

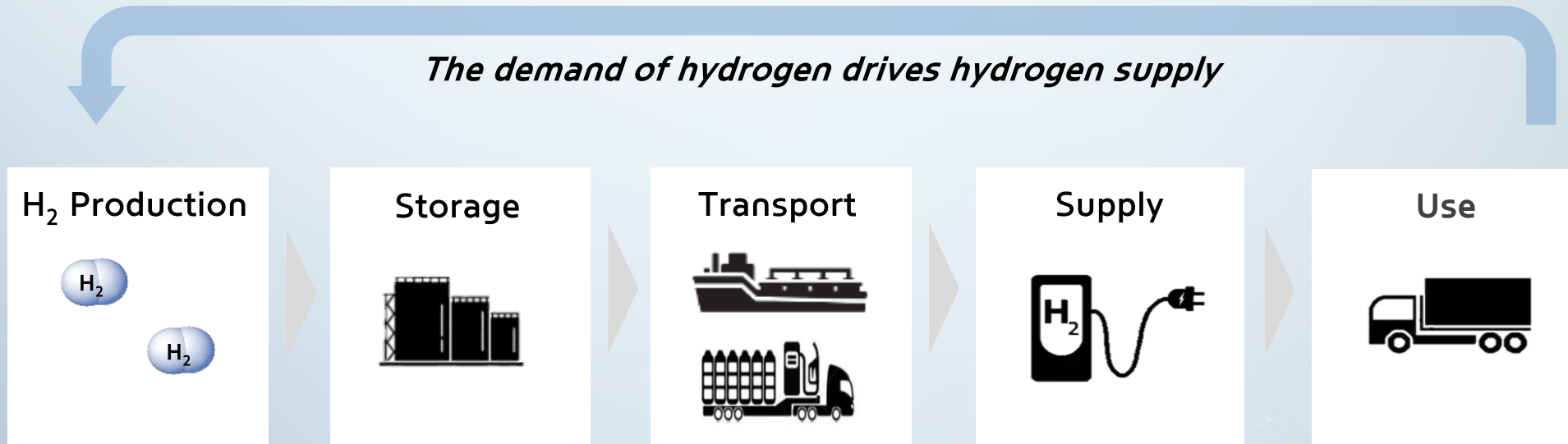


The Hydrogen Economy Vision in Korea

HYUNDAI MOTOR GROUP
Dongwook KIM (Executive Vice President)

The Hydrogen Economy

- The hydrogen economy has a wide value chain and cannot be achieved by the efforts of any single player
- It is important to balance the supply and demand of hydrogen step by step through cross-sector cooperation



※ Within each stage of hydrogen economy value chains, traditional major companies and new technology start-ups are growing up in competition.

Increased hydrogen supply makes the following steps cheaper

Hydrogen Mobility Business

- Hydrogen mobility companies are achieving economies of scale by adopting Fuel Cell to various vehicles
- Hyundai Motor Group is one of major players in hydrogen mobility business.

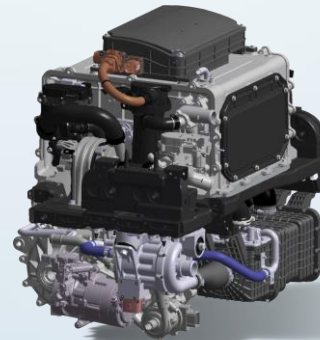
Passenger vehicle



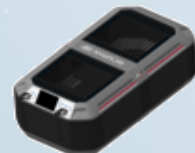
Commercial vehicle



Hydrogen Fuel Cell System



Power generator



Mobile generator



Stationary generator
('20.10~, demonstration projects, 500kWx2)

Air



Urban Air Mobility



Drone



Air Plane

Maritime



Private ship



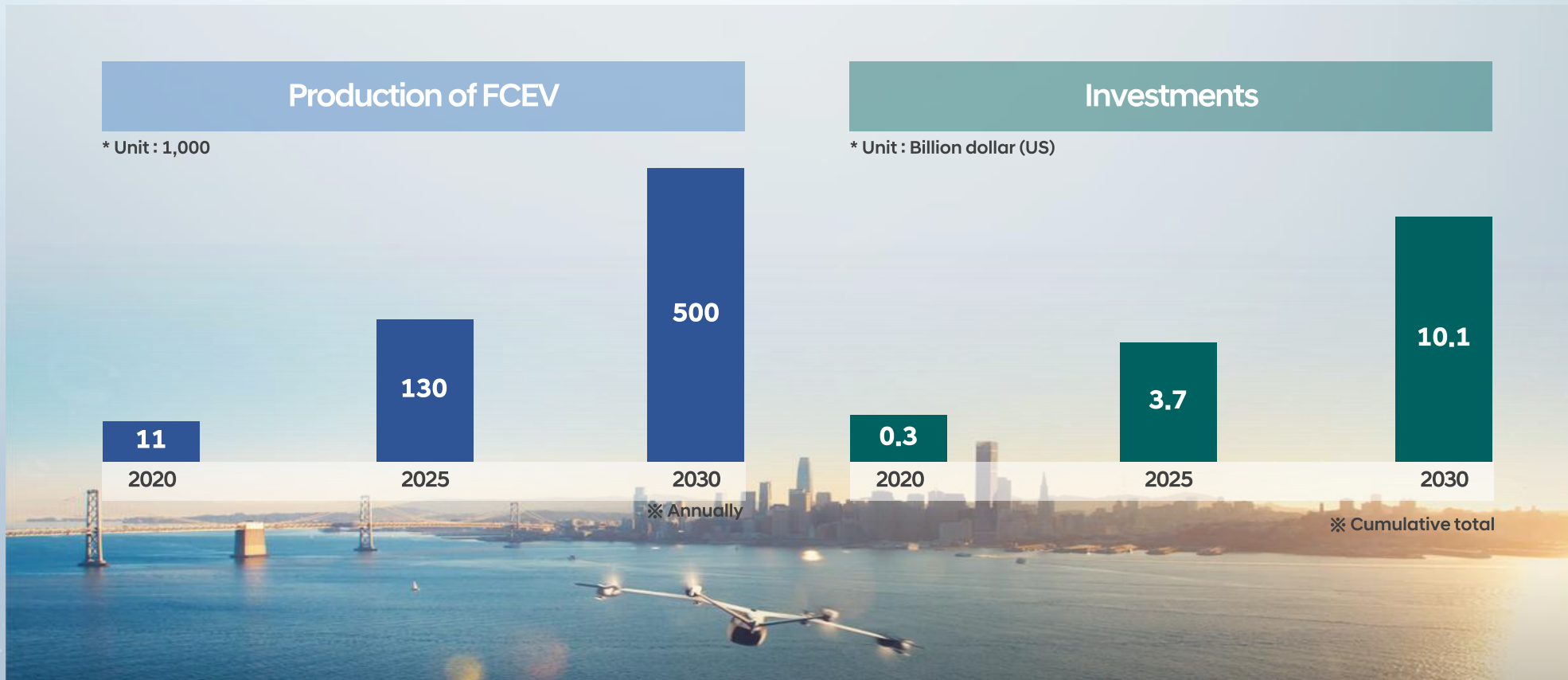
Cargo ship



Ferry






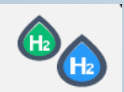
Hyundai Hydrogen Vision 2030

- Hyundai plans to invest \$10.1 billion by 2030 to take the lead of upcoming hydrogen economy.
- Plans to produce 500,000 hydrogen Vehicles by 2030 (700,000 Fuel Cell Systems)



Korea Hydrogen Roadmap

- Korean Government also unveiled “Hydrogen Economy Roadmap” including hydrogen-utilizing industries.
- Korea has the roadmap of “Hydrogen Economy” by 2040 including vehicles, HRS, industry, etc.

		2018	2030	2040
Vehicle		1,800 vehicles	0.8 million vehicles	6.2 million vehicles
HRS		14 units	660 units	1,200 units
Power Gen.		307MW	2.0GW	15GW
H2 Production		0.1 million tons / year	1.9 million tons / year	5.2 million tons / year
H2 price		\$7 / kg	\$3.5 / kg	\$2.5 / kg
		By-product hydrogen	By-product hydrogen Hydrogen extraction, Water electrolysis, Overseas production	By-product hydrogen Hydrogen extraction, Water electrolysis, Overseas production

A KEY FACTOR for the Hydrogen Economy : Government support system

- Cooperation between governments and private companies is essential for the future of hydrogen economy
- Especially, government role to balance the demand & supply of the hydrogen energy is the key factor to the “Hydrogen Economy Roadmap”

	Government support system	Korean government policy
Legal system	<ul style="list-style-type: none"> ▪ Enactment of legislation on deregulation and support policies for the hydrogen 	<ul style="list-style-type: none"> ▪ Enforcement of the Hydrogen Economy Act. ('21.2) <ul style="list-style-type: none"> - Government enact a comprehensive plan to activate hydrogen economy every 5 years - Establishment of “Hydrogen Economy Committee”
H2 Ecosystem	<ul style="list-style-type: none"> ▪ Developing the H2 ecosystem by increasing the demand in the hydrogen sector 	<ul style="list-style-type: none"> ▪ The government plans to implement the “HPS” to expand the use of hydrogen in the energy industry ('22~) <ul style="list-style-type: none"> * HPS : Hydrogen Energy Portfolio Standard, a mandatory quota for hydrogen power generation
Incentive	<ul style="list-style-type: none"> ▪ Tax and subsidy benefits for Hydrogen Mobility 	<ul style="list-style-type: none"> ▪ Tax benefits and subsidies for hydrogen passenger & commercial vehicles, and hydrogen fuel subsidies
Infrastructure	<ul style="list-style-type: none"> ▪ Expansion of Hydrogen charging infrastructure, storage and transportation systems 	<ul style="list-style-type: none"> ▪ Government supported companies to establish SPC(Special Purposed Company) , for expanding H2 charging stations in Korea <ul style="list-style-type: none"> - “Hynet” for passenger cars('18.11), “Kohygen” for commercial vehicles('21.3)
Clean hydrogen	<ul style="list-style-type: none"> ▪ Enlarging the supply of clean hydrogen energy 	<ul style="list-style-type: none"> ▪ Government R&D support for water electrolysis technology ▪ Need to clarify the scope of clean hydrogen (Green/Blue hydrogen)

Together for a better future

“As a first mover in the forthcoming hydrogen economy, we will lead a society that uses hydrogen as its main source of energy.”

