

# The success of the reefer container and its potential to influence the logistics chain



## Agenda

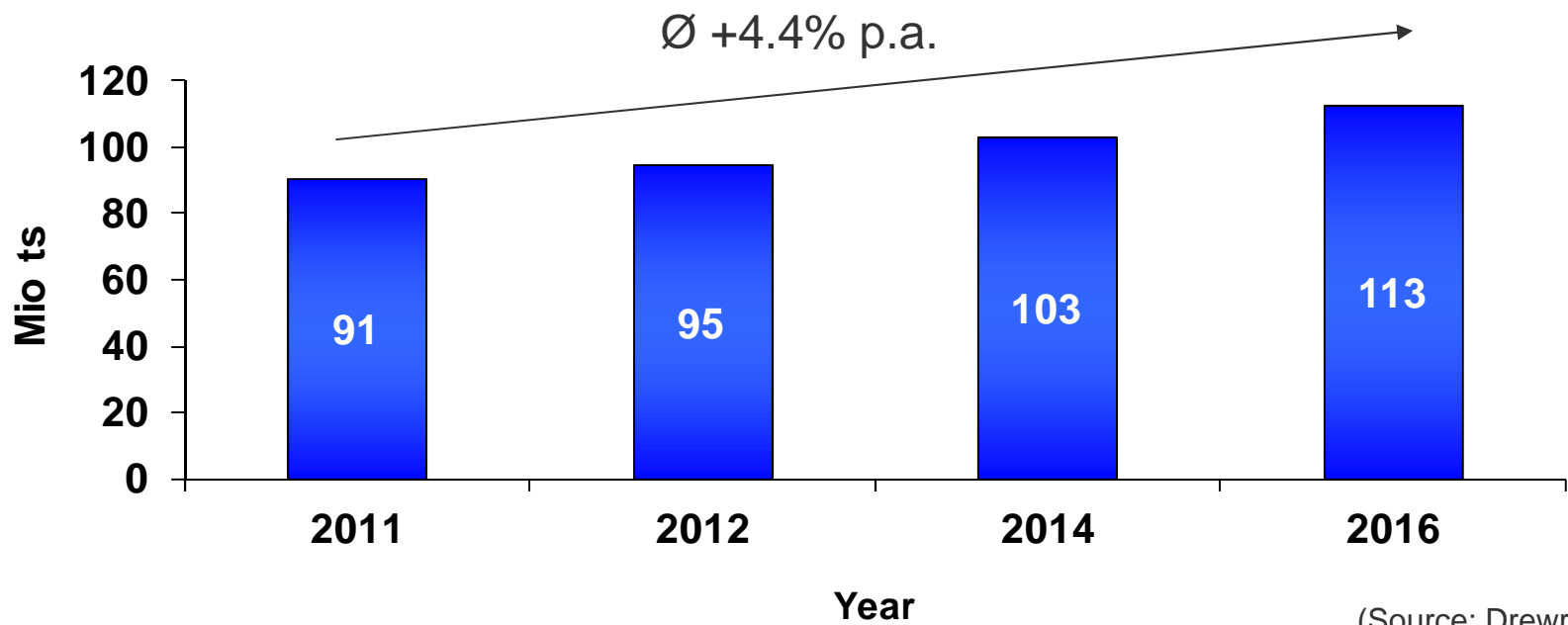
- 1 Reefer market
- 2 Reefer container fleet
- 3 Conventional vessels vs. reefer containers
- 4 Omnipresence
- 5 Economy of scale
- 6 Transport costs for reefer containers
- 7 Strengths and weaknesses of the container





## Reefer market

Global volume (in conventional and container vessels)

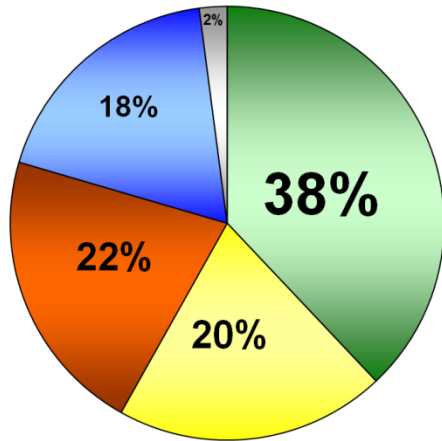


(Source: Drewry)



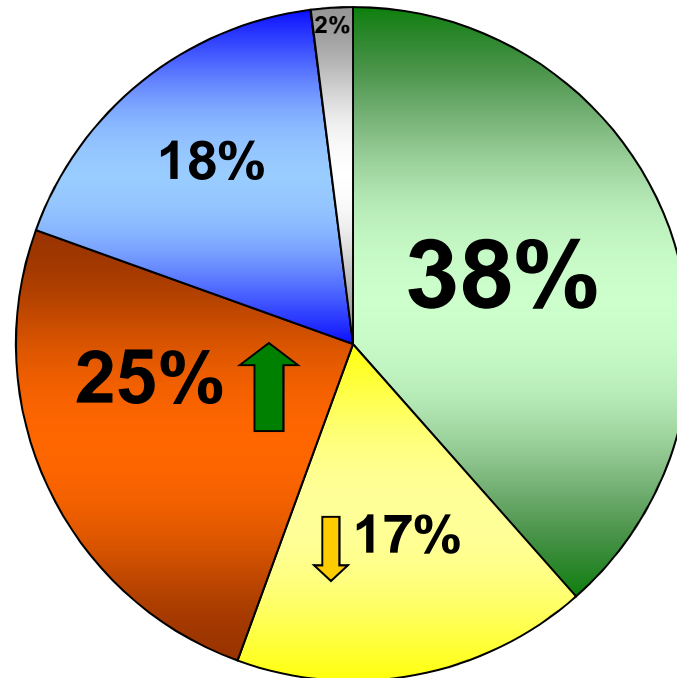
## Reefer market

Global seaborne cargo (91 mm tons for 2011)



2001

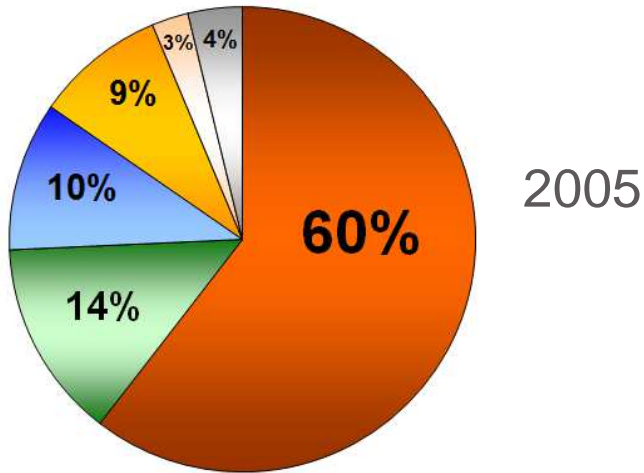
- Fruit & Vegetables (excl. bananas)
- Bananas
- Meat & Poultry
- Fish & Seafood
- Various



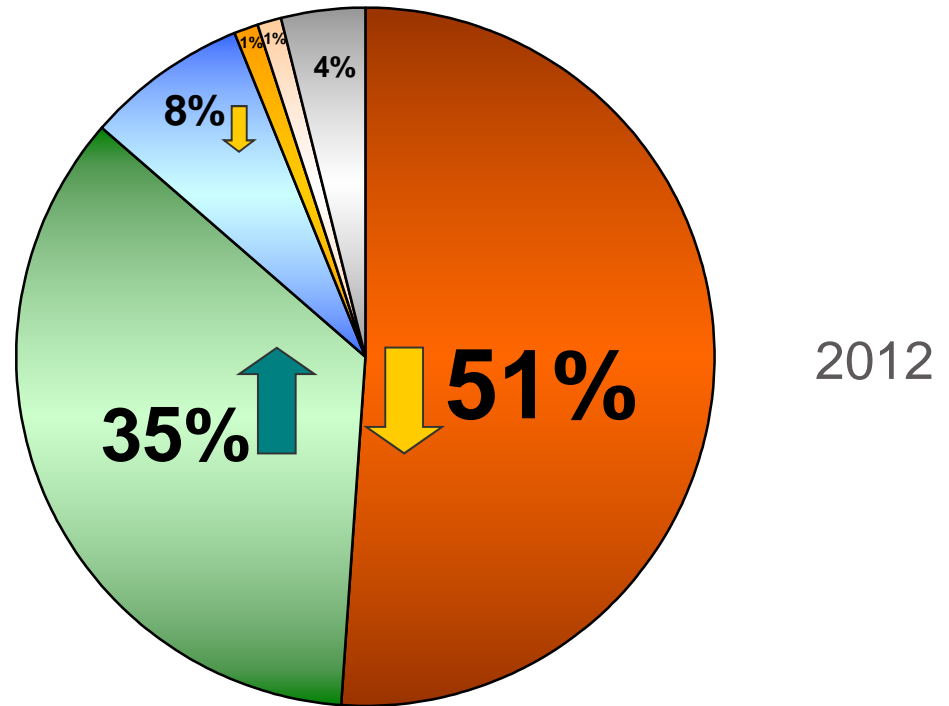
2011

(Source: Drewry)

**Reefer market**  
Hamburg Süd commodity split



- Meat & Poultry
- Fruit, Vegetables & Plants
- Fish & Seafood
- Juice
- Photographical Material & Chemicals
- Various



## Reefer container fleet Top 15 carriers

Carrier	Reefer (TEU)	Reefer as %age of Total Container Inventory	Total Container Inventory (TEU)
Maersk Line	470.100	12%	3.761.000
MSC	250.000	8%	3.000.000
CMA CGM	150.000	7%	2.100.000
<b>Hamburg Süd</b>	<b>( 4 ) 118.000</b>	<b>( 1 ) 17%</b>	<b>691.000</b>
APL	110.000	10%	1.100.000
Hapag-Lloyd	72.900	7%	1.042.000
CSAV	71.700	10%	712.000
Evergreen	57.000	5%	1.185.000
MOL	48.300	7%	690.000
OOCL	46.000	6%	730.000
NYK	41.000	6%	730.000
ZIM	38.400	6%	598.000
Hanjin	37.100	5%	723.900
China Shipping	30.000	3%	912.000
Coscon	28.000	3%	910.000
<b>Total</b>	<b>1.568.500</b>	<b>8%</b>	<b>18.884.900</b>

(Source: DynaLiners, early 2012)

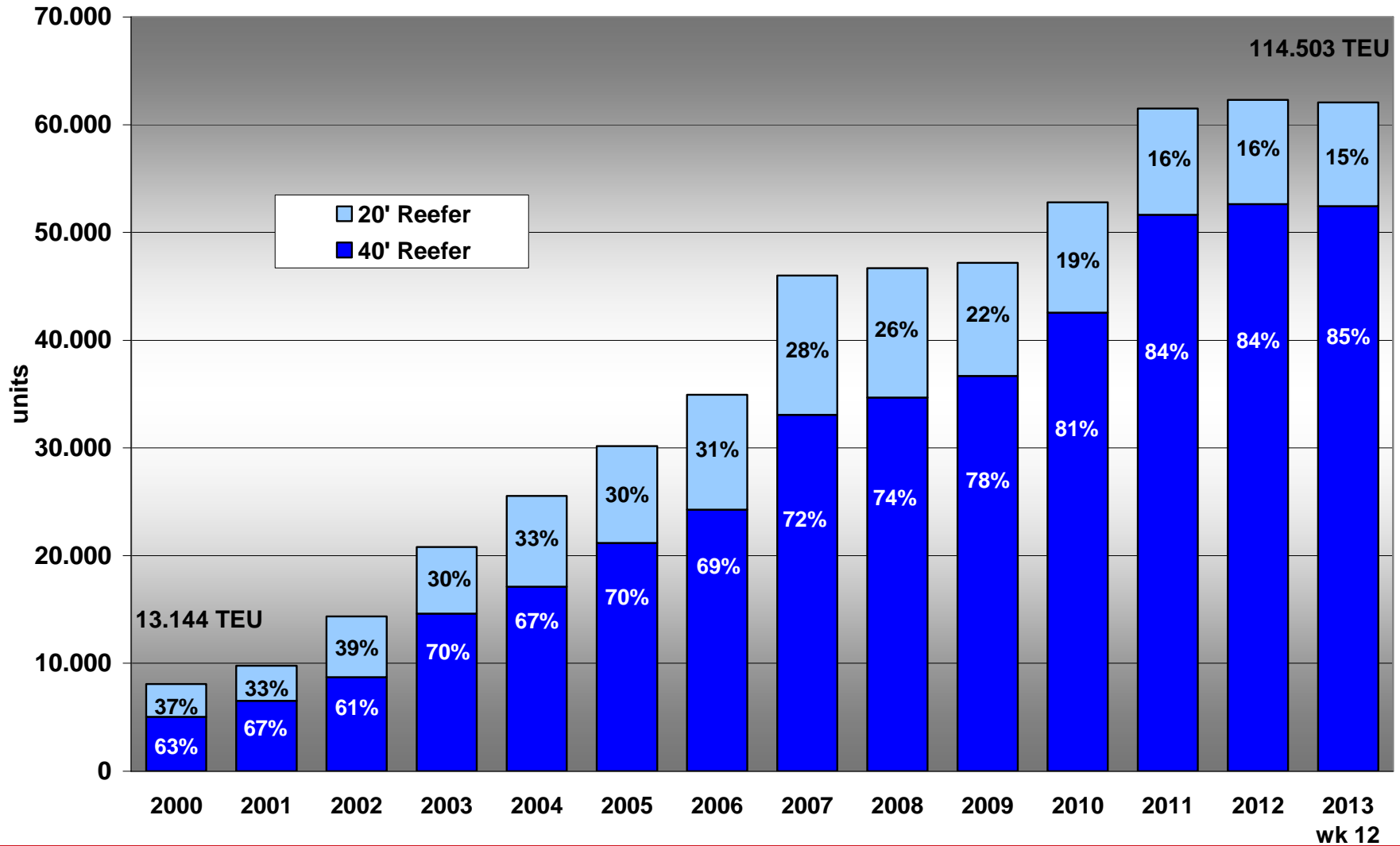


## Reefer container fleet

### Hamburg Süd ship size development

	Year	Class	Lenght (m)	Width (m)	Reefer Plugs (TEU)	Capacity (TEU)
	2013 / 14	Cap San	ca. 336	ca. 48.2	2,100	ca. 9,600
	2010 / 12	Santa	300	42.8	1,600	7,100
	2004 / 09	Monte / Rio	272 / 286.5	40	1,365	5,500 / 5,900
	2001 / 07	Cap San / Bahia	254	32	800	3,700

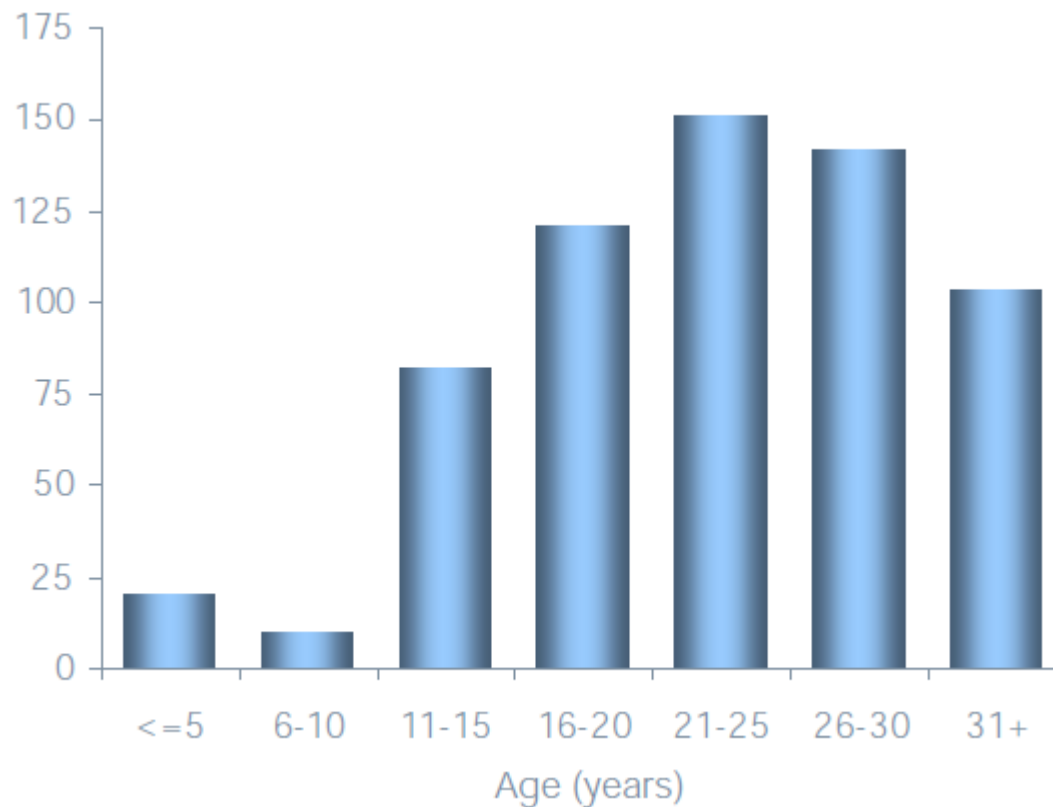
# Reefer container fleet Hamburg Süd 2000 - 2013





## Conventional vessels vs. reefer containers

Age Profile of conventional Reefer Fleet, Jan. 2012  
above 100,000cft [Number of Vessels]

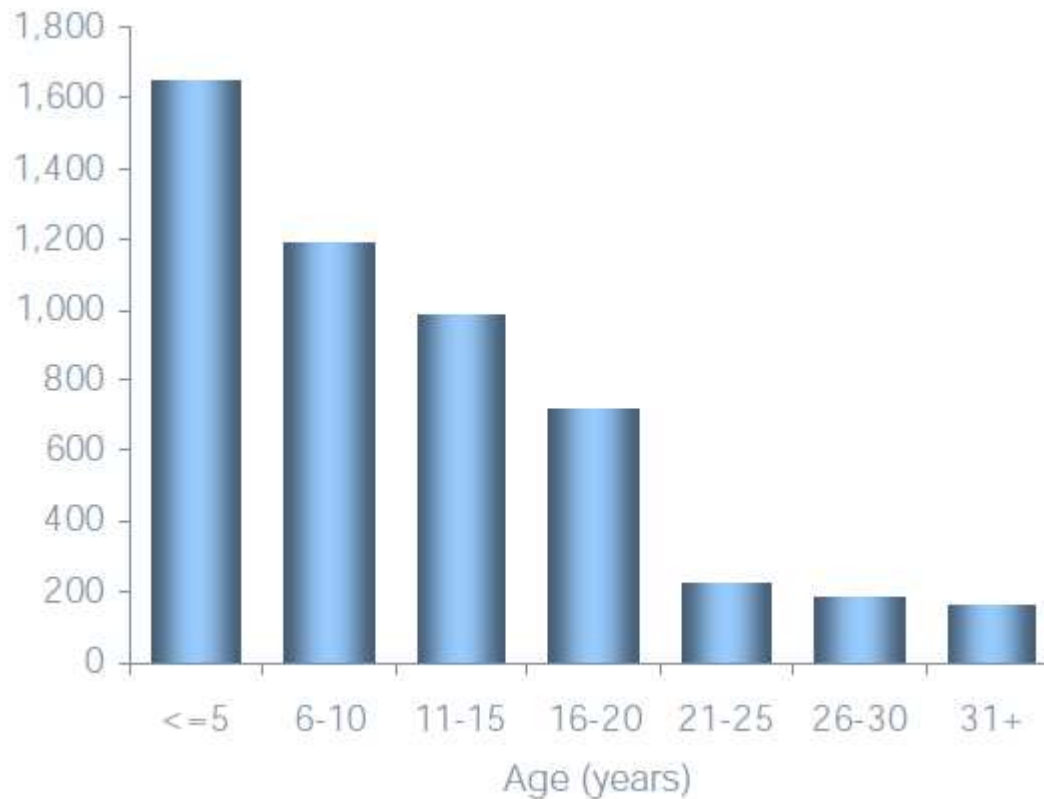


→ Average age of specialised reefer vessels: **23 years**

(Source: Drewry)

## Conventional vessels vs. reefer containers

Age Profile of Reefer Container Vessel Fleet, Jan. 2012  
[Number of Vessels]



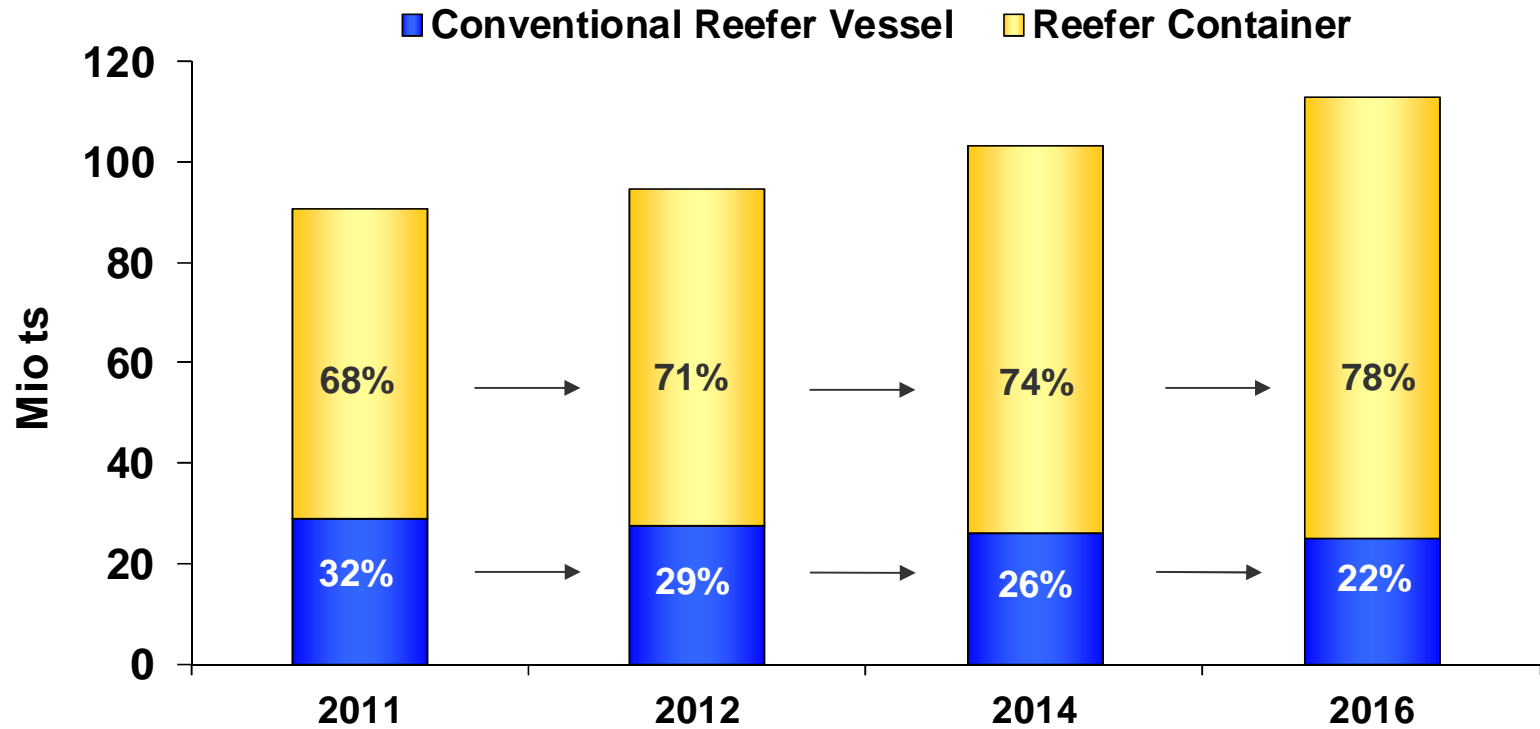
→ Average age of reefer container vessels: **11 years**

(Source: Drewry)



## Conventional vessels vs. reefer containers

Market shares container/ conventional

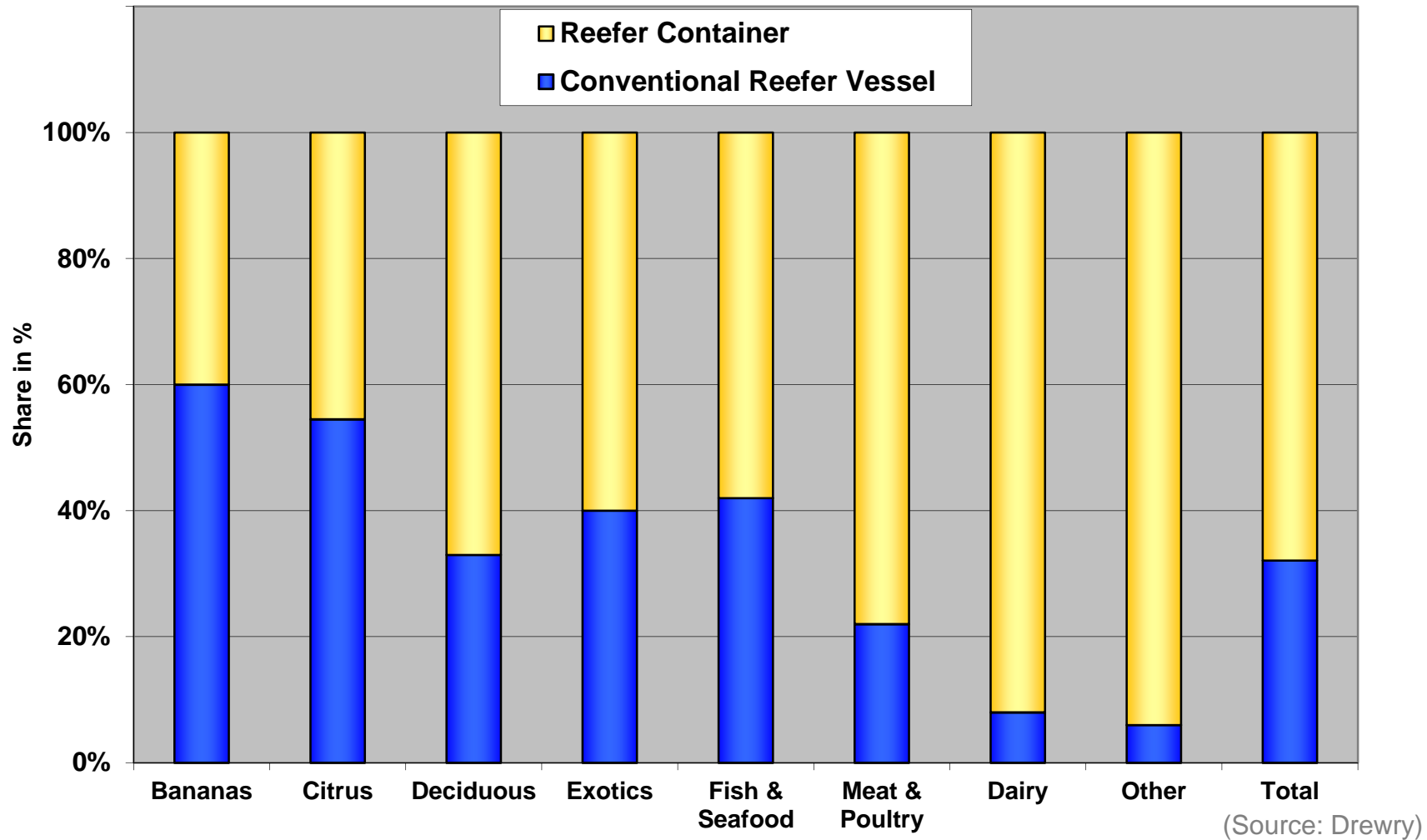


→ 2011-2016 Conventionals:  $\emptyset$  - 2.9% p.a.  
Containers:  $\emptyset$  + 7.3% p.a.



# Conventional vessels vs. reefer containers

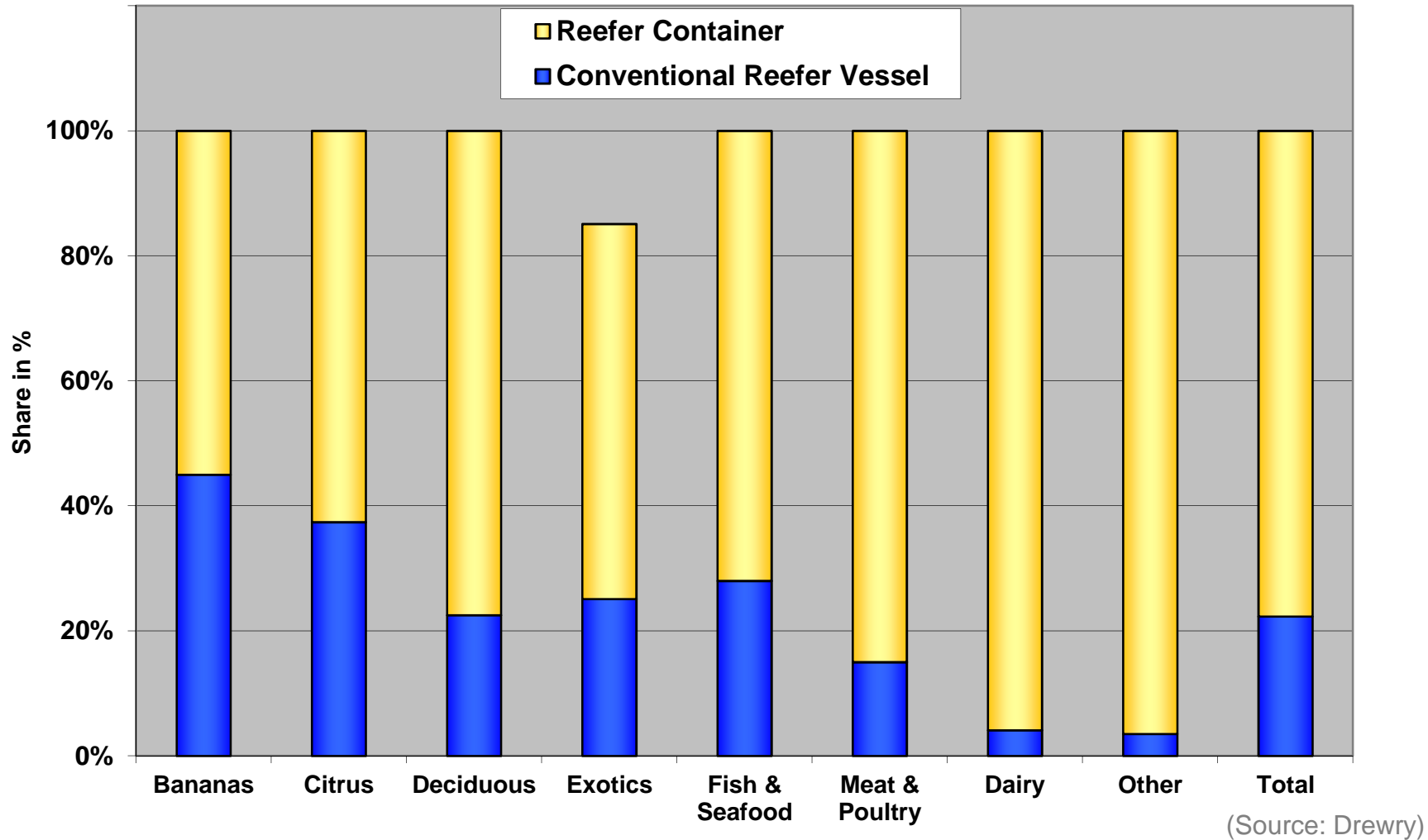
Market shares per commodity group 2011





## Conventional vessels vs. reefer containers

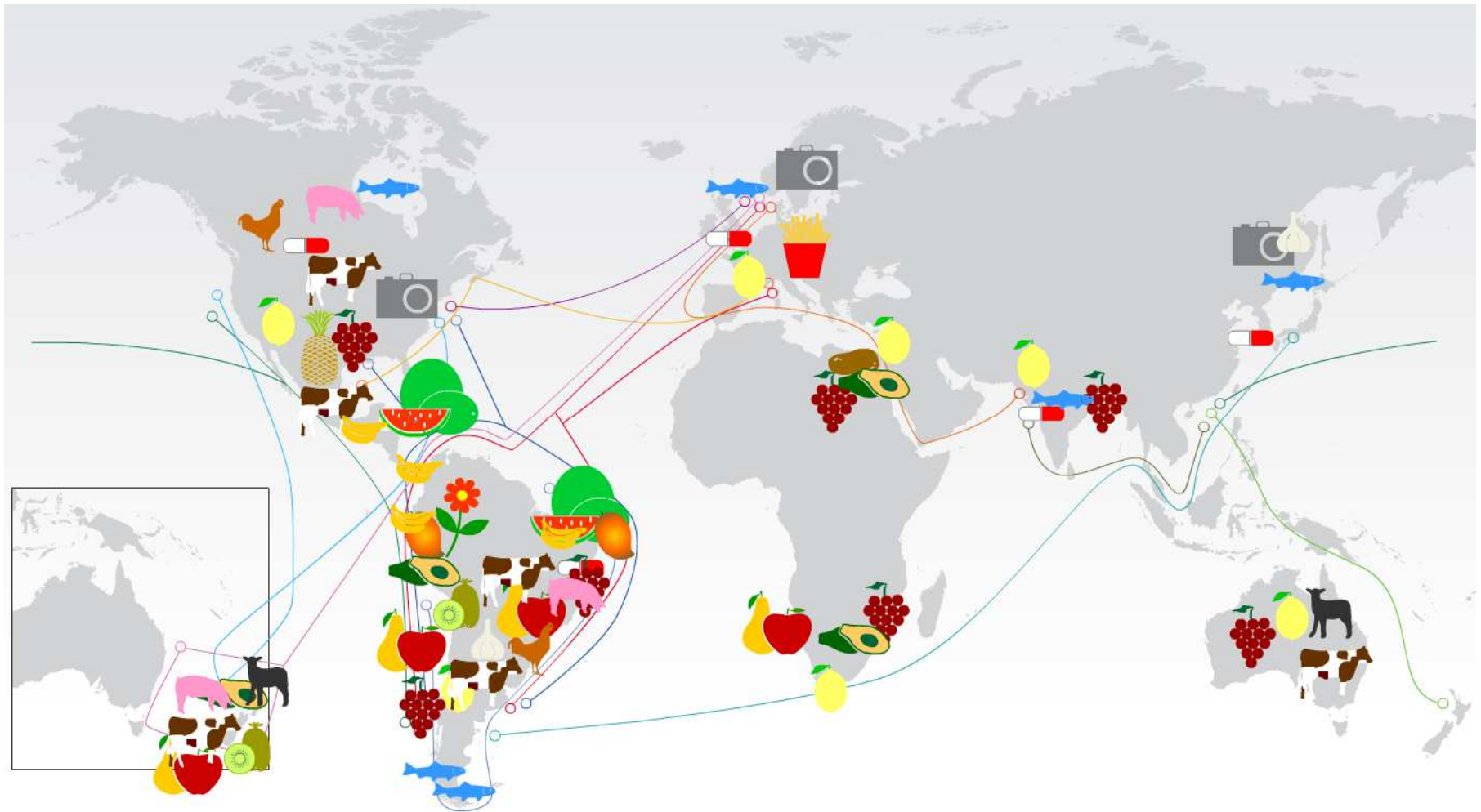
Market shares per commodity group 2016





# Omnipresence

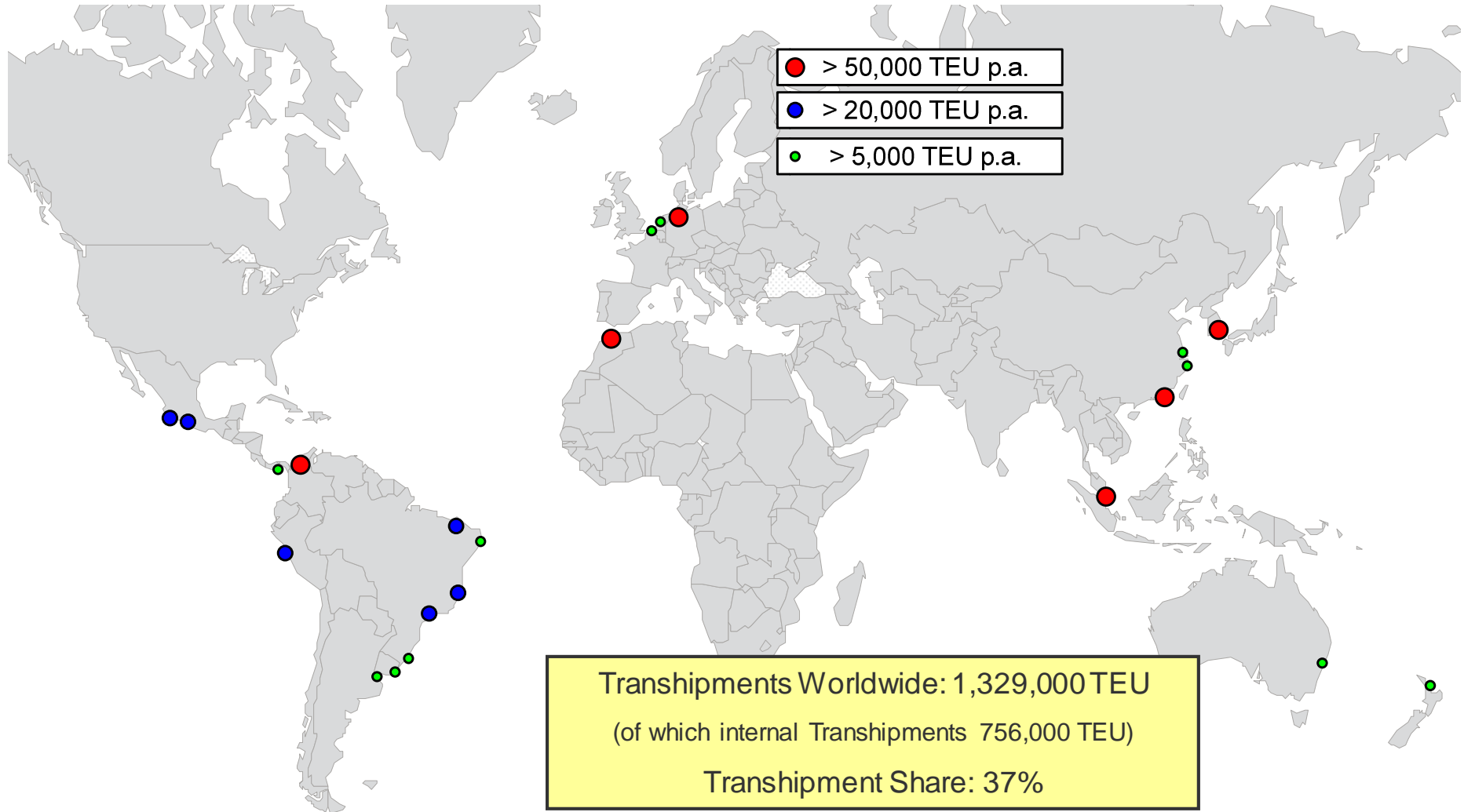
HS Container services are omnipresent





# Omnipresence

HS Multiplication through transshipment hubs in 2012

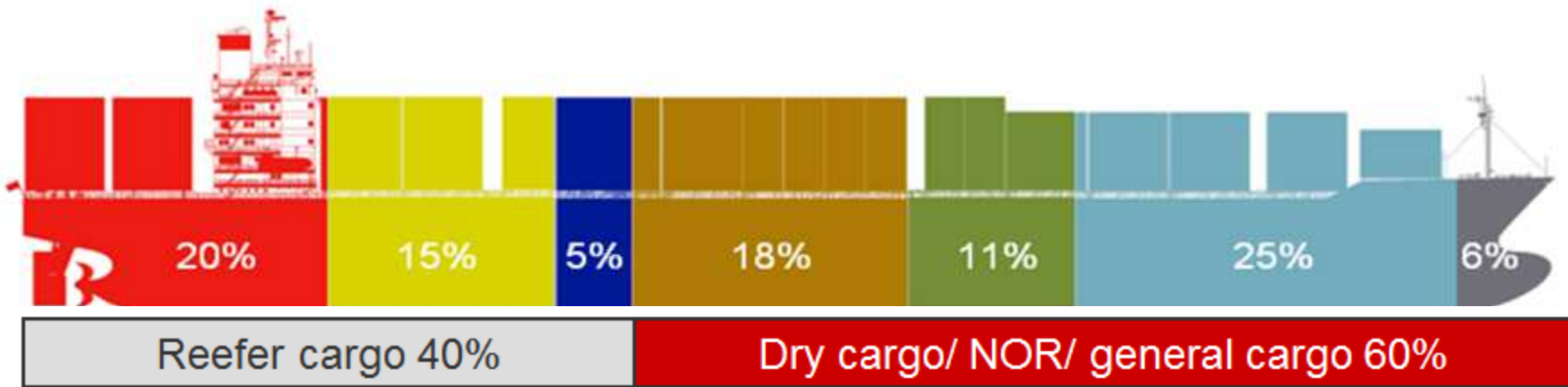











## Economy of scale

Versatility of a container ship

➔ Example: „Rio Class“ Vessel from South America to Europe



-  Meat (beef, poultry, pork)
-  Fruit and vegetables (apples, citrus, mangoes, juice, grapes)
-  Fish and seafood
-  Wood products (furniture, plywood, paper)
-  Coffee and tobacco
-  Car parts, steel products, agricultural products, chemicals, plastics
-  Other





## Economy of scale

➔ Dimensions of a „Santa Class“ Vessel vs. a large Reefer Vessel (approx.)

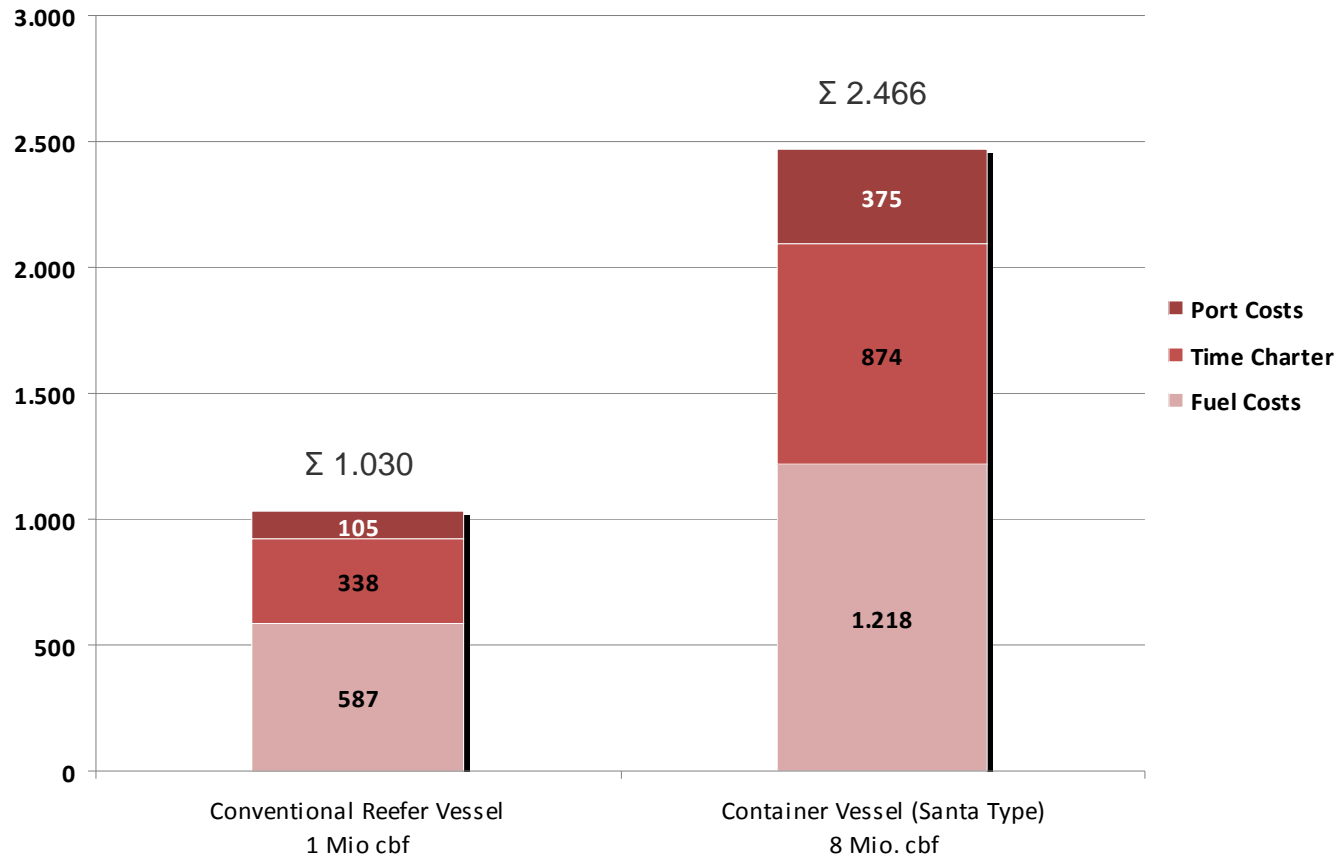




## Economy of scale

Voyage calculation Buenos Aires / Rotterdam

TUSD Conventional Reefer Vessel vs. Container Vessel (dry + reefer)



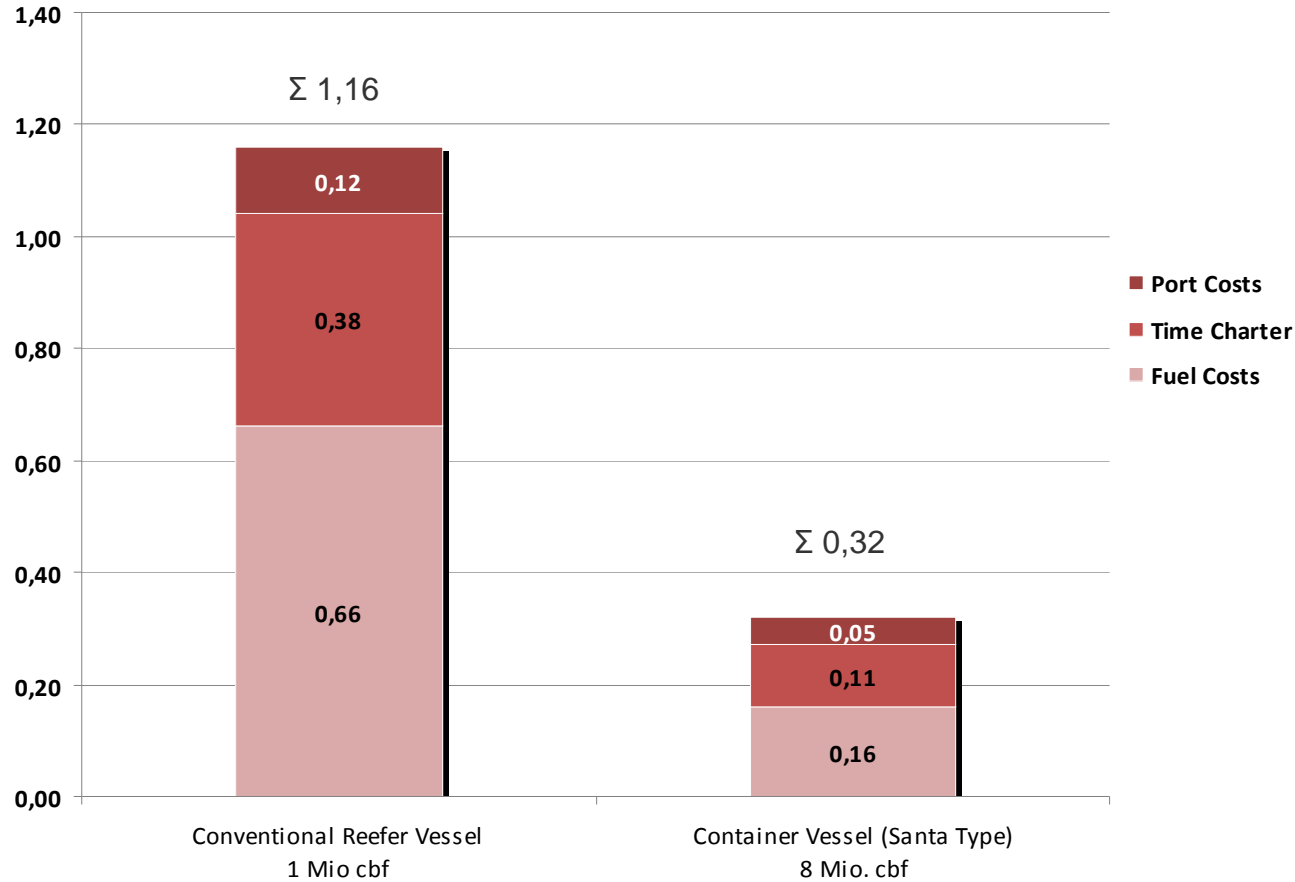


# Economy of scale

Voyage calculation Buenos Aires / Rotterdam

USD / cbf

Conventional Reefer Vessel vs. Container Vessel (dry + reefer)





## Economy of scale

The new „Cap San Class“ vessels



Container capacity: 9,600 TEU

Reefer capacity: 2,100 plugs

Overall length: 333.20 m

Width: 48.20 m

Max. draft: 14.00 m

Speed: 21 knots

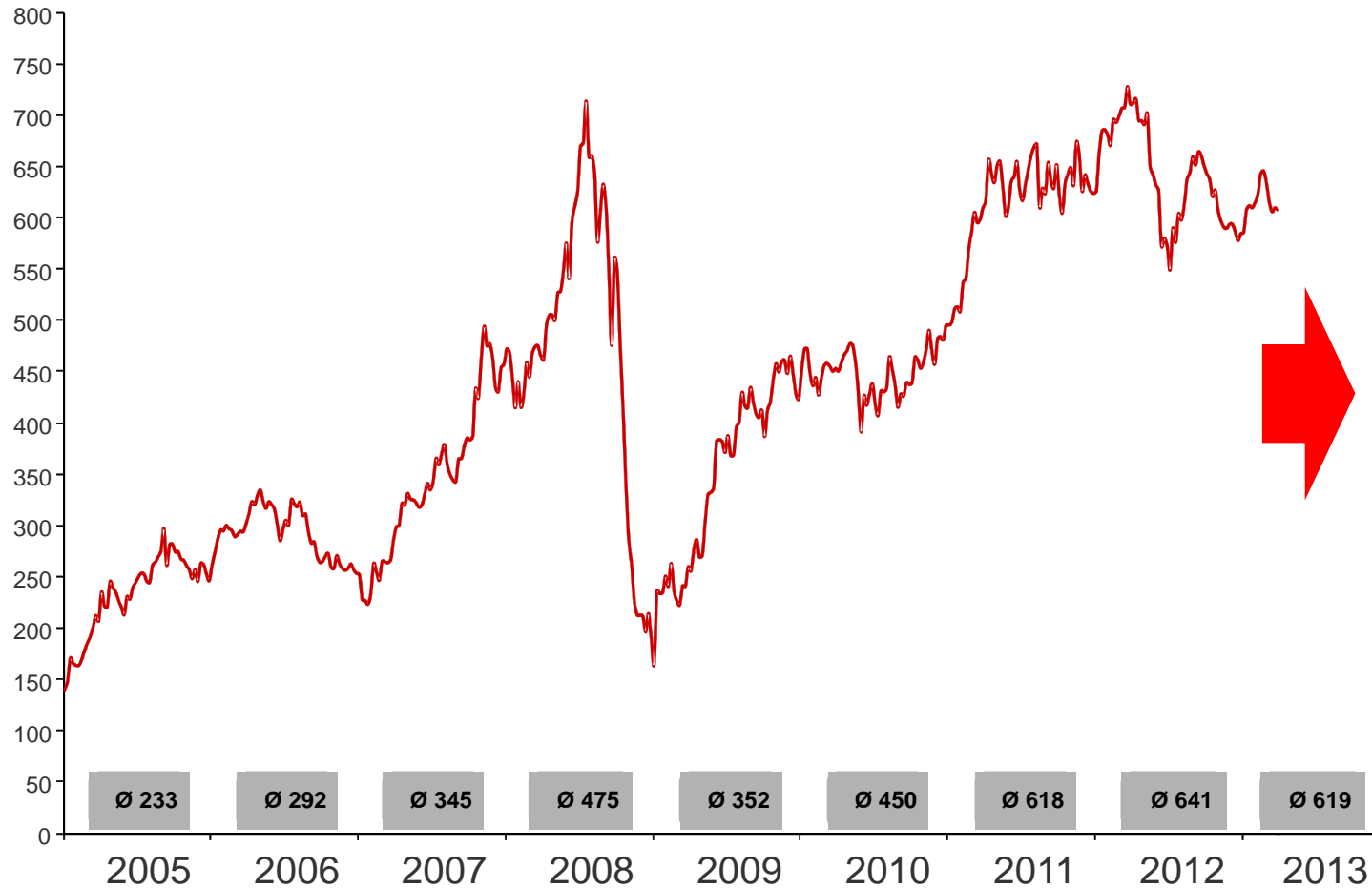
Cap San reefer carrying capacity vs.  
a modern conventional reefer vessel:

➔ 5 Mio. cbf vs. 1 Mio. cbf





## Transport costs for reefer containers (1) Bunker price development 2005-2013



### Impact for RF Segment

1. Higher cost for vessel main engine
2. Higher cost for auxilliary engines required to generate the electricity required for the RF container cooling onboard
3. Higher cost for pre-/on-carriage with active cooling



Source: Platts Oilgram Bunkerwire; IFO 380 Basis Rotterdam



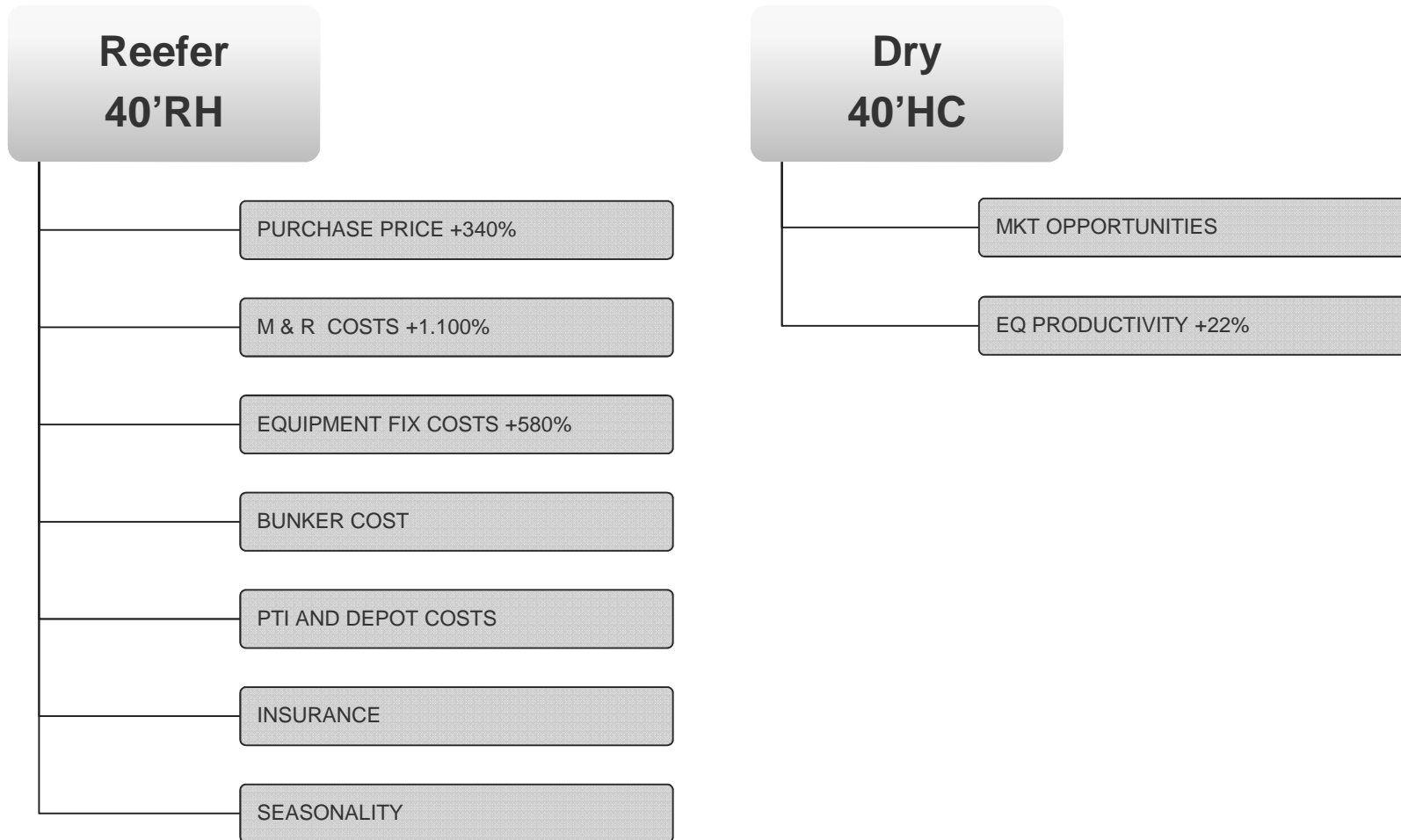
## ■ ■ Transport costs for reefer containers (2) Purchasing costs for reefer containers

- Cost of a 40'RH in absolute terms: 17,500 USD
- Current 40'RH Hamburg Süd Reefer fleet: 52,000 units
- Annual ratio of equipment replacement: 8.33%



Annual replacement capital expenditure (1st year): 75.8 Mio USD  
Assuming an add. annual fleet growth of 5%: 45.5 Mio USD/year  
**Total reefer equipment costs per year: 121.3 Mio USD**

## Transport costs for reefer containers (3) Opportunity Cost Analysis



## Transport costs for reefer containers (3)

### Opportunity Cost Analysis (continued)

	CARGO SELECTION ANALYSIS	40' DRY Peanuts BUE-RTM	40' REEFER Pears BUE-RTM	CHOICE
2012	A) Revenue* based <small>Equivalent to Ocean freight incl. BAF</small>	USD 1.920 USD 1.500	USD 3.530 USD 3.000	REEFER
	B) Contribution based <u>before</u> fuel costs <u>and</u> equipment repositioning	x	✓	REEFER
	C) Contribution based <u>after</u> fuel costs but <u>before</u> empty repositioning	x	✓	REEFER
	D) Contribution based <u>after</u> fuel costs <u>and</u> empty repositioning	✓	x	DRY
	Average equipment productivity per year (index)	122	100	
	<b>E) Contribution based <u>after</u> fuel costs <u>and</u> empty repositioning p.a.</b>	<b>100</b>	<b>67</b>	<b>DRY</b>
2013	A) Revenue* based <small>Equivalent to Ocean freight incl. BAF</small>	USD 1.920 USD 1.500	USD 4.730 USD 4.200	REEFER
	B) Contribution based <u>before</u> fuel costs <u>and</u> equipment repositioning	x	✓	REEFER
	C) Contribution based <u>after</u> fuel costs but <u>before</u> empty repositioning	x	✓	REEFER
	D) Contribution based <u>after</u> fuel costs <u>and</u> empty repositioning	x	✓	REEFER
	Average equipment productivity per year (index)	122	100	
	<b>E) Contribution based <u>after</u> fuel costs <u>and</u> empty repositioning p.a.</b>	<b>100</b>	<b>120</b>	<b>REEFER</b>



\* Ocean Freight incl. BAF, LTHC, DTHC



## Transport costs for reefer containers (3)

### Opportunity Cost Analysis (continued)

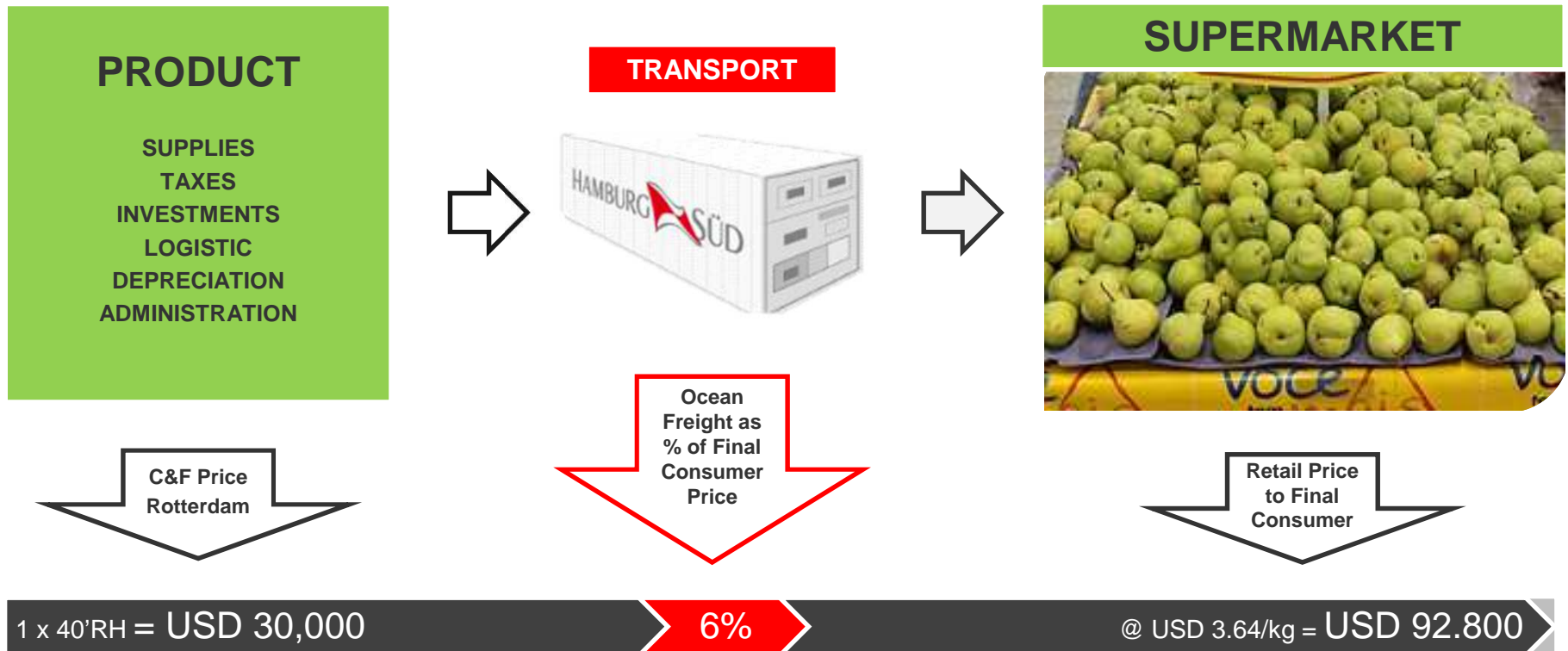
In USD per 40'RF for Chilled Fruit	RTM Rotterdam	STP St. Petersburg	PHL Philadelphia	SIN Singapore	SSZ Santos
<b>Chile Base Ports</b>					
Peak-Season	\$6,400	\$7,600	\$4,700	\$6,400	\$4,000
Off-Peak	\$4,700	\$5,900		\$4,500	
<b>South Africa Base Ports</b>					
	\$6,000	\$6,500	\$6,500	\$3,600	\$4,600
<b>Brazil Base Ports</b>					
Peak-Season	\$4,000	\$5,000	\$4,300	\$3,000	N/A
Off-Peak			\$6,100		
<b>Australia/New Zealand Base Ports</b>					
	\$7,200	\$8,500	\$7,000	\$4,100	\$5,600

*Rates are indications of the levels applied during 2013*

*Rates are inclusive of BAF but subject to origin and destination charges*

*Rates are net of any discount or volume rebate*

**Transport costs for reefer containers (4)**  
 Ocean Freight in the context of the overall value chain



## Strengths and weaknesses of the container

Feature	Reefer Vessel	Reefer Container
Short transit times due to limited calls	Yes	No
Fumigation aboard (USDA)	Yes	No
Open sea exchange (vessel to vessel, for fish)	Yes	No
<b>Intermodal advantages:</b>		
Door-to-door steering → Higher flexibility	No	Yes
No intermediate cargo storage → Reduced costs	No	Yes
Minimized handling → Less claims	No	Yes
Unbroken cold chain → Less claims	No	Yes
Fixed-day-service (Liner schedule)	No (partly)	Yes
Suited for small lots (e.g. air cargo)	No	Yes



Thank you for your attention!

