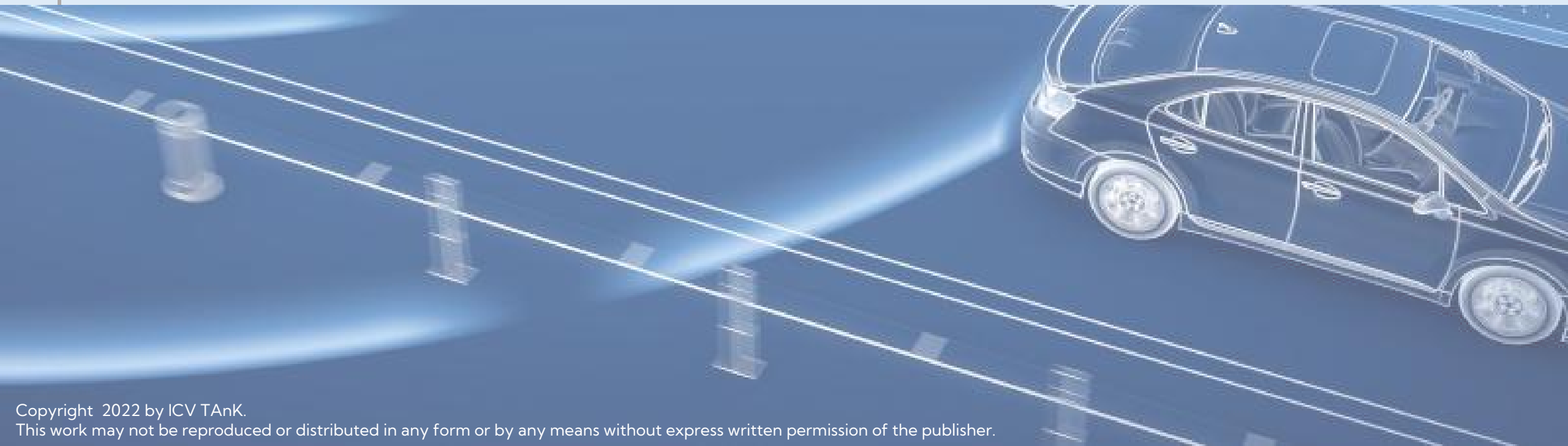
ICV TAnK
Technology Advisory
& Knowledgebase

Passenger Vehicle

Market Research Report (2022 H1)



Introduction

ICV TAnK
Technology Advisory
& Knowledgebase

The aim of this report is to evaluate the Automotive Camera market, the report contains three main topics: the (automatic driving) passenger vehicles, the automotive cameras, and the CMOS image sensors. This report offers market analysis and market forecasts for each topic mentioned above.

The automation-driving system consists of three main departments who are respectively responsible for: perception sensing, decision-making, and executing

Generally, vision system, radar system, and LiDAR system are main types of sensors for perception sensing department. At present, the fusion of multi-sensors is the choice for most automobile manufacturers who are on the track of driving automation.

Classifications of Automotive Camera

ICV TAnK
Technology Advisory
& Knowledgebase

Side View Camera

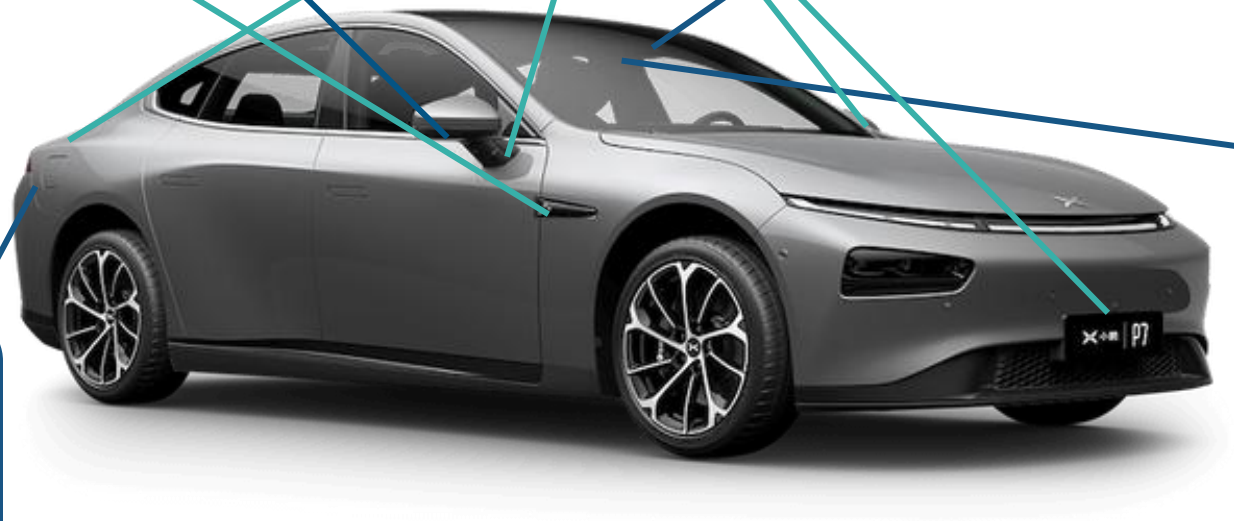
- Sensing functionalities
- Usually has higher pixels than surround-view cameras

Surround View Camera

- Consists of 4 individual cameras
- Provides 360-degree images

Interior Cabin Camera

- Supports ADAS applications (e.g., driver monitor system)



Front View Camera

- Sensing functionalities(e.g., LKA)

Rear View Camera

- Sensing functionalities (e.g., automated parking system)

Configuration Assumptions

ICV TAnK
Technology Advisory
& Knowledgebase

Vision System: number of cameras

	Surround View	Rear View	Front View	Side View	Interior Cabin Camera
L0	0	0.6	0	0	0
L1	0	1	1	0	0
L2/L2+	4	1	1	2	0
L3	4	1	1	2	1
L4/L5	4	1	3	4	2

With considering about the existing automobiles' configurations and the developing ADAS technologies, ICV generated more reasonable assumptions about the number of cameras for each level of automation (as above table shows), which are used for the following analysis.

In this report, ICV classified the automotive cameras into five different types based on how they work. The basic logic is the positive relationship between the number of cameras and the level of automation-driving.

Regions & Automobile Manufacturers

ICV TAnK
Technology Advisory
& Knowledgebase

In this report, ICV classified the automobile manufacturer into two types, the new car-making forces and the traditional carmakers.

As the developing stages of automation-driving are different between countries/ regions, this report will divide the whole market into five sub-markets:

1. China
2. Europe
3. America
4. Asia (exclude China), Oceania, and Middle East Region (hereinafter referred to as "AOME" region)
5. Africa

ICV TAnK
Technology Advisory
& Knowledgebase

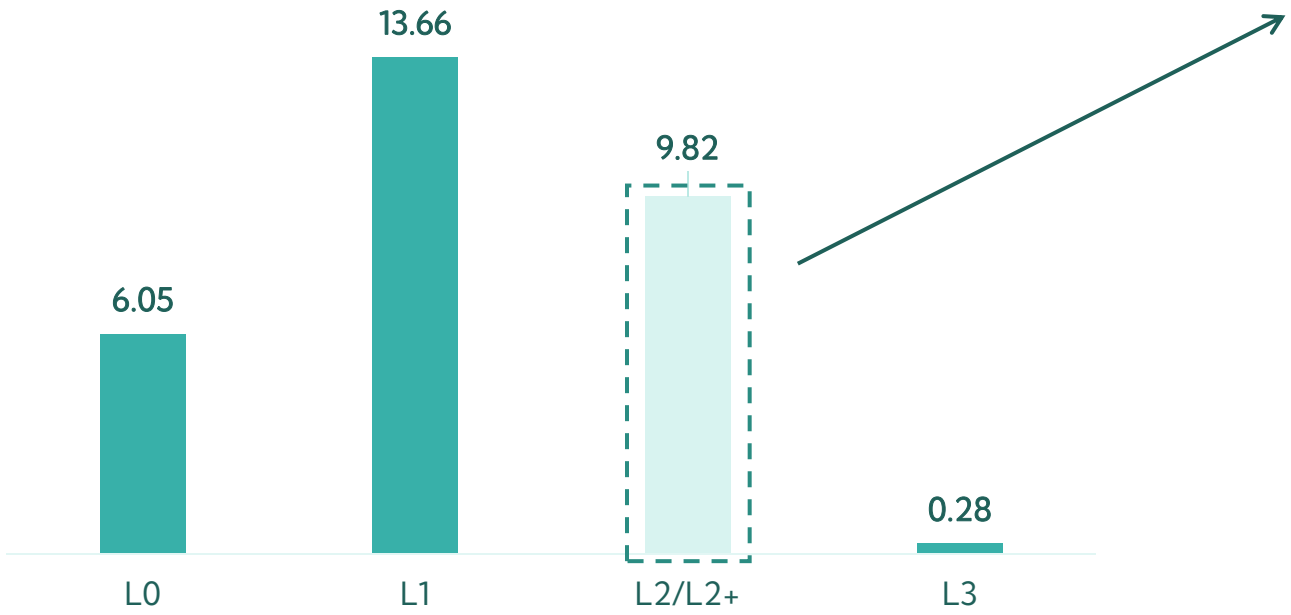
Automotive Camera
Market Research Report (2022 H1)

Passenger Vehicles

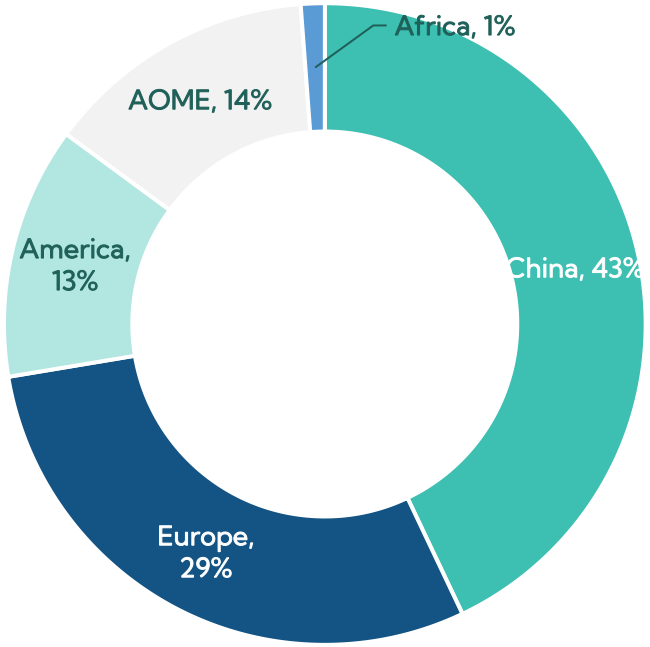
1.1 Passenger Car –Global (2022 H1)

ICV TAnK
Technology Advisory
& Knowledgebase

Automation-driving Car Sales (2022 H1) (unit in millions)



Sales of L2-Vehicles by Regions

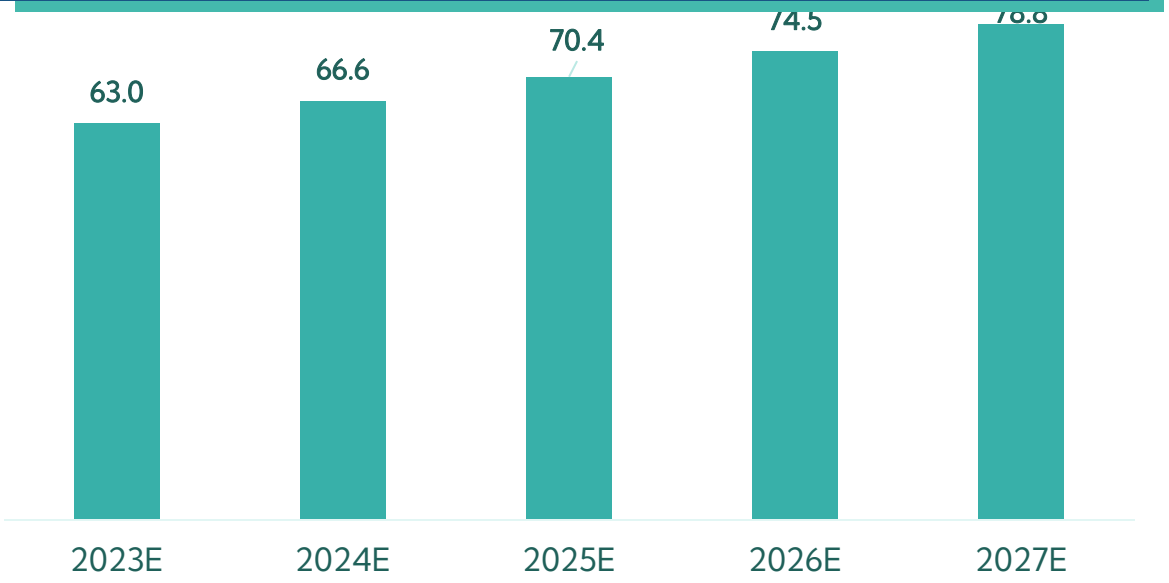


The sales of passenger cars are total of 29.8 million for the first half of 2022, with the vehicles which were equipped with L1 autonomy system accounting the highest proportion. As the mainstream automobile manufacturing countries are chasing for higher levels of automation-driving, this proportion will decrease gradually.

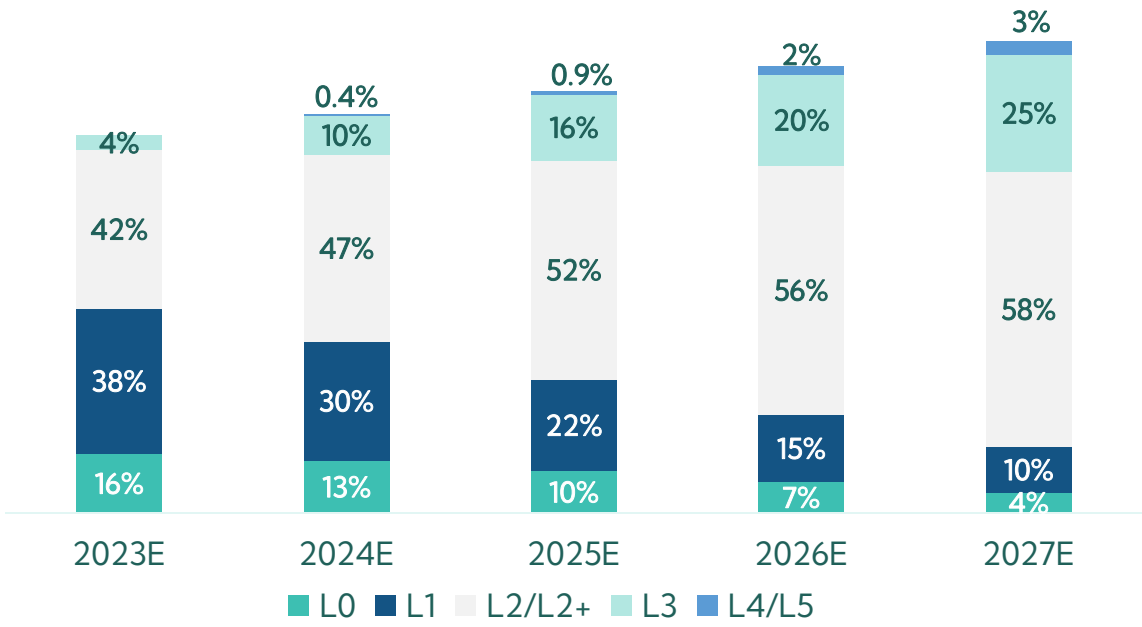
1.2 Passenger Car Forecasts –Global

ICV TAnK
Technology Advisory
& Knowledgebase

Passenger Car Sales Forecast (unit in millions)



Automation-driving Car Sales Forecast (23′~27′)



ICV estimated that, in 2023, the penetration of L2 might reach 50%. The vehicles who employ the L4 automation system are expected to hit the market in the same year.

Vehicles with L0/L1 automation system are expected to be replaced by vehicles equipped with L2/L2+ automation system, so that the penetration of L2/L2+ might be close to 60% in the year of 2027.

ICV TAnK
Technology Advisory
& Knowledgebase

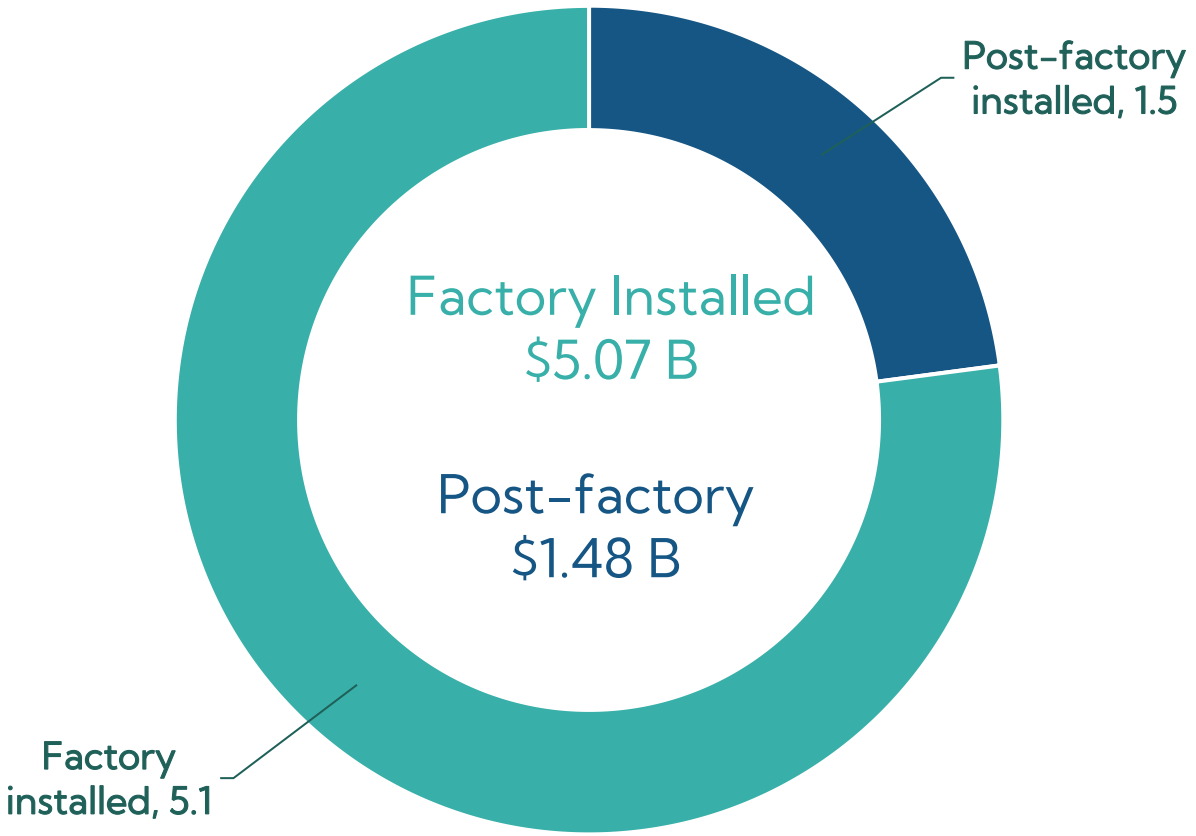
Automotive Camera
Market Research Report (2022 H1)

Automotive Cameras

2.1 Automotive Camera – Global (2022 H1)

ICV TAnK
Technology Advisory
& Knowledgebase

Market Size – Whole Market (2022 H1)



As a general automobile component, automotive camera has two main distribution channels. The Factory installed covers all five types of camera; the Post-factory installed includes two types of camera (rear view & front view) due to the nature of their workings.

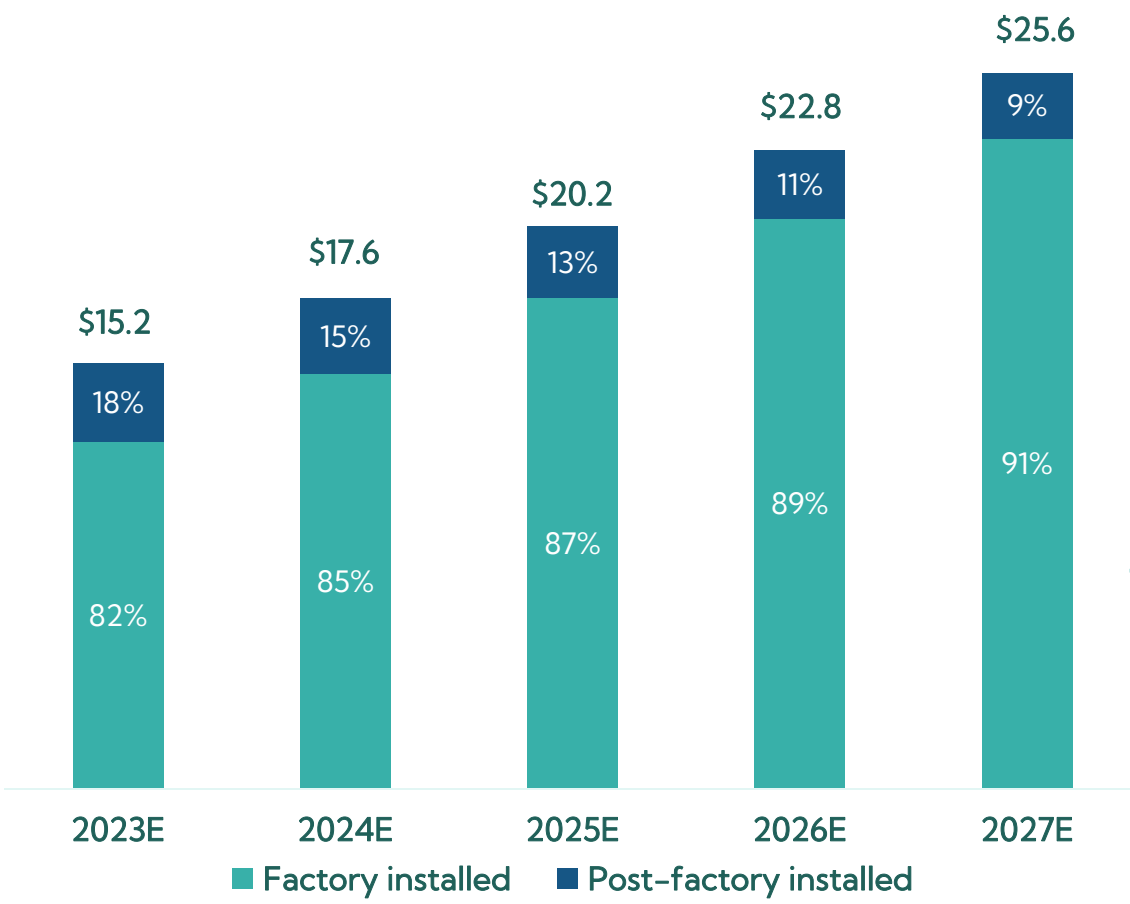
The interior cabin camera is not counted for the post-factory installed camera, since the Dash Camera was thought as consumer electronic product.

> For the first half of the year of 2022, the whole market of automotive camera had a value of $6.55 billion.

2.2 Automotive Camera Forecasts – Global

ICV TAnK
Technology Advisory
& Knowledgebase

Market Size Forecasts – Whole Market (23'~27') (USD in billions)



The increased demand on autonomous passenger vehicles would drive up the demand on the automotive cameras. ICV estimated that the whole market is worth $15.2 billion in 2023 and will get to $25.6 billion in 2027.

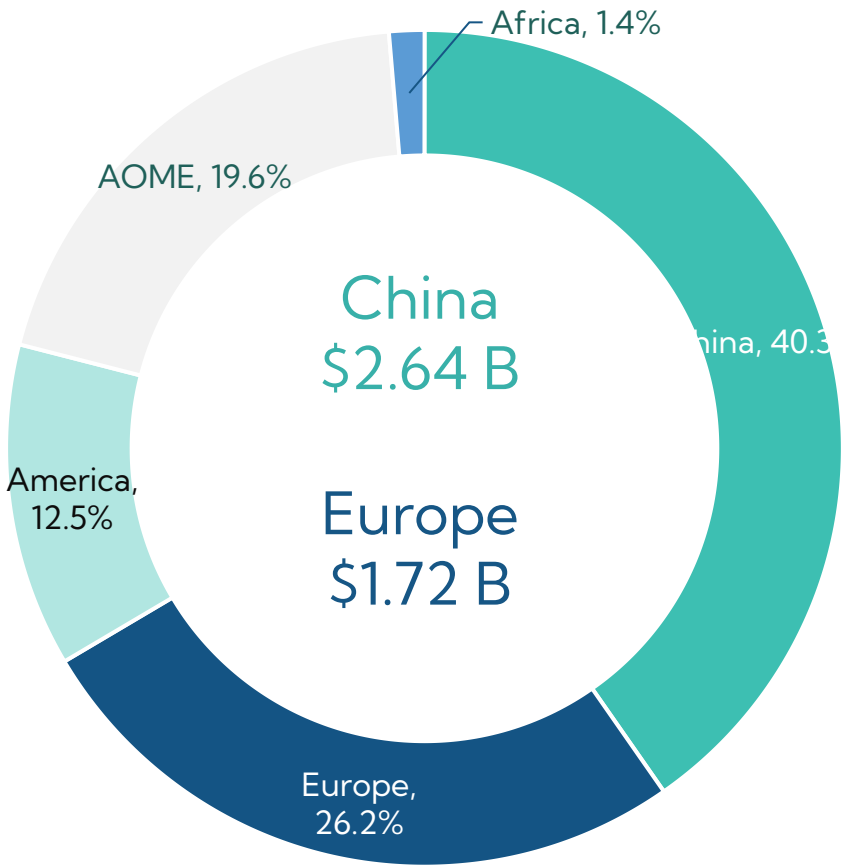
The sales of factory installed cameras are expected to be $12.5 billion in 2023, while the sales of post-factory installed cameras are $2.7 billion.

The proportion of post-factory installed cameras is estimated to have a decreasing trend through the projection period (from 18% to 9%). Because the number of vehicles with L0 and L1 automation system would decrease constantly in the future, so that the demand on post-factory installed cameras also would be less and less.

2.3 Market Segments – by Geography

ICV TAnK
Technology Advisory
& Knowledgebase

Market Size – Segments (2022 H1)



As mentioned before, ICV divided the global market into five sub-region markets, including China, Europe, America, AOME regions, and Africa.

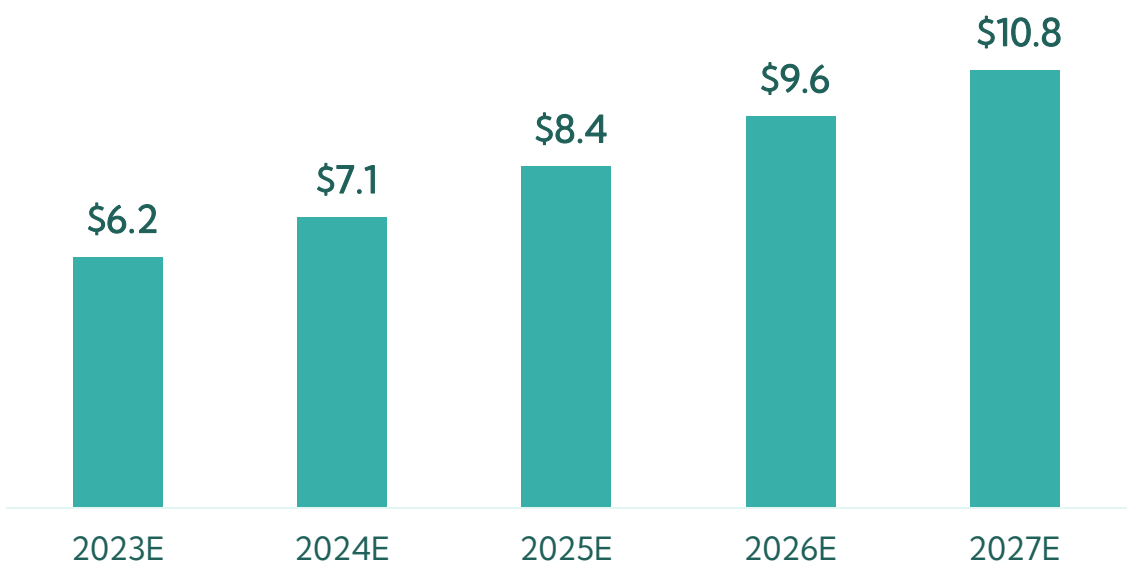
China got the largest market shares among the global market. The reason could be the rising of new car-making forces in China, such as NIO, Xpeng, etc. Except Tesla who is from North America, other regions have few automobile manufactures like those new car-making brands. This could also be reflected by the higher penetration rates of L2 in China.

ICV points out that the new car-making forces prefer to have more cameras on their models (e.g., Xpeng has total of 13 cameras on P7), to improve the capabilities of perception for automation-driving system.

2.4 Sub-Markets Forecasts

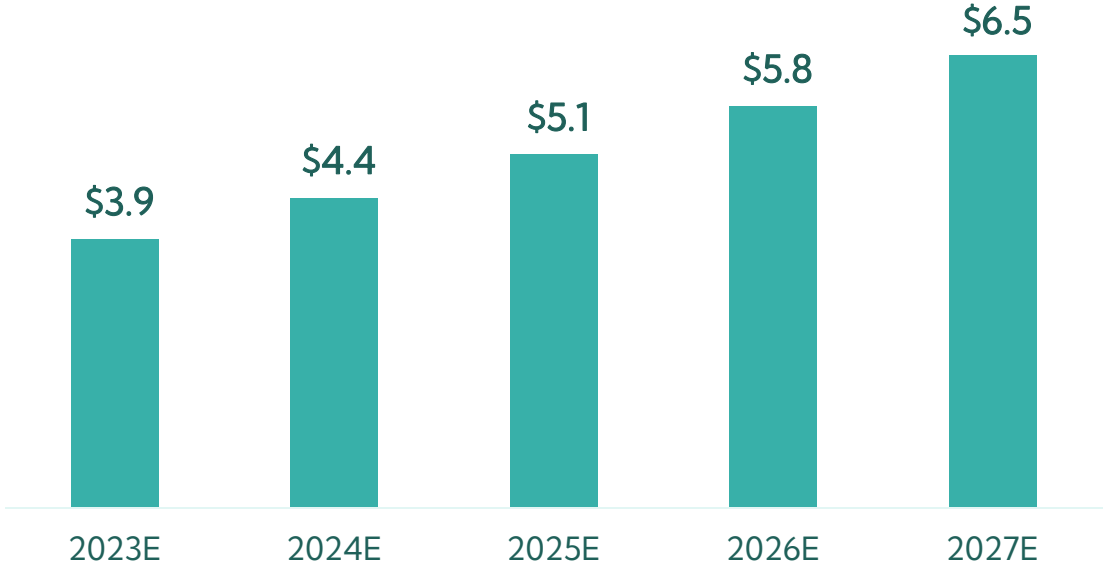
ICV TAnK
Technology Advisory
& Knowledgebase

Market Size of Automotive Cameras – China (USD in billions)



The market of automotive camera (a.k.a. optical image sensor) in China was estimated to worth $6.2 billion in 2023 and will get to $10.8 billion in 2027.

Market Size of Automotive Cameras – Europe (USD in billions)

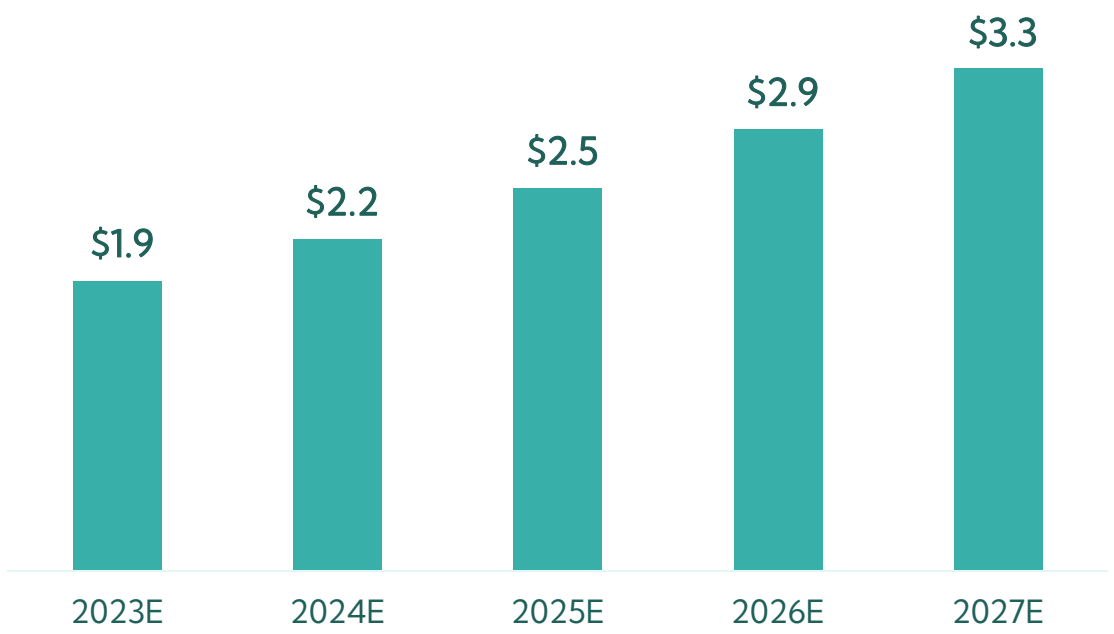


The market of automotive camera (a.k.a. optical image sensor) in Europe was estimated to worth $3.9 billion in 2023 and will get to $6.5 billion in 2027.

2.4 Sub-Markets Forecasts

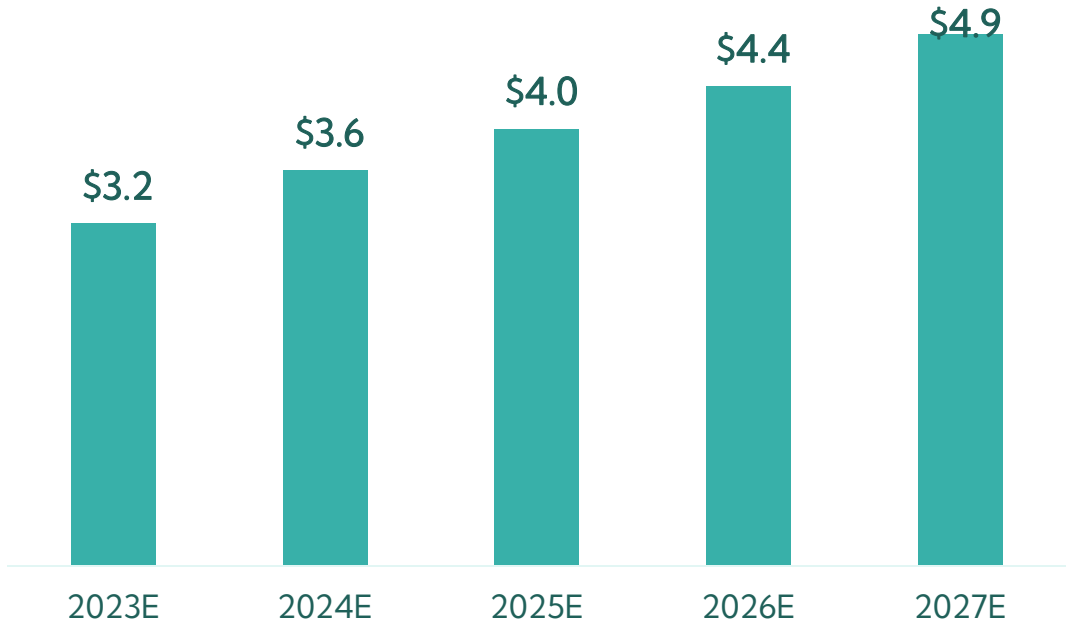
ICV TAnK
Technology Advisory
& Knowledgebase

Market Size of Automotive Cameras – America (USD in billions)



The market of automotive camera (a.k.a. optical image sensor) in America was estimated to worth $1.9 billion in 2023 and will get to $3.3 billion in 2027.

Market Size of Automotive Cameras – AOME (USD in billions)

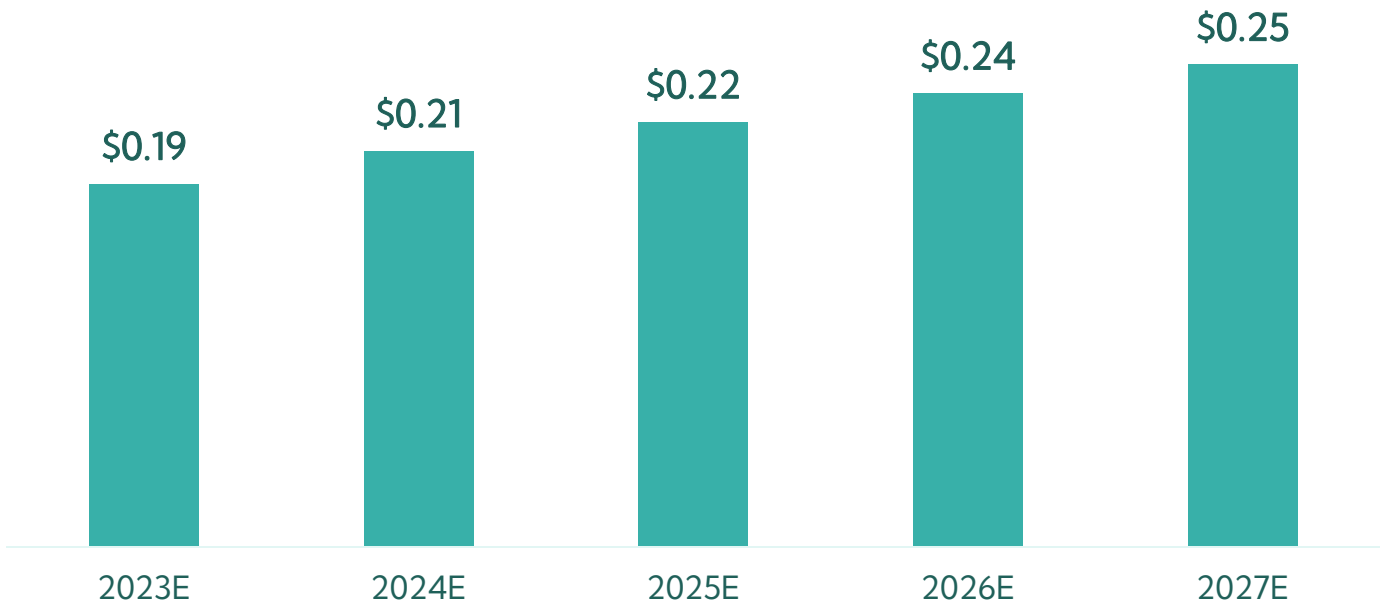


The market of automotive camera (a.k.a. optical image sensor) in Asia, Oceania, and Middle East region was estimated to worth $3.2 billion in 2022 and will get to $4.9 billion in 2027.

2.4 Sub-Markets Forecasts

ICV TAnK
Technology Advisory
& Knowledgebase

Market Size of Automotive Cameras – Africa (USD in billions)



The market of automotive camera (a.k.a. optical image sensor) in Africa was estimated to worth $0.19 billion in 2023 and will get to $0.25 billion in 2027.

ICV TAnK
Technology Advisory
& Knowledgebase

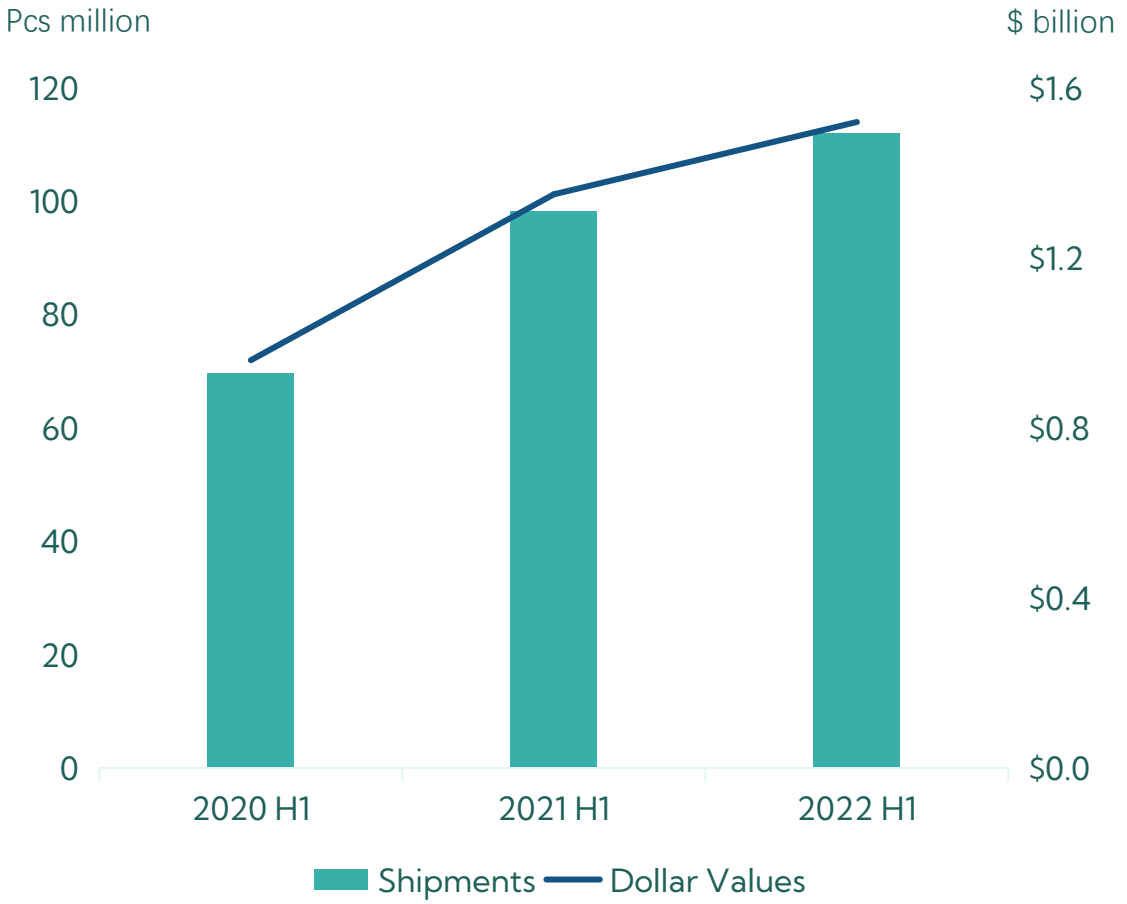
Automotive Camera
Market Research Report (2022 H1)

CMOS Image Sensors

3.1 Automotive CMOS Image Sensor – Global

ICV TAnK
Technology Advisory
& Knowledgebase

Shipments of Automotive CIS (piece in millions; USD in billions)



CMOS image sensor (CIS) is one of the core components for camera modules. Compared to another type of electronic image sensor (i.e., CCD sensor), CMOS image sensor has the advantage of price, resulting in lower overall costs of cameras.

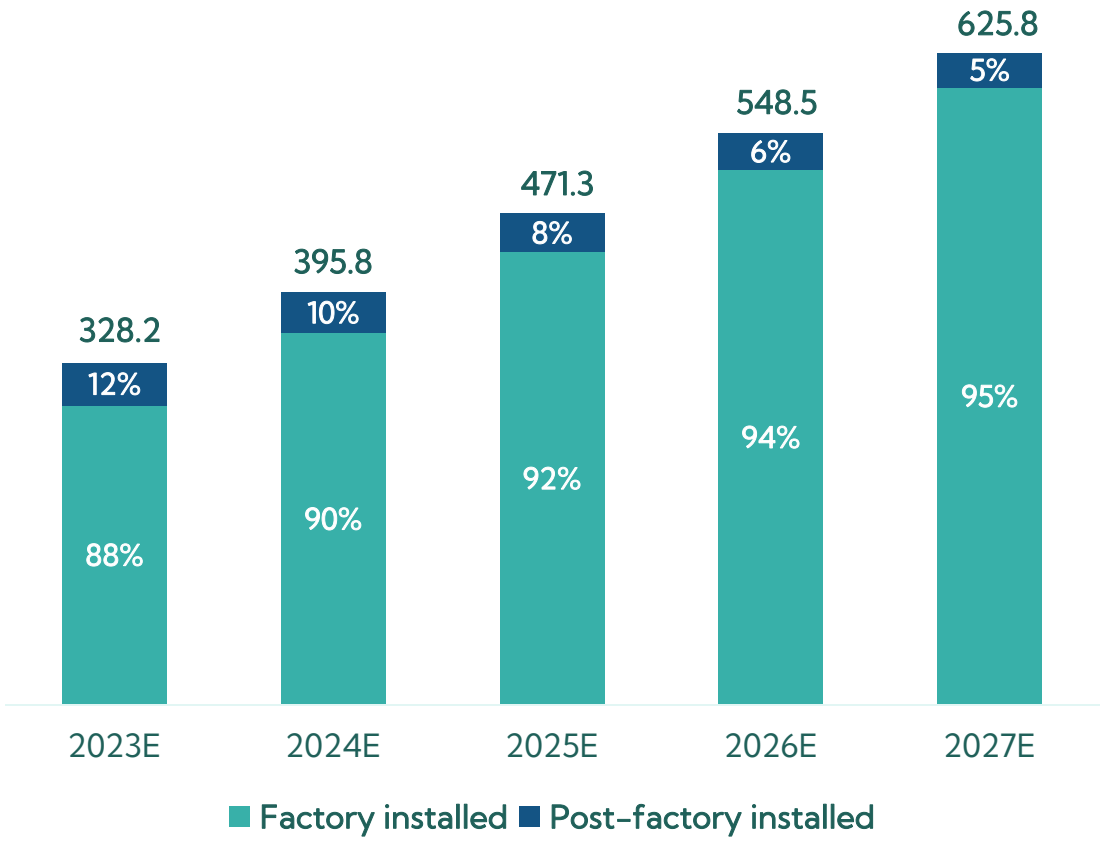
ICV noticed that, in 2021, the shortage of chips that was caused by global pandemic led to the price of CIS be higher than usual price. But it's expected to back to normal level in 2022.

For the first half of the year of 2022, the shipments of CIS reached 112 million, which increased by around 62% compared to the same period last year.

3.2 Automotive CIS Shipments Forecasts

ICV TAnK
Technology Advisory
& Knowledgebase

Shipments Forecasts – Whole Market (23′~27′) (piece in millions)



As the core component of cameras, the growing demand for the automotive cameras is expected to drive the growth of demand for the CMOS image sensors.

ICV estimated that the shipments of automotive CIS are 328.2 in 2023 and would grow to 625.8 million in 2027.

Being beneficial from the acceleration of driving automation, the market of auto-grade CIS is fast-growing. Existing industry players generally used to major in the business of consumer electronics, some of them developed automotive CIS products in recent years.

Contact Us

ICV TAnK
Technology Advisory
& Knowledgebase

At ICV we are passionately curious about New Technology, and we strive to deliver the most robust market data and insights, to help our customers make the right strategic decisions.

We bring together the deepest intelligence across the widest set of capital-intensive industries and markets. By connecting data across variables, our analysts and industry specialists present our customers with a richer, highly integrated view of their world.

That is the benefit of The New Intelligence. We are able to isolate cause and effect, risk andopportunity in new ways that empower our customers to make well-informed decisions with greater confidence.

100 King Street West, Suite 5600, Toronto, Ontario, Canada M5X 1C9

+1 909 247 5800

infer@icvtank.com