Getting greener: Innovations for more sustainable payment smart cards

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Consumer demand for sustainability is growing across all aspects of life

85%

of consumers believe
that they can personally act
to slow down climate change
and are willing to take action

Consumers' expectations towards companies

37%

slash waste

35%

reduce air
and water pollution

35%

deal with plastic
pollution in packaging
and product

Source: Mastercard

Status quo: Still a lot of potential with payment cards

Since the Paris Agreement on climate change was signed in 2016, over **15 billion** new payment cards have entered our ecosystem.

Source: Giesecke & Devrient

Production of **3.5 billion** payment cards produces **>500 thousand** tons of CO_2-eq/y.

Up to **43 percent** could be saved.

Source: ABI report, 2022

Sustainable card efforts accelerating

Several initiatives already aim to create cards from more environmentally-friendly materials.

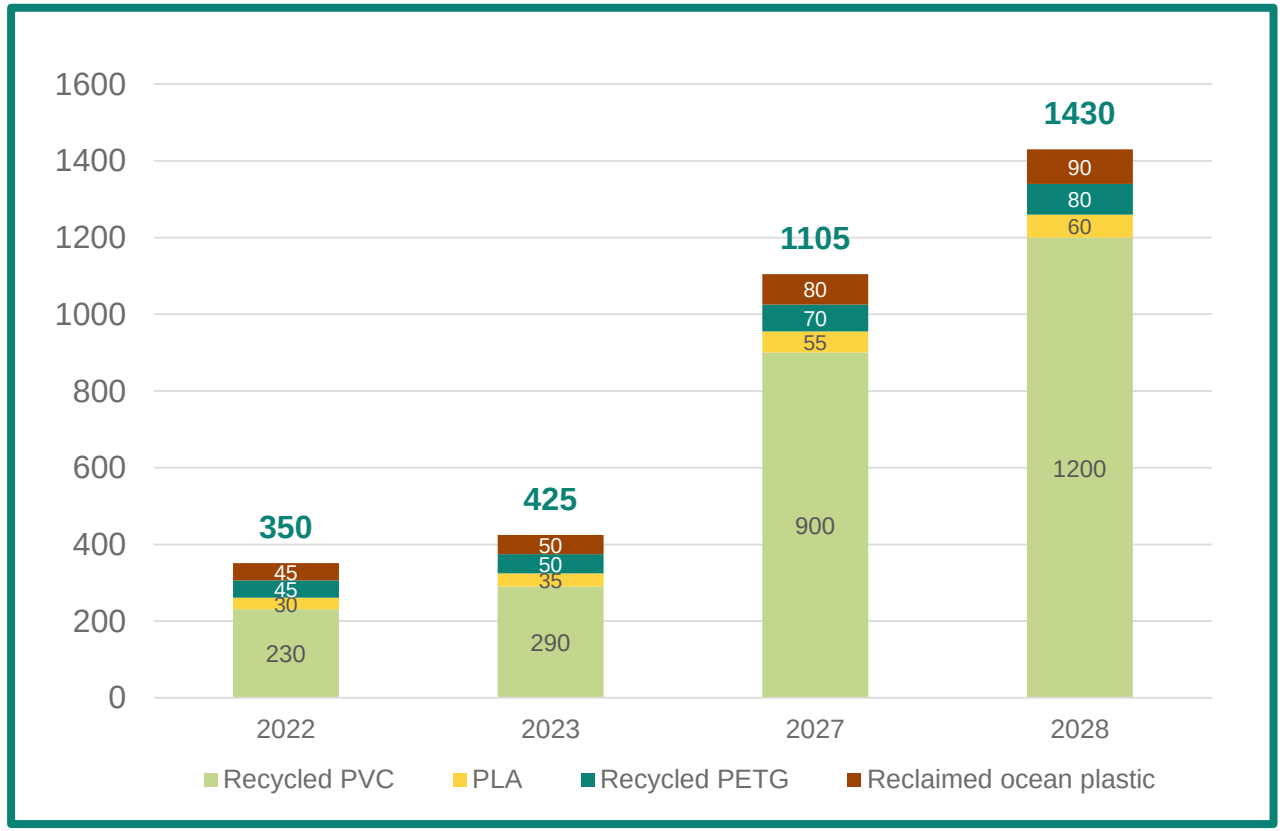
Mastercard will **remove first-use, PVC plastics** from payment cards on its network **by 2028.**

Visa has introduced the **Earthwise High Content Card,** which consists of up to 98 percent recycled plastic.

Source: Mastercard, Visa

Shipment of sustainable materials in payment card market

Volume in million pcs



By 2028 almost 50 percent of yearly issued payment card volumes are expected to migrate to sustainable materials.

Source: ABI Research 2023

Infineon: Driving decarbonization and digitalization. Together.

- Infineon is **one of the 15 percent most sustainable** companies in the world
- By 2025, the company's **emissions are to be reduced** by 70 percent compared to 2019

53%
Less electricity consumed*

30%
Less water consumed*

30%
Less waste consumed*

*Per square centimetre manufactured wafer

Infineon: Some unique eco-friendly advantages of payment smart cards already available

Coil-on-Module

- **Optimized size:** 70 percent less weight and 50 percent less height than other packaging solutions
- It is the **thinnest module** (only 320 µm)
- It offers **high production flexibility** and robustness
- The inlays are based on copper wire for easy embedding **even in ocean recovered plastic**
- **Minor** additional manufacturing **investments** compared to conventional direct connect modules

Improved CO_2 footprint!

Accelerating towards innovative card designs

Innovative modules based on inductive coupling

Efficient smart card production enabling sustainable card materials

Challenges still to solve

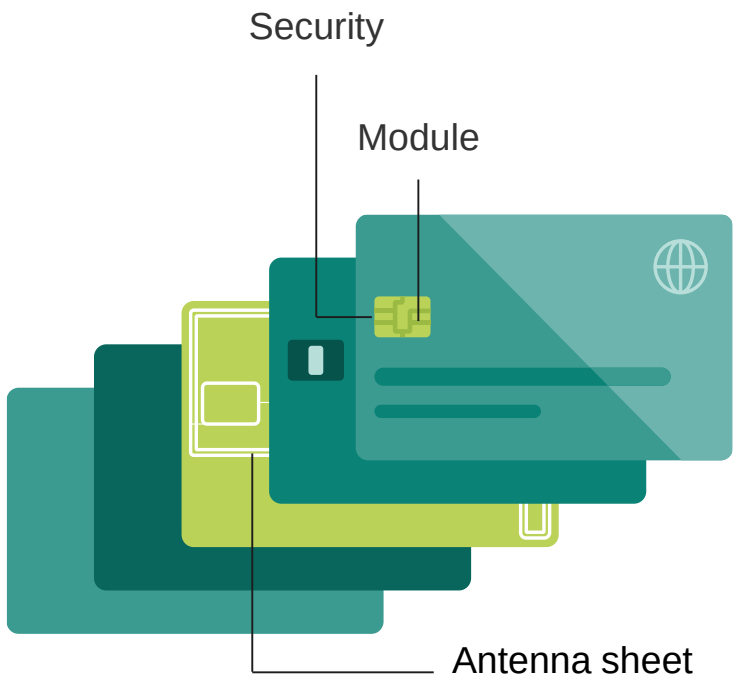
- Multi-layer card body with material mix (PVC + inlay + copper wire)
- Antenna inlays (3 m copper wire/card)
- Alternative card materials differ in characteristics like bonding, strength and durability
- How to make smart packages thin and durable at the same time?

Sustainability for payment is heavily promoted throughout the eco-system. However, none of these solutions is 100 percent sustainable yet!

Next generation – mono block card design

Compact module enables mono block cards made of 100 percent sustainable materials and are 100 percent recyclable

Before: use of several sheets is mandatory



After: mono block card design with a unique layer

Module including

1) security controller
2) certified software
3) antenna!

Significant reduction in the CO_2 footprint of smart cards

- Integrated antenna makes a separate inlay obsolete
- Smart-card-body can be made from sustainable materials
- Minimized transport-related carbon emissions
- Easy recycling of smart cards

→ **Production of mono block cards can save high amount of CO_2 emissions**

Key takeaways for sustainable payment smart cards

Consumers increasingly demand sustainable products

High carbon footprint of ‘classic’ payment cards

Card manufacturers are introducing sustainable materials

Innovative packages enabling the production of thinner, more durable, and eco-friendly smart cards

Innovation at card design needed for completely sustainable, recyclable cards, reducing CO_2 emissions

Infineon plays a pivotal role in advancing smart payment card technologies

Let's turn the latest market trends into best-in-class solutions together

Find out more about sustainable card materials **here**


Infineon