long-term infrastructure (sorting centers, tech interface, etc.); requires stable income source (EPR, service fees).

# Questions and comments?



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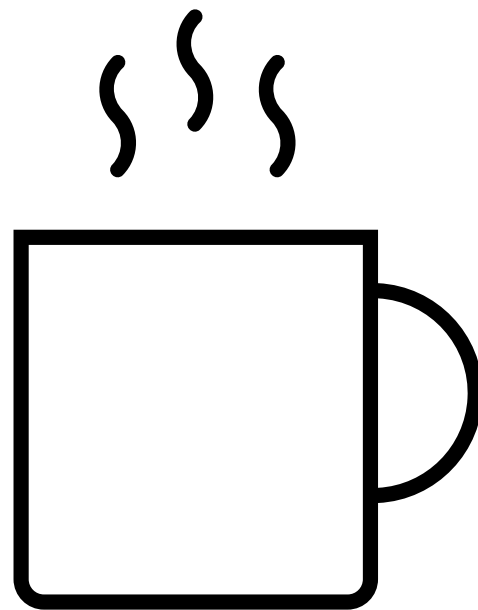
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# Thailand Post's “Rebox: Green Hub” project and innovation challenge outcomes

## Coffee break



Back at 10h30!

# EXERCISE: circular electronics management and reverse logistics

## Group 1: Reverse logistics

How can Thailand Post build scalable investment-ready reverse logistics services for circular electronics through partnerships, digital systems and infrastructure sharing?

*Moderator: Ms. Kannikar Srithunyalucksana*

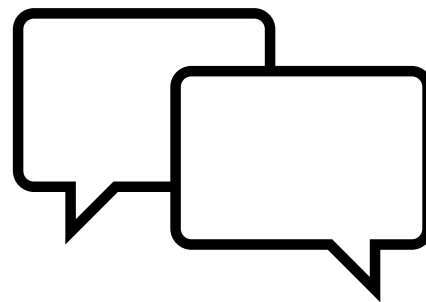
## Group 2: Public procurement

How can public procurement, licensing requirements, and EPR frameworks create demand certainty and unlock financing for postal-led reverse logistics systems?

*Moderator: Ms. Weenarin Lulitanonda*



# Plenary report back and Q&A



# LUNCH BREAK



Back at 13h00!

## Event Page



## Day 2 – Thursday, 29 May 2025

Morning Review

Session 4      Circular Electronics Management and  
Reverse Logistics

**Session 5      Green Transport and Renewable Energy  
Integration**

Day Review

# Learning Objectives

By the end of the session, participants should be able to:

- Discuss grid integration barriers and opportunities for distributed energy in greening Thailand Post fleets.
- Identify collaboration opportunities between postal services and relevant stakeholders for EV charging and clean fleet rollout.
- Discuss the role of the postal fleet in contributing to national climate strategies/policies and clean air targets.
- Identify pilots for solar-powered depots and postal delivery Evs.



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# Green Transport and Renewable Energy Integration - Global Postal Context

29 May 2025

# Green Economy Policy Evolution

**Levelling the playing field:** Pricing the fossil fuel sectors and Investing in the green sector



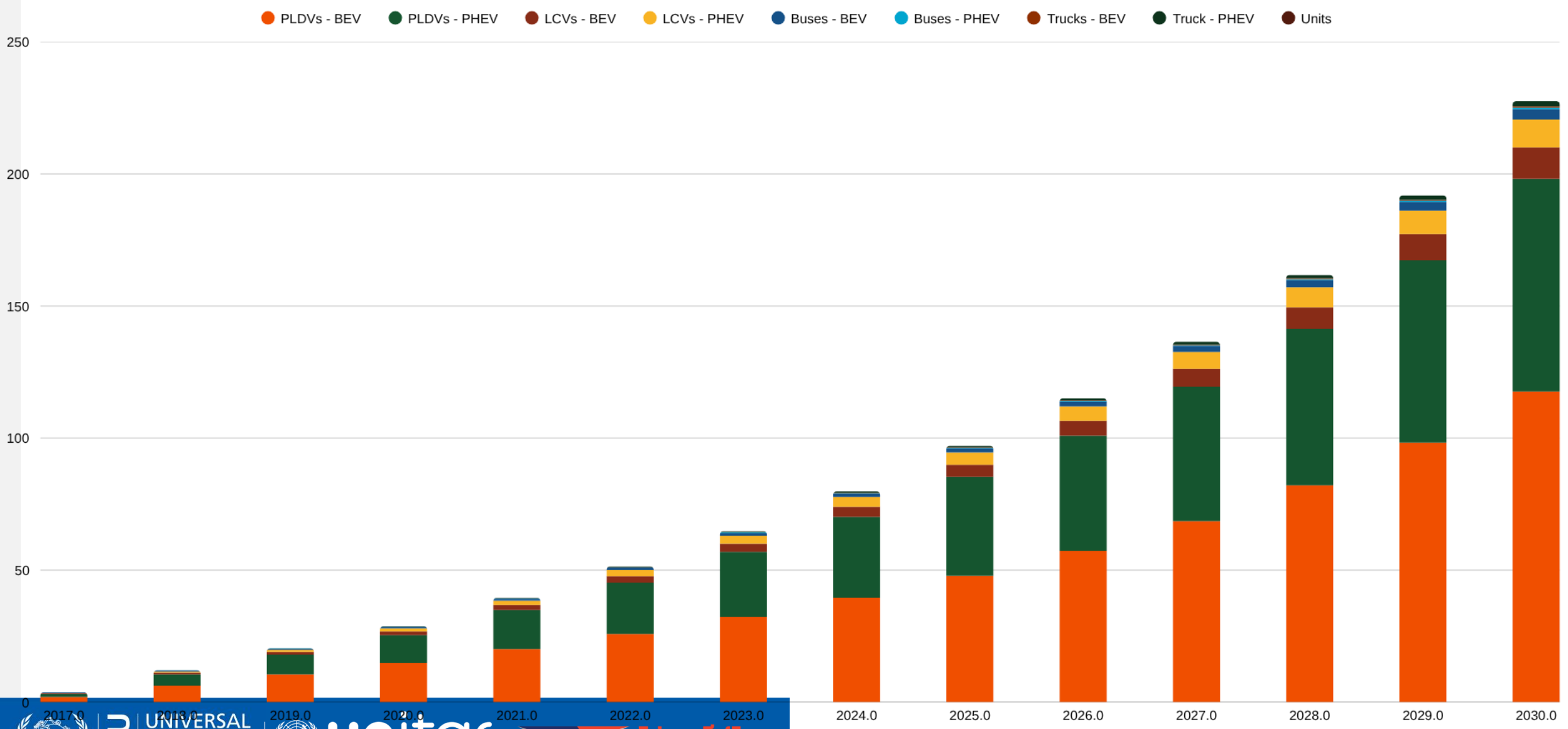
**Building competitiveness of renewable energy:** production and project capacity



**Renewable energy adoption as a new focus:** e.g. electrification in transport sector; hydrogen value chain



# EV30@30 Global EV projections





# EV Fleet Adoption Status: UPU Survey

**30%- 70%**

Who Has Adopted Small Vehicles  
and Who Plan to Do So ?

**2%- 50%**

Who Has Adopted Large Vehicles  
and Who Plan to Do So?

# The Gap Between EV Demand and Grid Capacity



Energy source

## “From Well to Grid”

Challenges:

- Large-scale adoption of EVs places significant pressure on national electricity grids, many of which are not currently equipped to handle high-powered fleet charging.
- Charging of postal EV fleets may create peak load spikes, risking voltage drops, transformer overloads and local grid congestion.
- In many countries, fleet-scale charging lacks sufficient regulatory support, leading to prolonged approval processes for grid upgrades, unclear metering requirements, and inflexible electricity tariff structures.

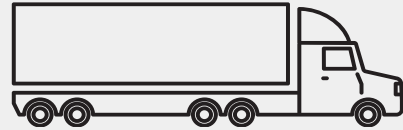
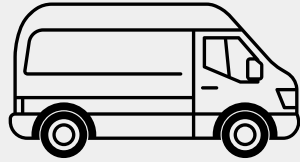
# Some demand side responses



## Responses

- Smart charging schedules to balance night/day loads
- Local PV (solar) generation + battery storage
- Split charging architecture and Vehicle-to-Grid (V2G) strategies to reduce grid dependency

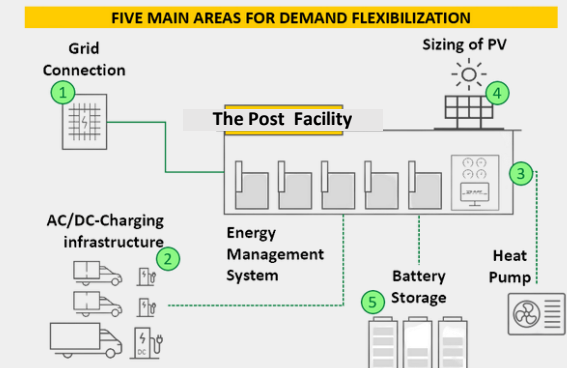
# Practical considerations for energy management



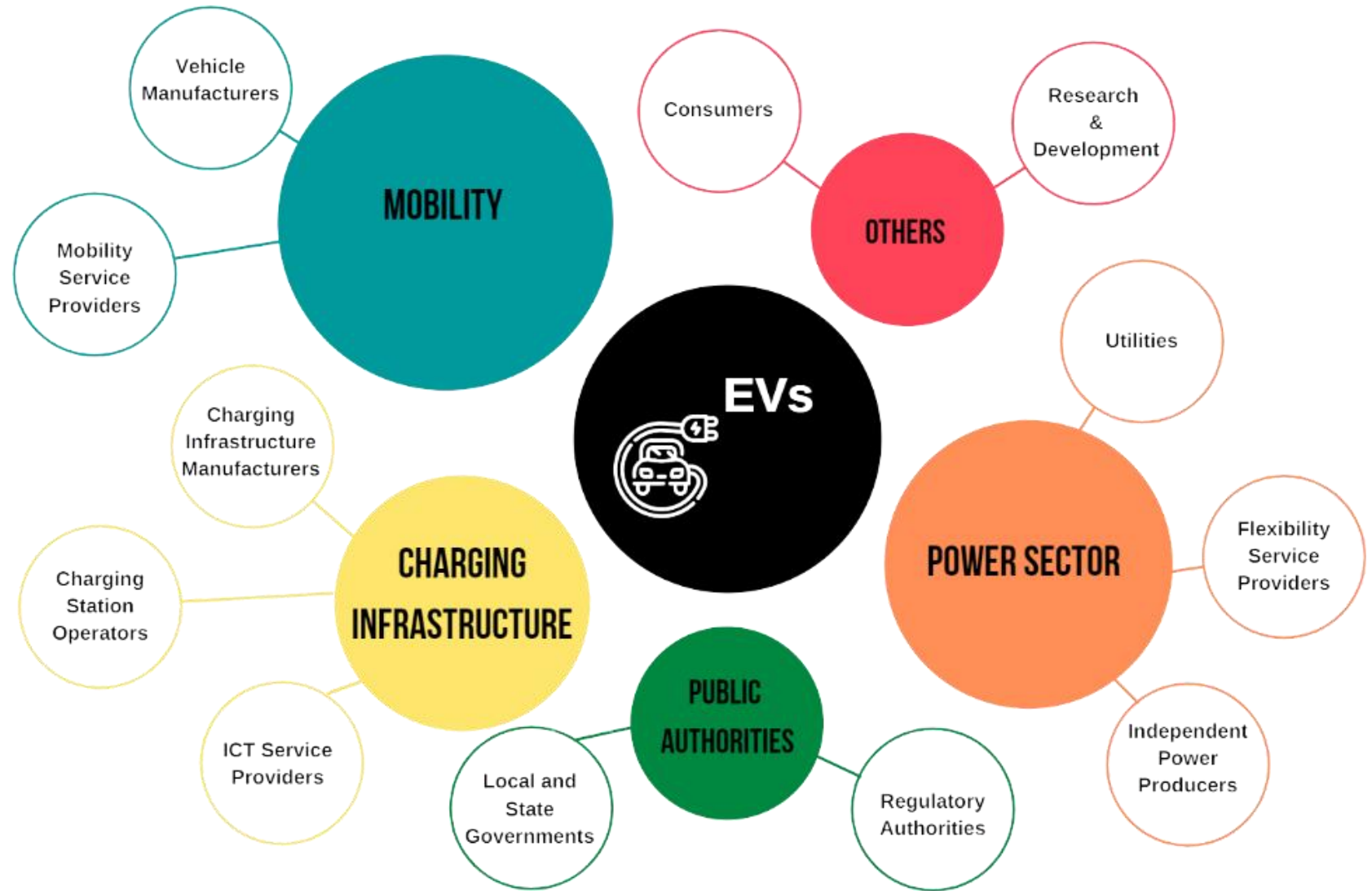
Average electric consumption	20 – 40 kWh/100 km	125 – 175 kWh/ 100 km
Battery capacity	40 – 80 kWh	300 - 600 kWh
Required power per charging point	22 kW	350 kW
Actual charging power/ power peak	~ 6 kW (if charged during night)	350 kW (if charged in a short period)
<p><b>!</b> Since <b>linehaul trucks</b> usually have to charge in a <b>short amount of time</b> – unlike <b>PuD vans</b>, which usually <b>charge slowly overnight</b> at the depot – they generate a <b>60-fold higher power peak</b> and thus have an extremely <b>high impact</b> on the <b>grid connection</b>.</p>		

Source: UPU/UNITAR Global Webinar event

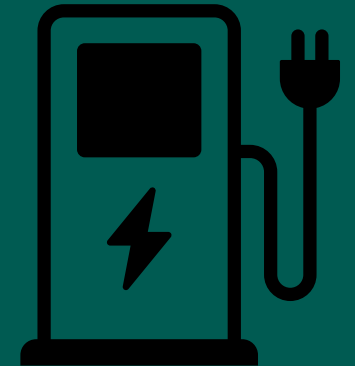
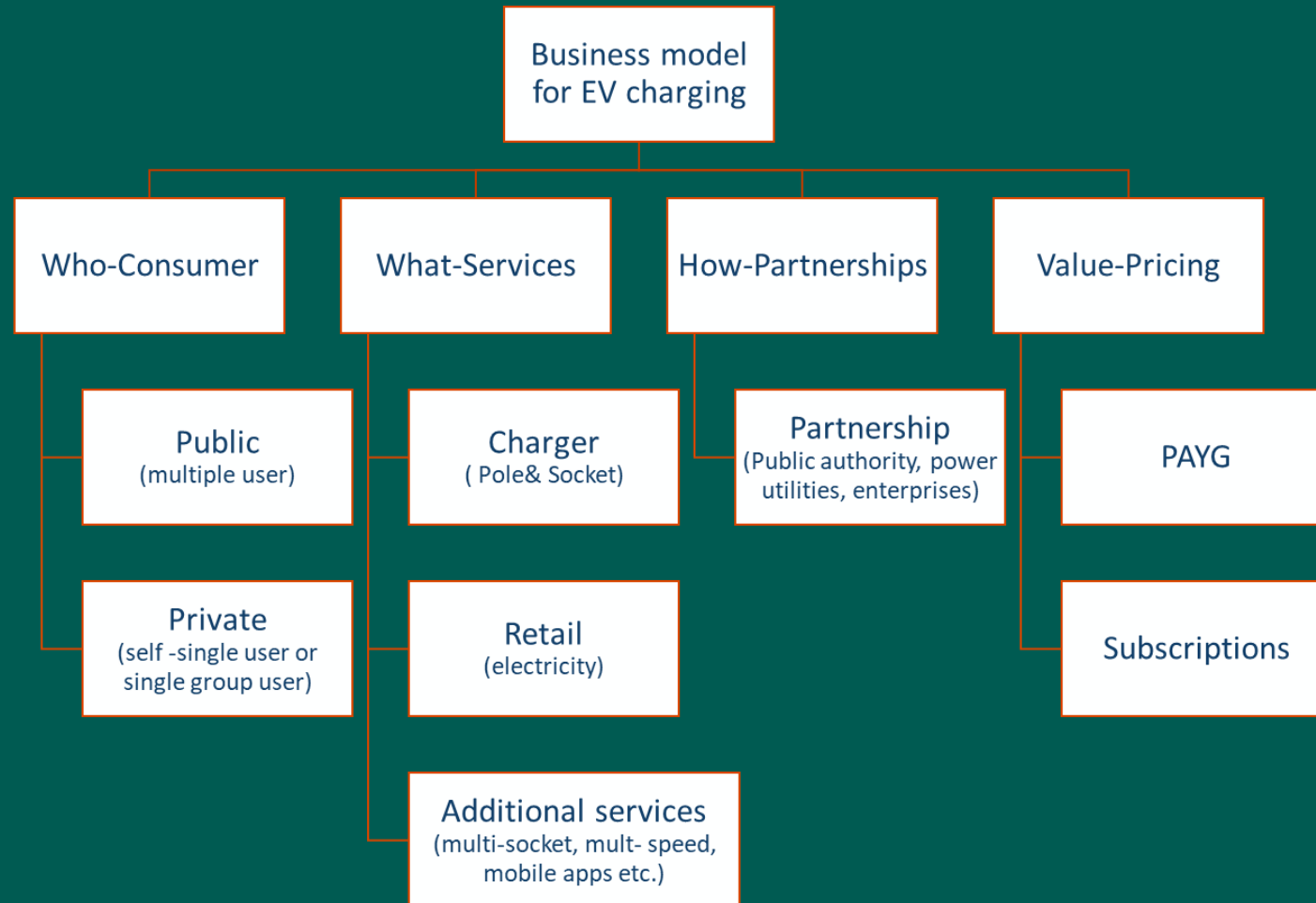
- Planning the charging time
- Integrating additional systems
  - Grid connection
  - AC-/DC Charging infra
  - Building Technologies
  - PV Integration
  - Battery Storage



# EV Ecosystem



# EVs Charging Business Model



# One Investment Example



“

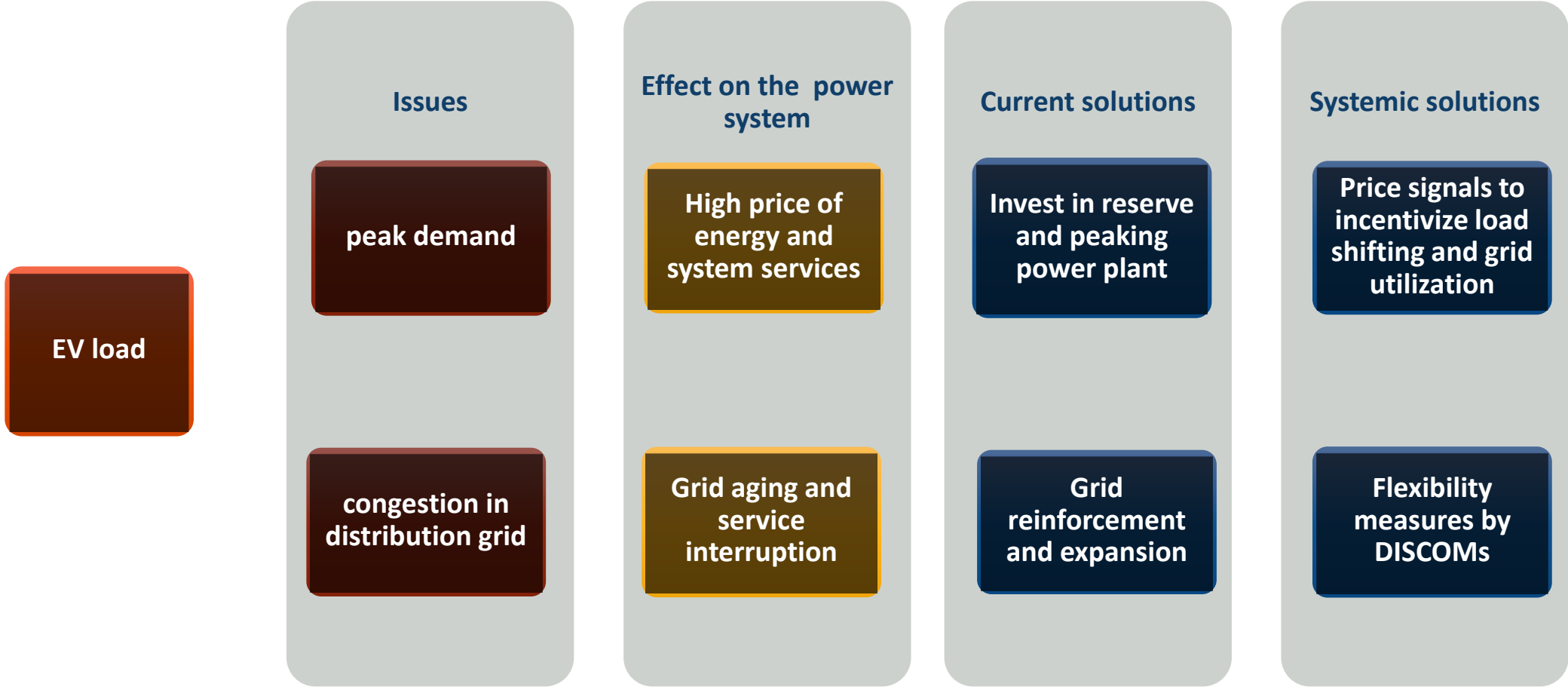
Swiss Post and agricultural cooperative Fenaco have signed a new contract to develop a nationwide fast charging network for electric vehicles powered by Swiss electricity from renewable energy sources, with the new service due to go live from mid-2025.

Swiss Post and Fenaco **both own 50% each of the new network, which will be called PowerUp**, with the first 50 locations put into operation next year. The infrastructure will be deployed in villages, towns and rural areas.

By 2030, the partners aim to expand PowerUp to 300 locations with a total of 1,500 charging points, which will be available to both private customers and companies.

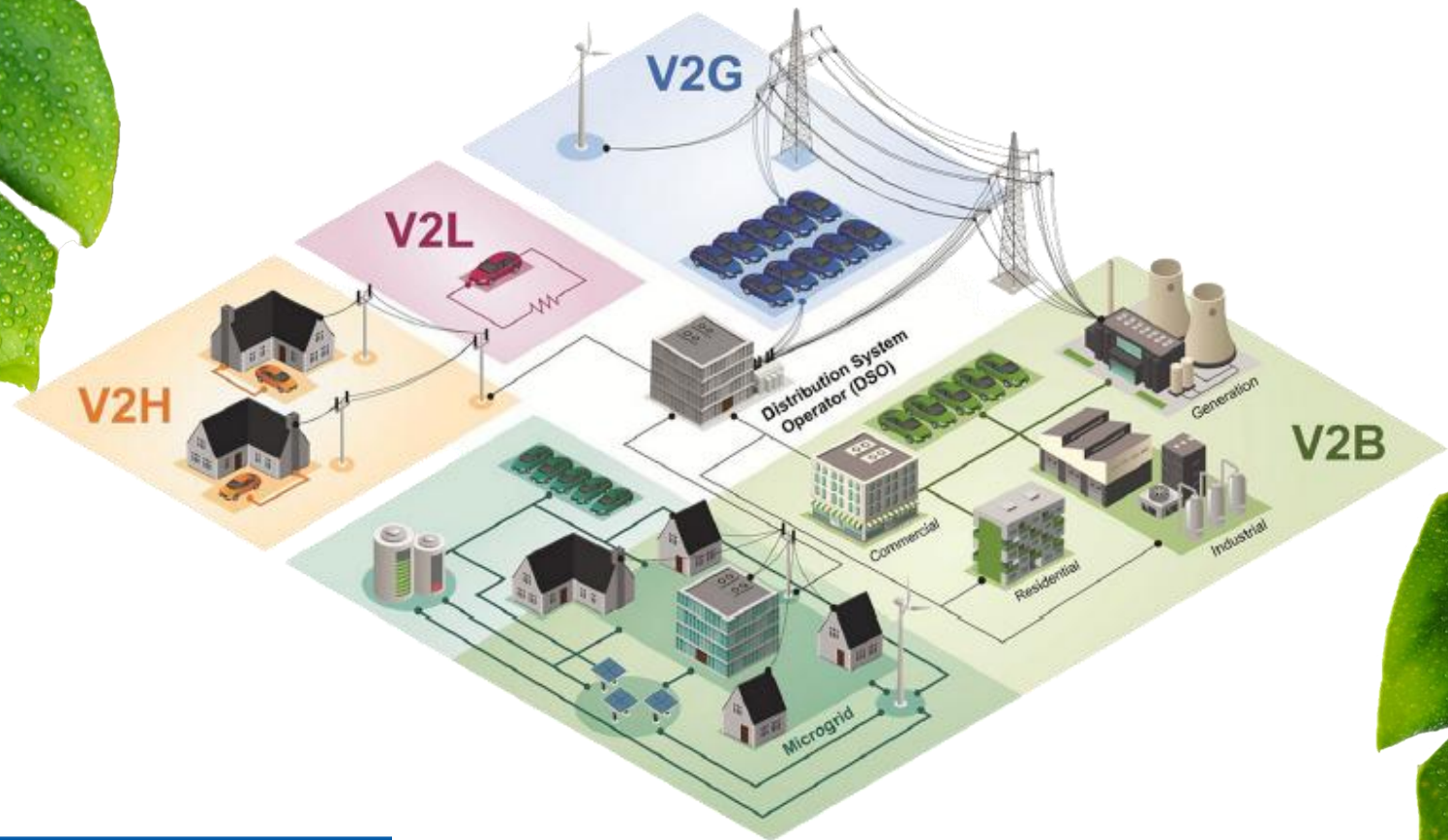
The charging stations will be located at Swiss Post branches, and at Fenaco's AGROLA petrol stations and LANDI stores, as well as at other sites.

From the Lens of Electricity Supply Side (Source: FSR Global)





# Converting Challenges into Opportunities of Collaboration?




# Hydrogen Pilots




- **New Zealand Post:** Trialed a hydrogen truck in 2023 with success on urban and open-road routes.
- **DHL & Apple:** Tested hydrogen trucks between the Netherlands and Belgium in 2021.
- **Royal Mail:** Piloted hydrogen vans for parcel delivery as early as 2020.
- **La Poste (France):** Used Renault EVs with hydrogen-powered range extenders in 2013.
- **China Post & Bosch:** Launched a hydrogen logistics demonstration project in 2023 in Wuxi, China





# Converting Challenges into Opportunities of Collaboration?



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# Thailand Post on its journey of fleet decarbonization and plans



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# **EGAT's V2G project: insights on technology readiness, grid integration and policy considerations**



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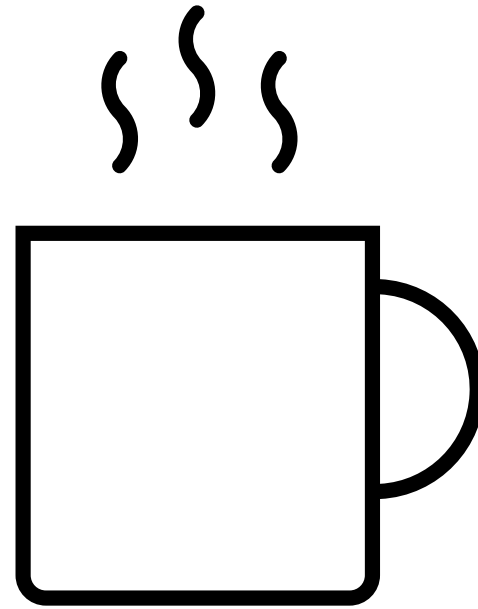
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# MULTISTAKEHOLDER DIALOGUE: sharing experiences and identifying collaboration opportunities

## Coffee Break



Back at 14h55!

# EXERCISE: Green transport and renewable energy integration

## Group 1: EV fleet track

EV Fleet Transition as a platform for energy management, grid integration, and finance-ready infrastructure.

*Moderator: Ms. Kannikar Srithunyalucksana*

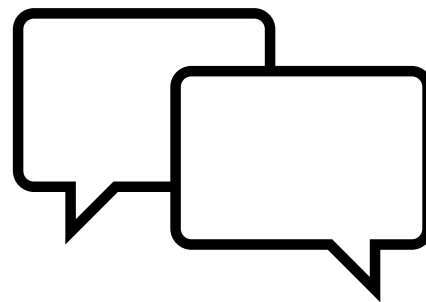
## Group 2: Hydrogen track

Postal network as a national demonstration platform for hydrogen logistics: Making the case for early-stage investment and policy alignment.

*Moderator: Ms. Weenarin Lulitanonda*



# Plenary report back and Q&A



## Event Page



## Day Review

What have you found most useful today?

Are there any issues/questions that need to be addressed or clarified?