



CirclePV

Circular Solar Panel Management

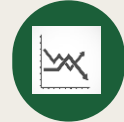
Transforming solar panel waste into sustainable value through AI-powered diagnostics and circular economy solutions.

Problem-The Solar Panel Waste



Typhoon Damage

Frequent typhoons (up to 150 km/h) cause early panel damage, generating premature waste across Hong Kong.



Unmanaged Growth

Rapid solar adoption driven by carbon neutrality goals lacks coordinated disposal pathways for outdated or low-performing panels.



Lack of B2B Solutions

Asset owners lack an integrated B2B SaaS solution that enables comprehensive assessment of panel health, circularity diagnostics, ESG impact, and waste handling when needed



Environmental Hazards

Damaged panels release toxic metals—cadmium, selenide, copper—into soil and water from landfills.



Material Loss

Poor waste practices lose recoverable glass, aluminum, silicon, copper, and silver resources.



Solution-CirclePV

01

Predictive B2B Platform

SaaS solution integrating IoT sensors, drone inspections, and AI analytics to assess aging solar panels.

02

Advanced Diagnostics

IR and RGB imaging plus sensor data detect thermal anomalies, cracks, corrosion, and typhoon damage.

03

Circular Management

Enables repair, reuse, and recycling strategies to reduce landfill impact and recover valuable materials.

04

Connected Ecosystem & Seamless Integration

Streamlines coordination between asset owners, recyclers, and logistics providers

No additional hardware retrofits required

integrates with BIM and property management systems.

05

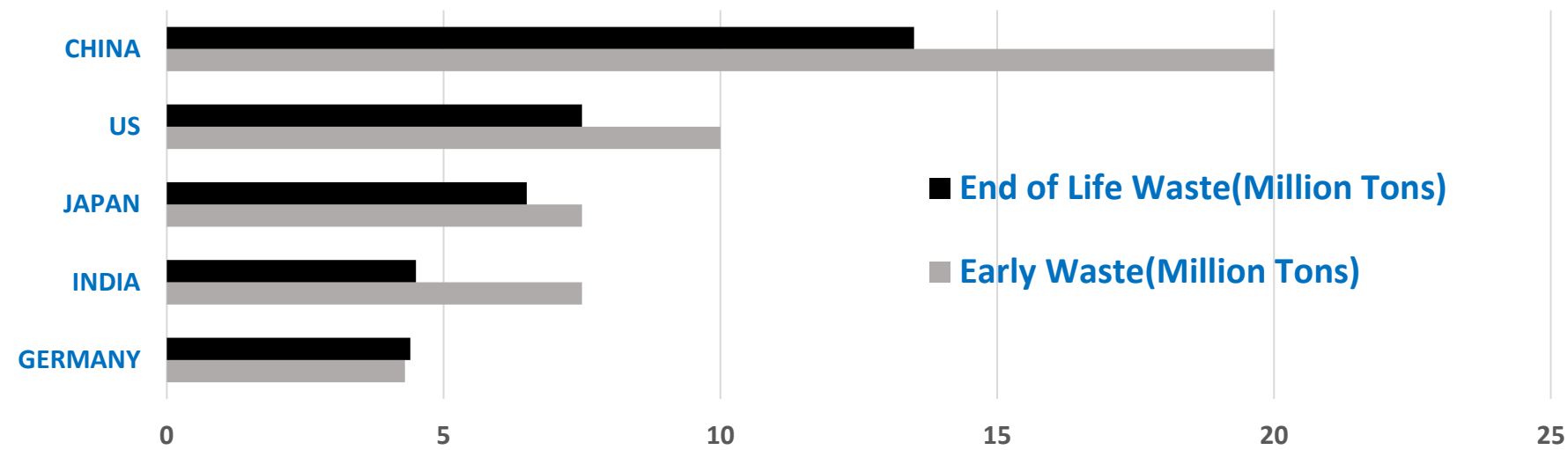
ESG & LCA Insights

Generates carbon savings, and Life Cycle Assessment metrics

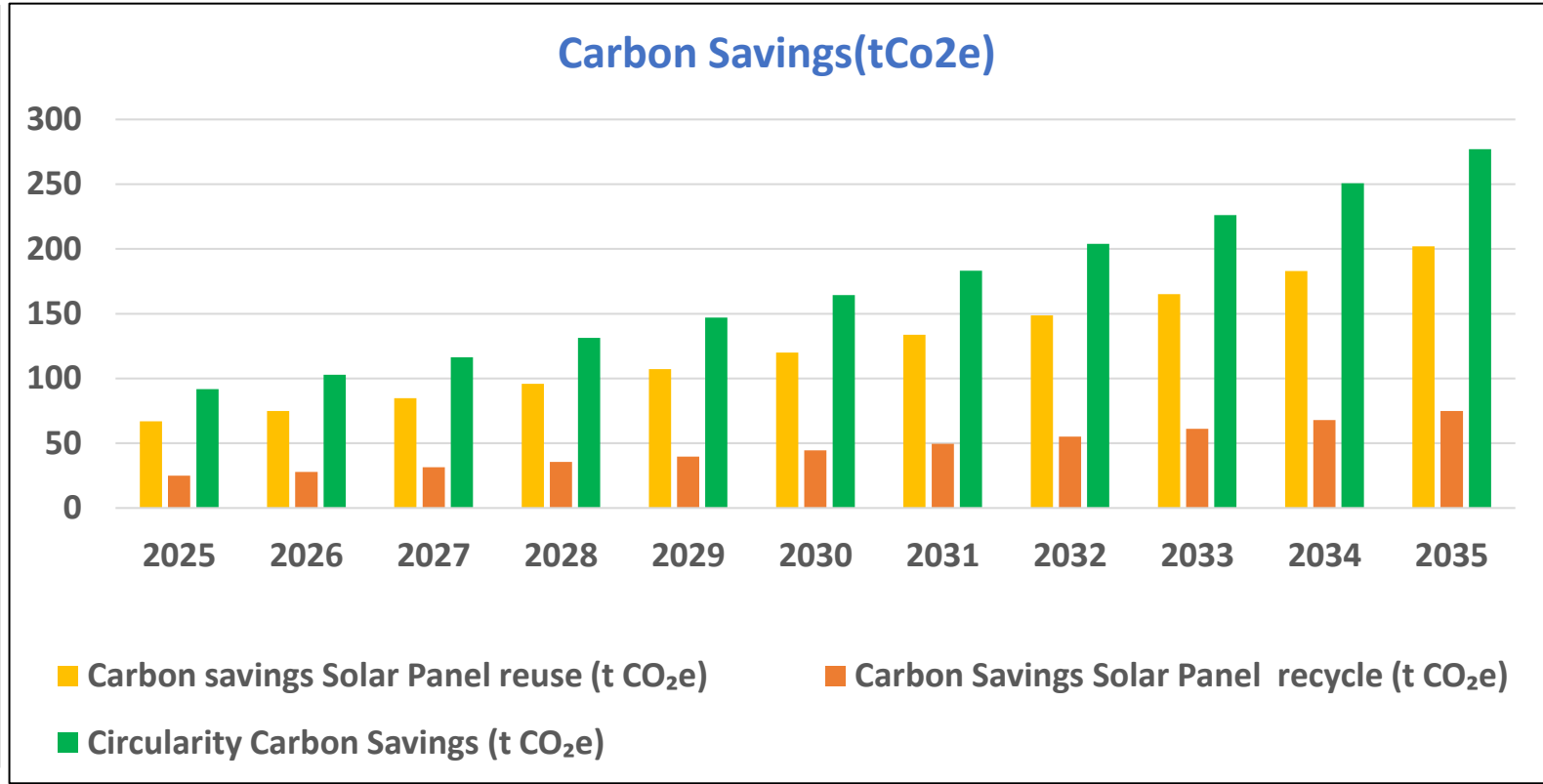
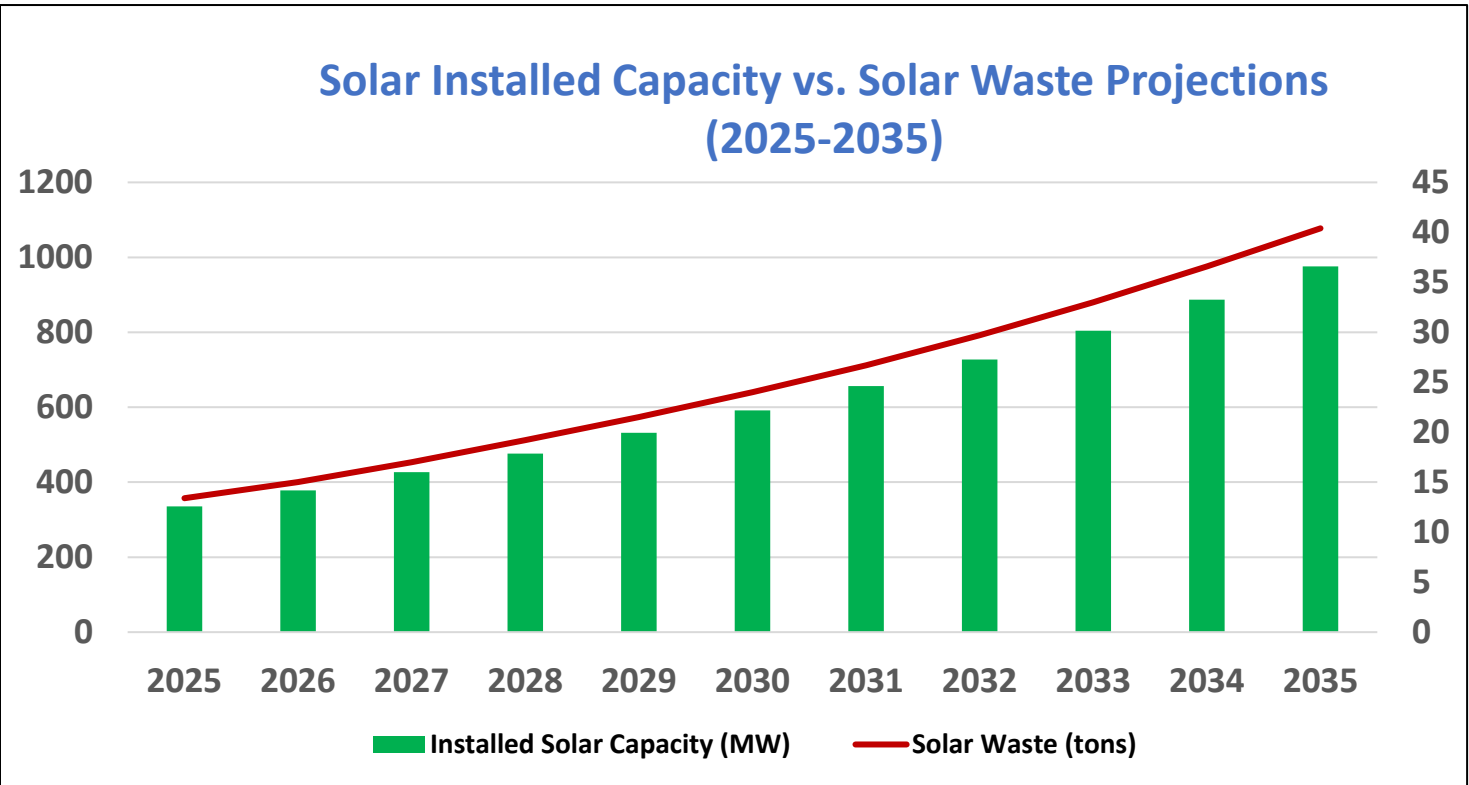


Solar Waste Projections-Global & Hongkong

IRENA cumulative PV Waste Volume predictions by 2050



Market Opportunity



300MW
Current Solar Capacity

1GW
Expected 2035 Solar Capacity Target

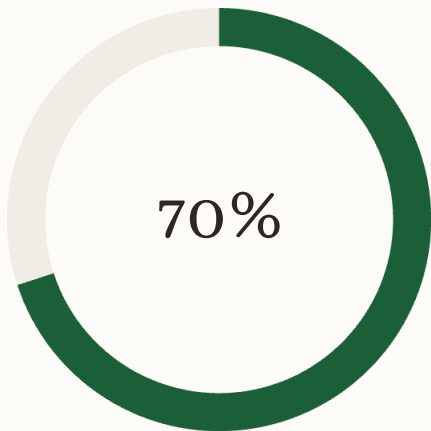
- Assumption**
- EOL after 20 years
 - 0.2% Typhoon based Solar Panel Waste
 - 20% Reused Solar Waste
 - 70% Recycled Solar Panel Waste
 - 10% Discarded Solar Panel Waste
 - 7.5% -10% Renewable share Target

15-50 Tons
Expected Solar Panel Waste

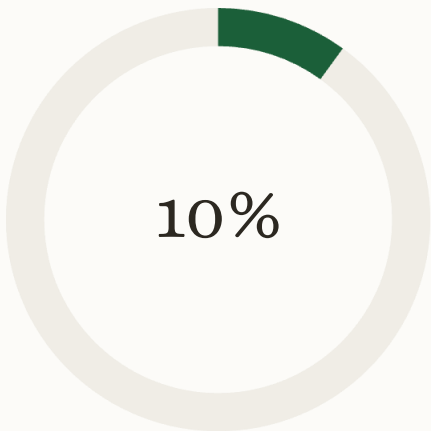
90-270 tCO₂e
Expected Circularity Carbon Savings

Material Recovery Potential

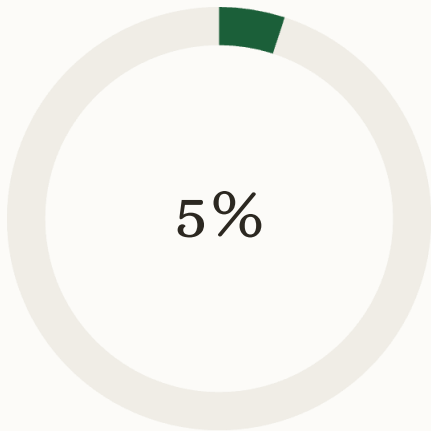
Cumulative recovery from 2025–2035 (≈1,200 tons total):



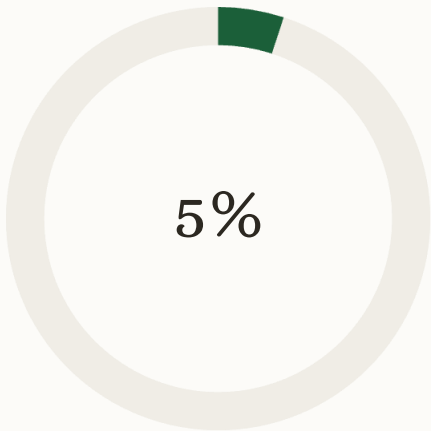
Glass
~840 tons recoverable



Aluminum
~120 tons recoverable



Silicon
~60 tons recoverable



Copper
~60 tons recoverable

📌 **Carbon Impact:** ≈14,000 tons CO₂e avoided over the decade—equivalent to removing ~3,000 cars from Hong Kong's roads for a year.

Business Model

X₁

SaaS Subscription

Recurring revenue from asset owners for platform access and analytics.

≡



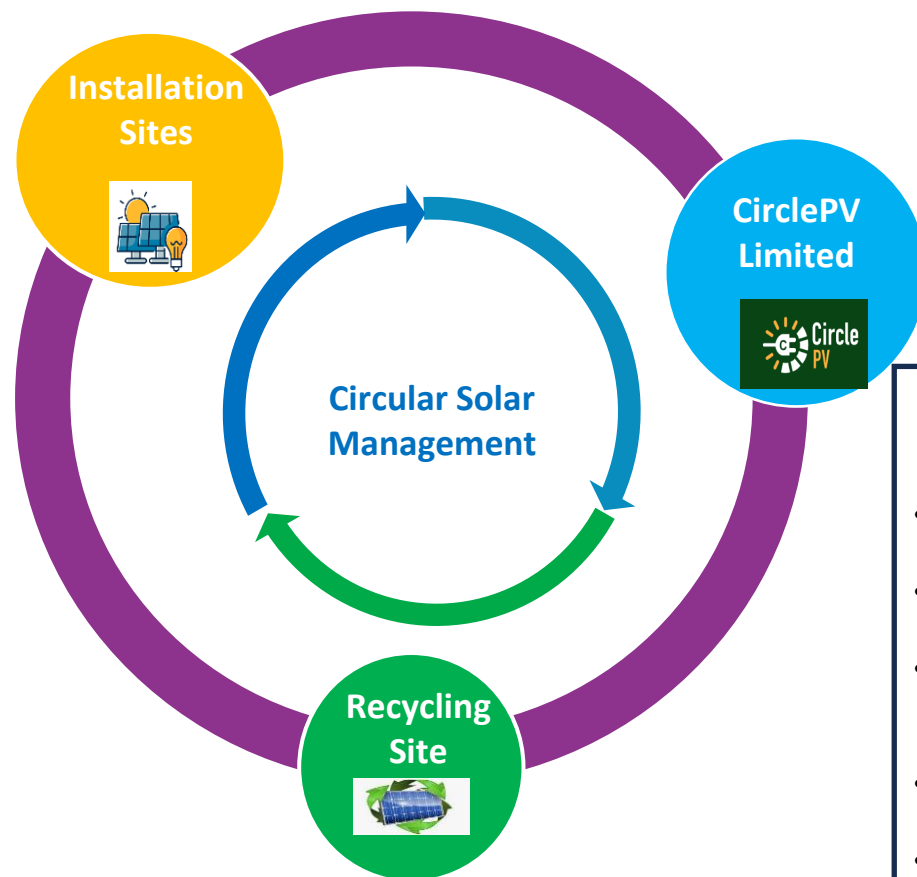
Pay-Per-Use

Flexible diagnostics services for drone inspections and IoT assessments.



Licensing

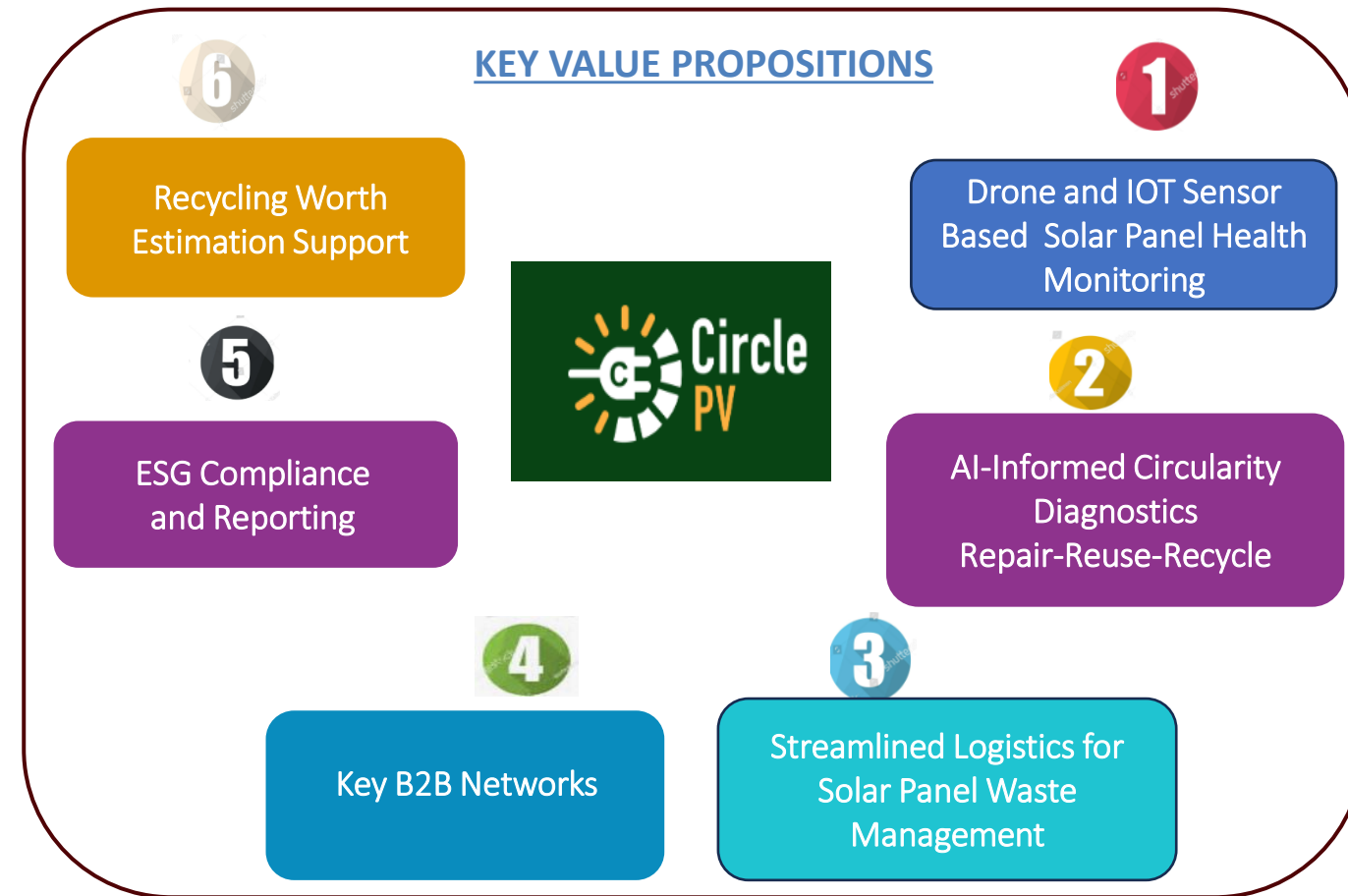
Revenue from recyclers and logistics partners using the platform.



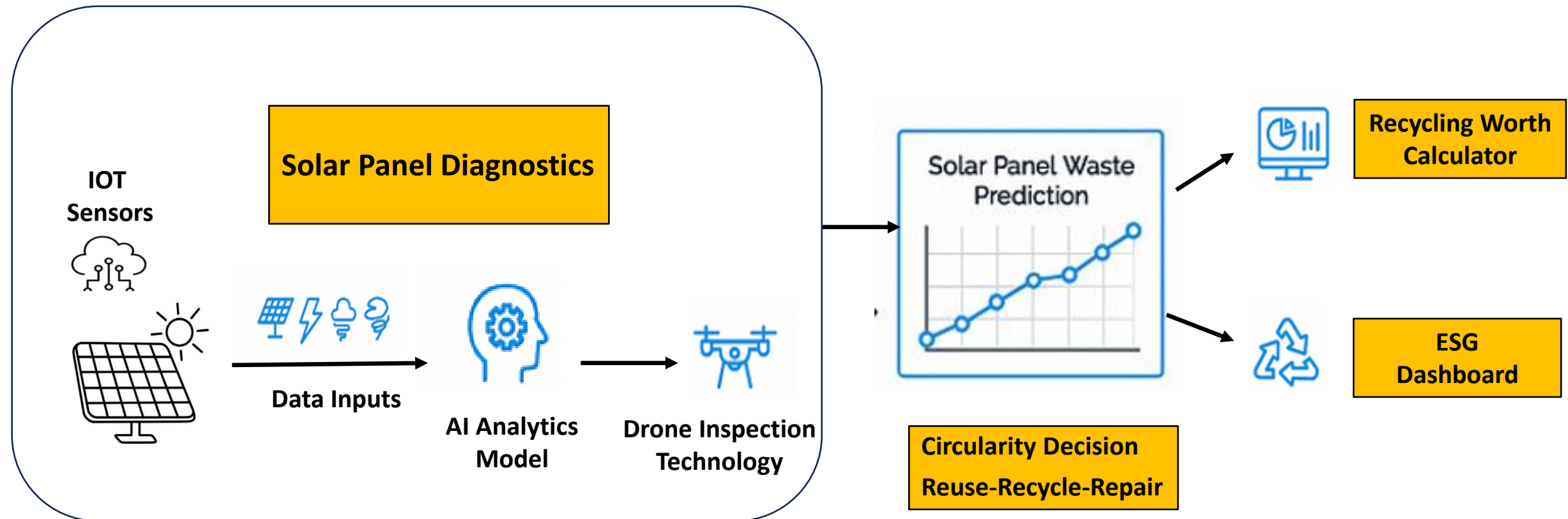
KEY STAKEHOLDERS

- PV Manufacturers
- Solar Asset Owners
- Installer/Supplier/Construction/Real Estate Industry
- Commercial & Residential Industry
- Recyclers
- Construction/Real Estate Industry

KEY VALUE PROPOSITIONS



TECHNICAL MODEL



The accuracy achieved by our detection model is up to 85% which can further be improved with more real test data Inputs

MVP & VISION

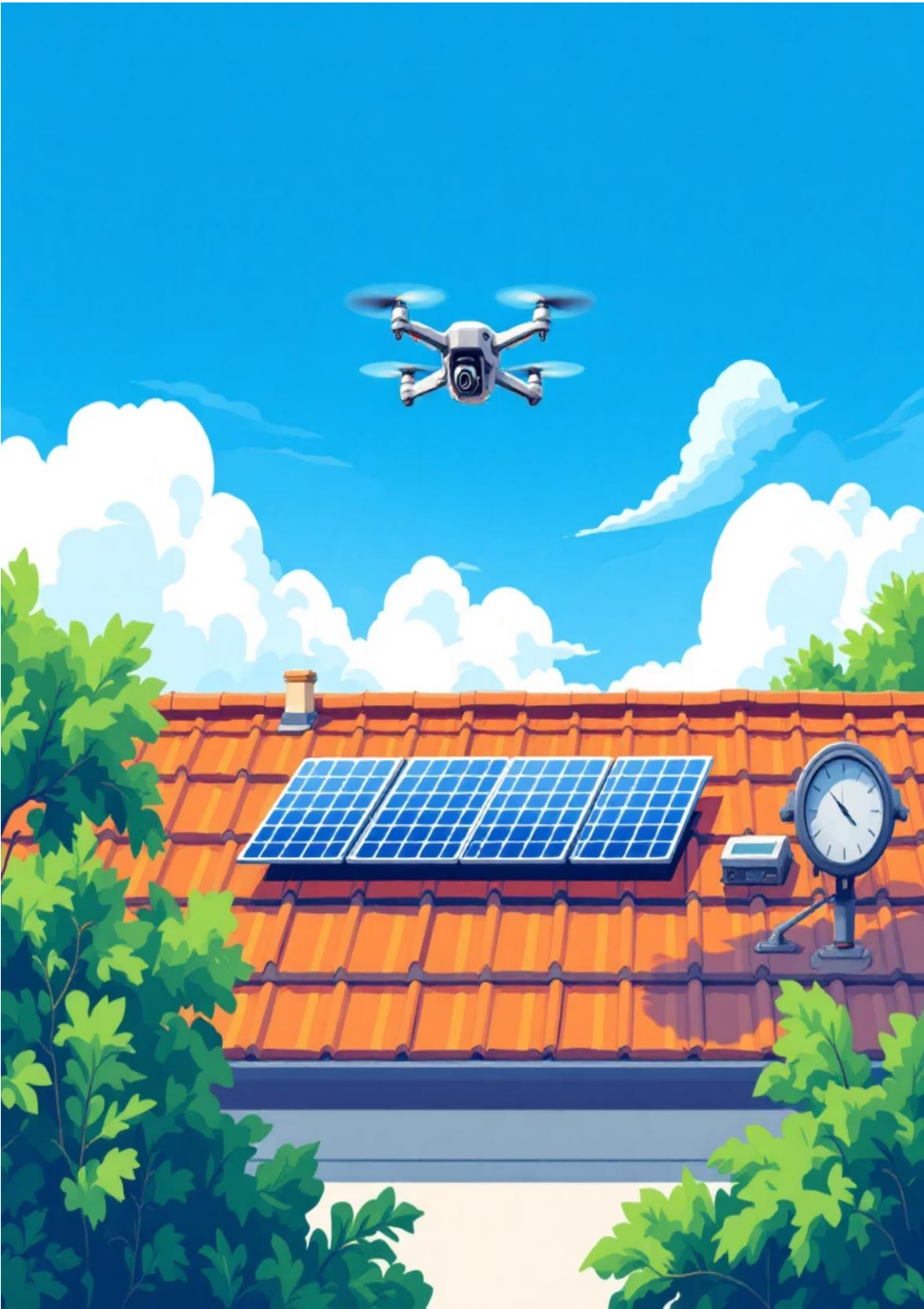
CirclePV's MVP integrates defect detection with drone and IoT sensor-based assessment, enabling predictive identification of early or end-of-life solar panel waste.

MVP

- **IoT sensors + drone inspections** -detect defects and predict early/end-of-life solar panel waste
- **AI analytics** → lifecycle prediction under environmental stressors
- **Circularity pathways** → repair, reuse, recycling decisions with logistics coordination to local recycling Centers
- **Recycling Worth Calculator** → clear insights into material recovery value for stakeholders
- **ESG Reporting Dashboard** → quantifies carbon savings, compliance metrics, and circularity impact

Vision

- Establish Hong Kong's first **solar circularity diagnostics** platform
- Enable property owners **to extend panel lifetimes by 15–20%** and reduce operational emissions
- Provide audit-ready **ESG compliance tools** for property portfolios
- Scale across the **Greater Bay Area and Asia**, positioning CirclePV as the leader in solar waste management and circularity innovation
- Collaborate with universities to **advance new recycling technologies**, making solar waste management more viable and lower-cost
- Pilot with property owners and local recyclers **to validate defect detection, recycling logistics, and ESG reporting** in real-world operations



Team & Partners

Company & Team

Company Profile

CirclePV Limited, founded in Hong Kong, focused on solar circularity and ESG innovation.

Track Record

MVP developed, partnerships secured, academic support from HKUST and HKO.

Dr. Tanvi Bansal

Founder & Technical Lead (solar diagnostics, ESG strategy)

Jaskirat Singh

Tech. Lead (backend/dashboard development)

Huaden HK

Recycling Partner

Raspect

Inspection Partner

Advisors

HKUST, Hong Kong Observatory

