

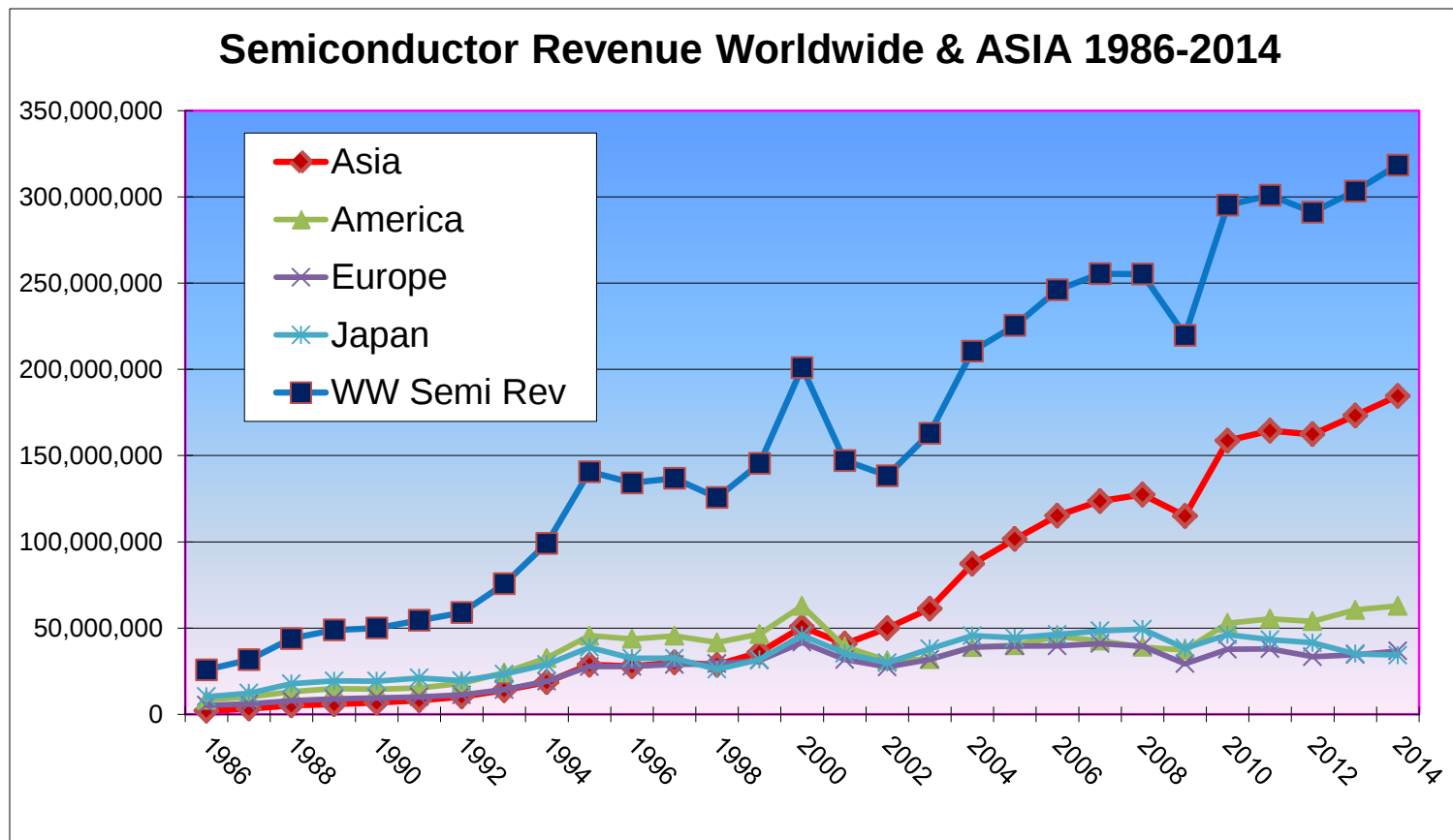


TỔNG CÔNG TY CÔNG NGHIỆP SÀI GÒN
TRÁCH NHIỆM HỮU HẠN MỘT THÀNH VIÊN

IC WAFER-FAB PROJECT

Sep 2014

Overview of the World Semiconductor Market

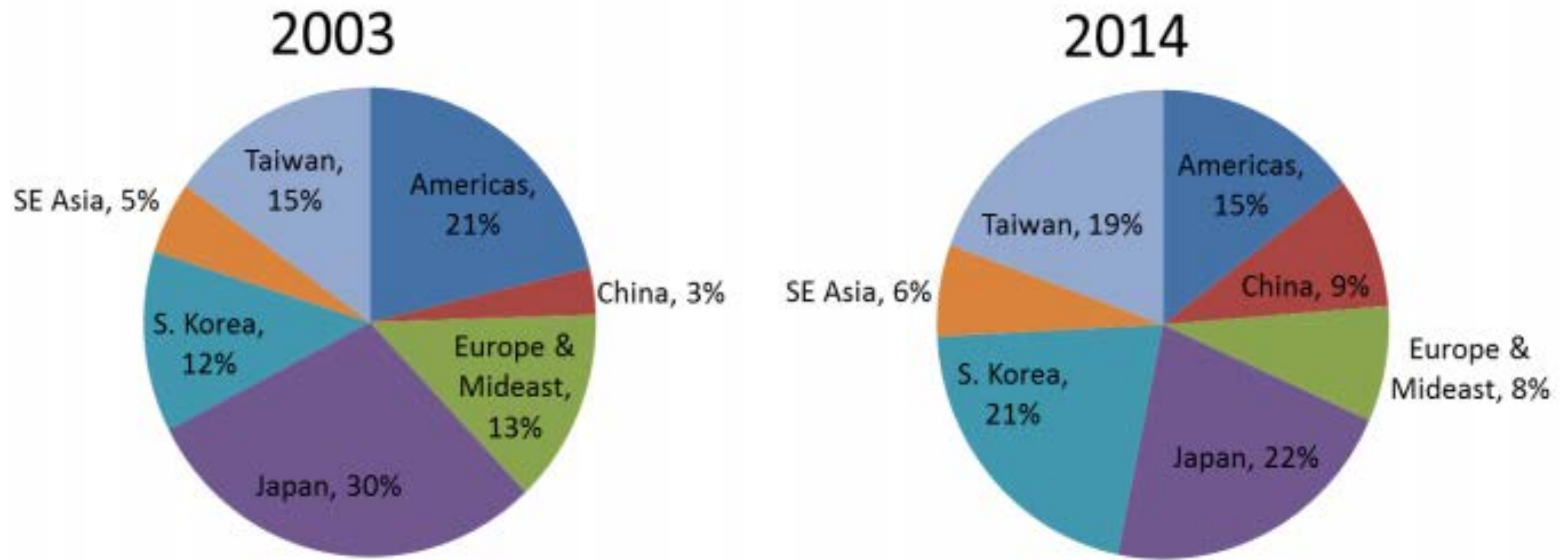


Worldwide & Asia

(Source: June 2014 WSTS)

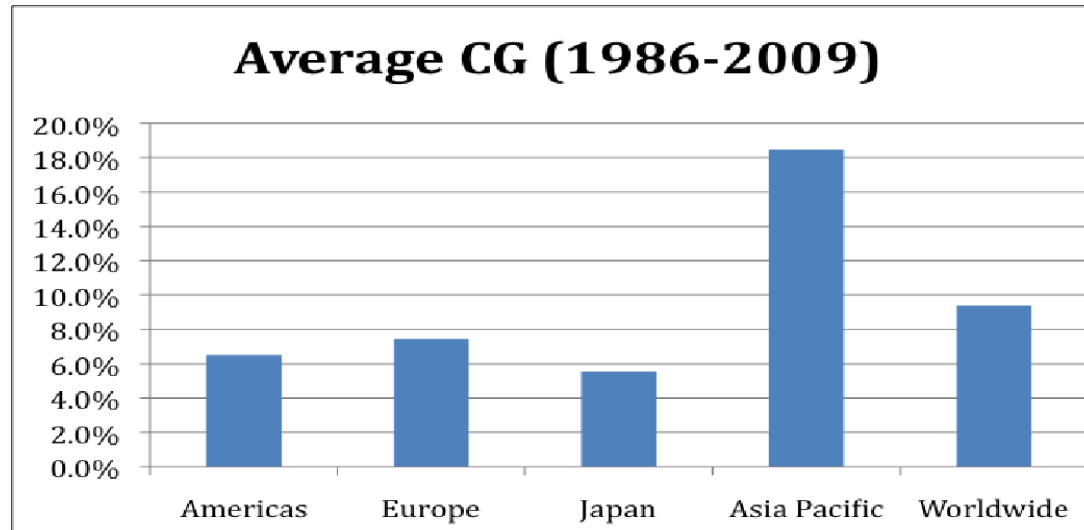
Overview of the World Semiconductor Market

Evolution of Capacity from 2003 to 2013



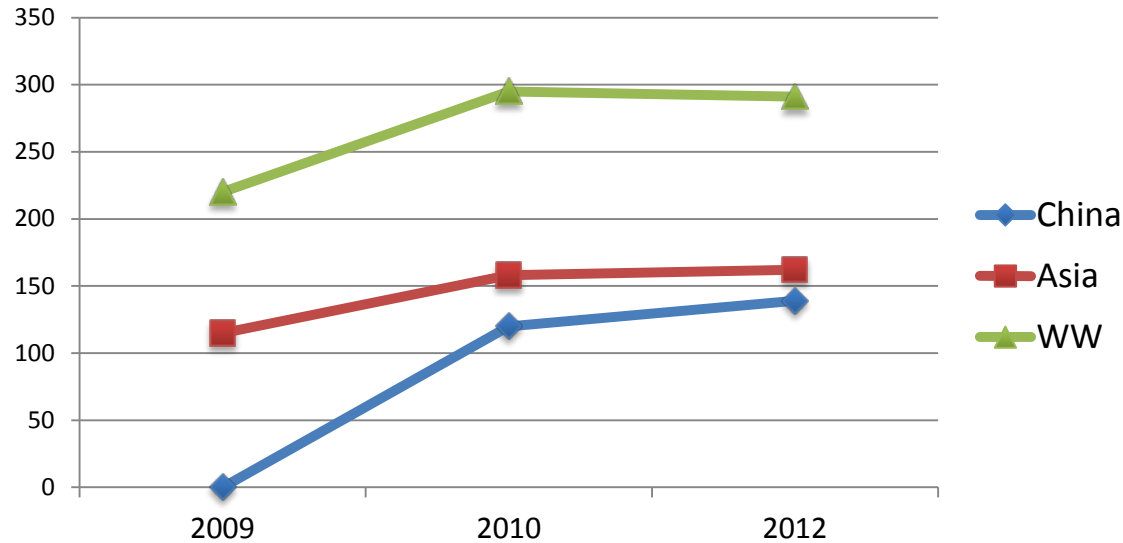
(Source: The Supply side: Overview of the World Microelectronic Manufacturing Landscape, Bettina Weiss, SEMI, September 10, 2013)

Situation of Semiconductor Market in Asia



Growth Rate is highest in Asia

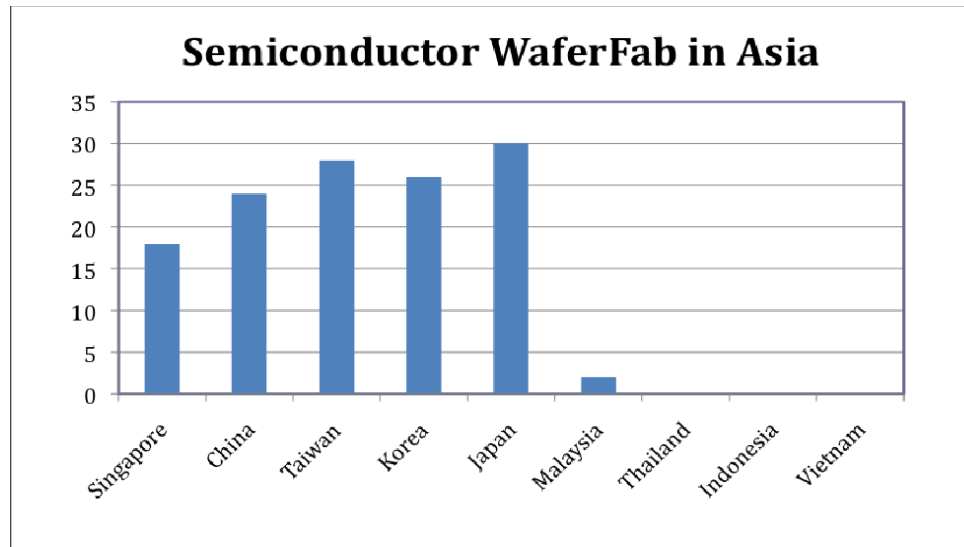
Situation of Semiconductor Market in Asia/ China



Source: Semiconductor Manufacturing Magazine

- 60% of world population live in Asia
- Consumption of Electronic goods grows
- Consequence: number of Wafer-fabs in Asia grow

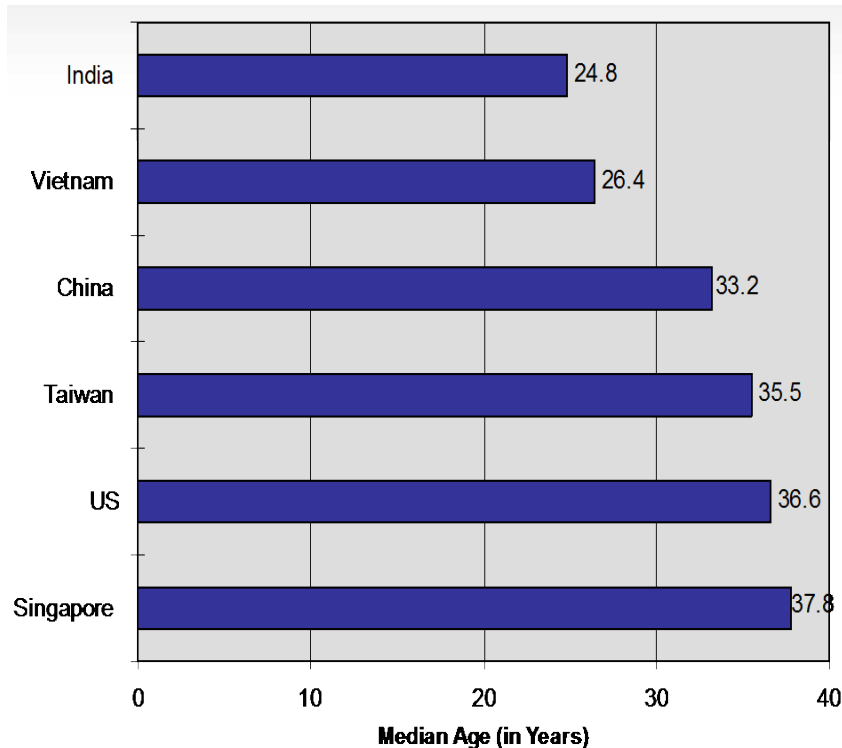
Situation of Semiconductor Market in Asia/ China



Samsung	12,6%
Hynix	7%
TSMC	10%
UMC	3,5%

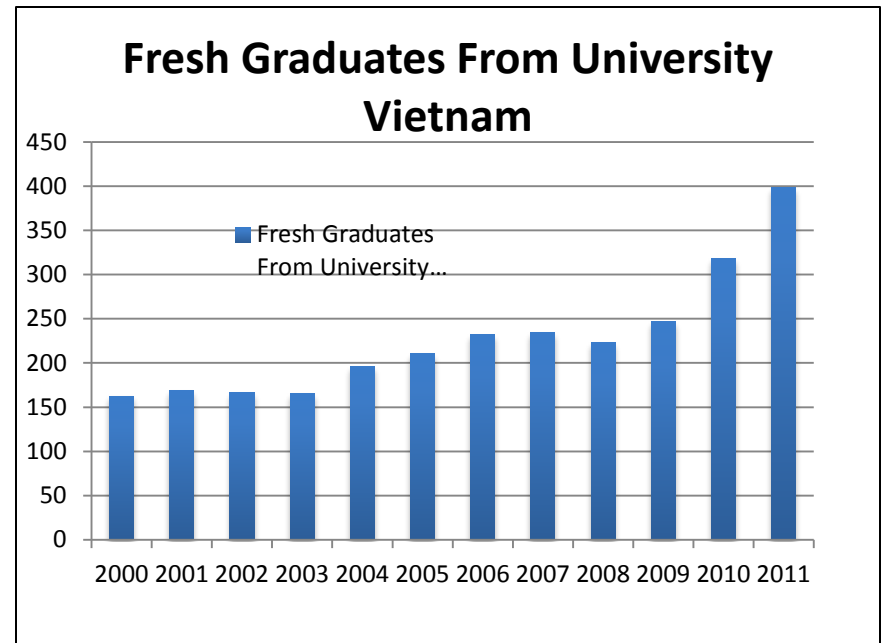
IC Wafer Capacity Leaders

Situation of Semiconductor Market in Vietnam



Source: CIA World Fact Book, 2007

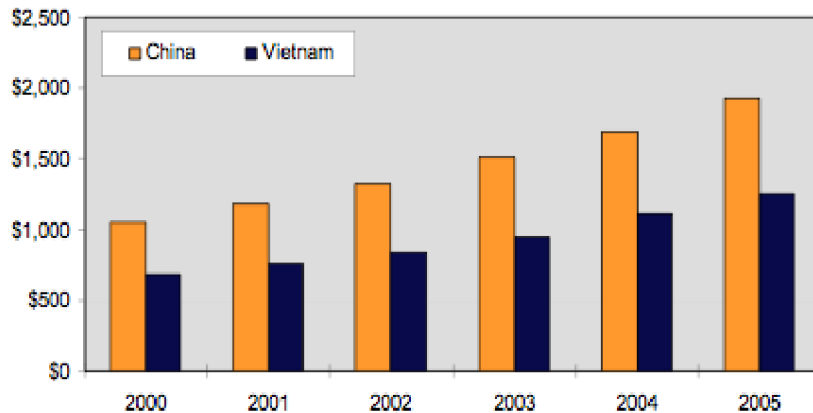
Young population



Source General Statistics Office of Vietnam

Strong number of fresh graduates

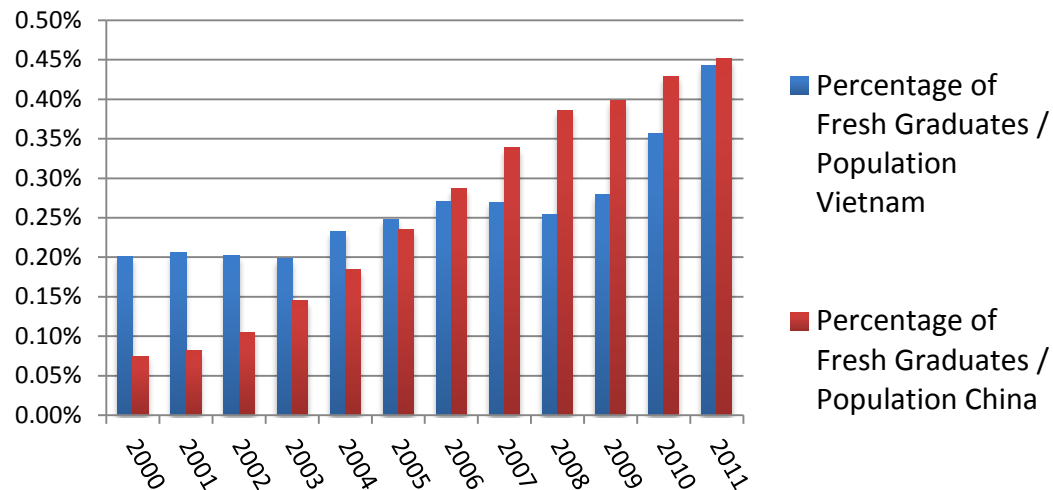
Situation of Semiconductor Market in Vietnam



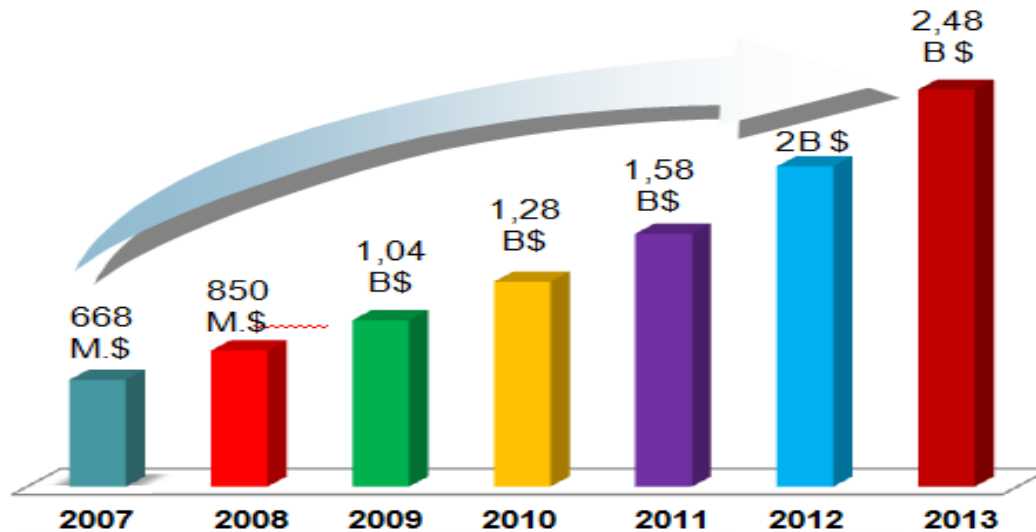
Source: National Bureau of Statistics of China, General Statistics Office of Vietnam, 12/07

Low wage compared to China

Comparable rate
to China in
Fresh Graduates
/ Population



Situation of Semiconductor Market in Vietnam

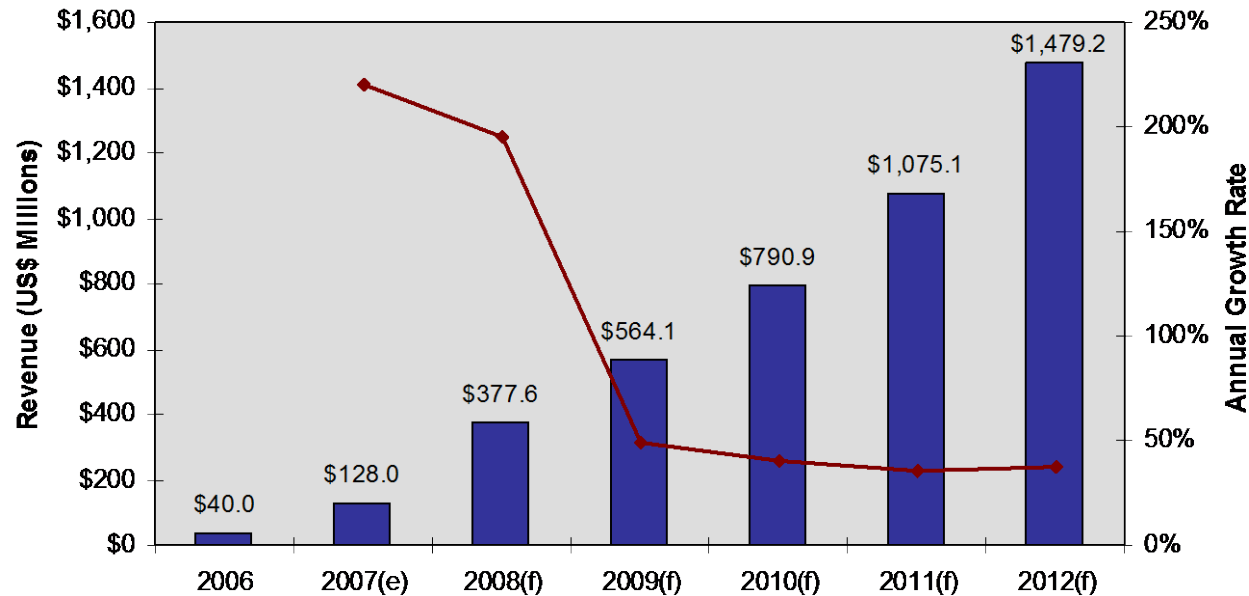


Source: In-Stat

Annual growth rate until 2015: 25% – 27%

Annual growth rate beyond 2015 : 28% – 30%

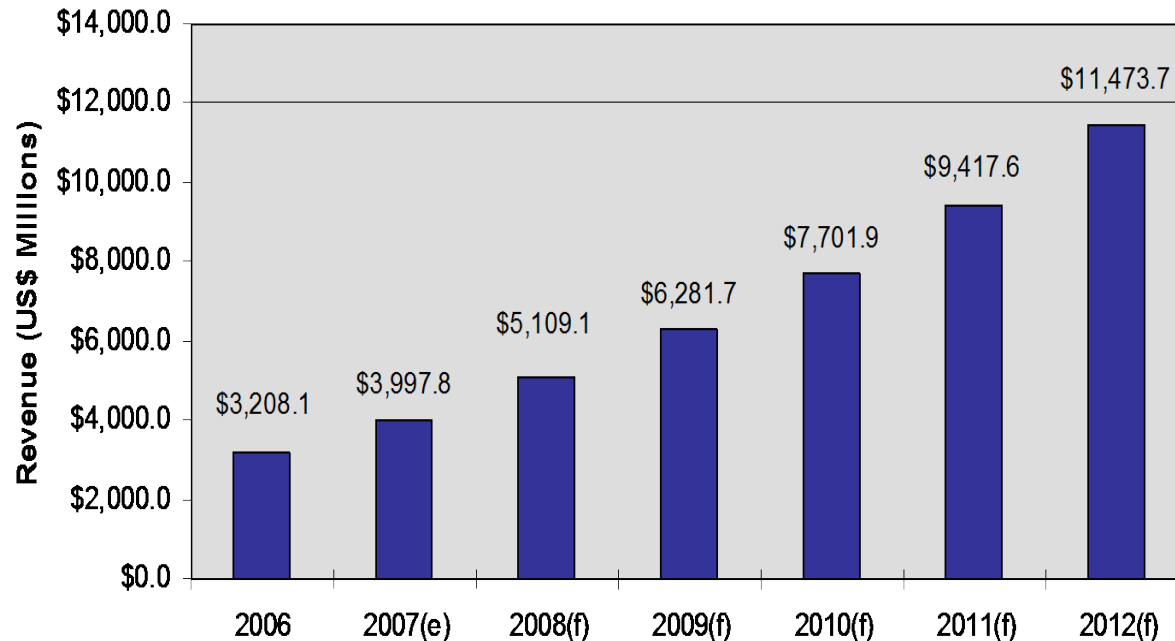
Situation of Semiconductor Market in Vietnam



Source: In-Stat, 12/07

Vietnamese EMS/ODM Revenues, 2006–2012 (US\$ in Millions)

Situation of Semiconductor Market in Vietnam



Source: In-Stat, 12/07

OEM Revenues in Vietnam, 2006–2012 (US\$ in Millions)

Size of the Vietnam Wafer-fab

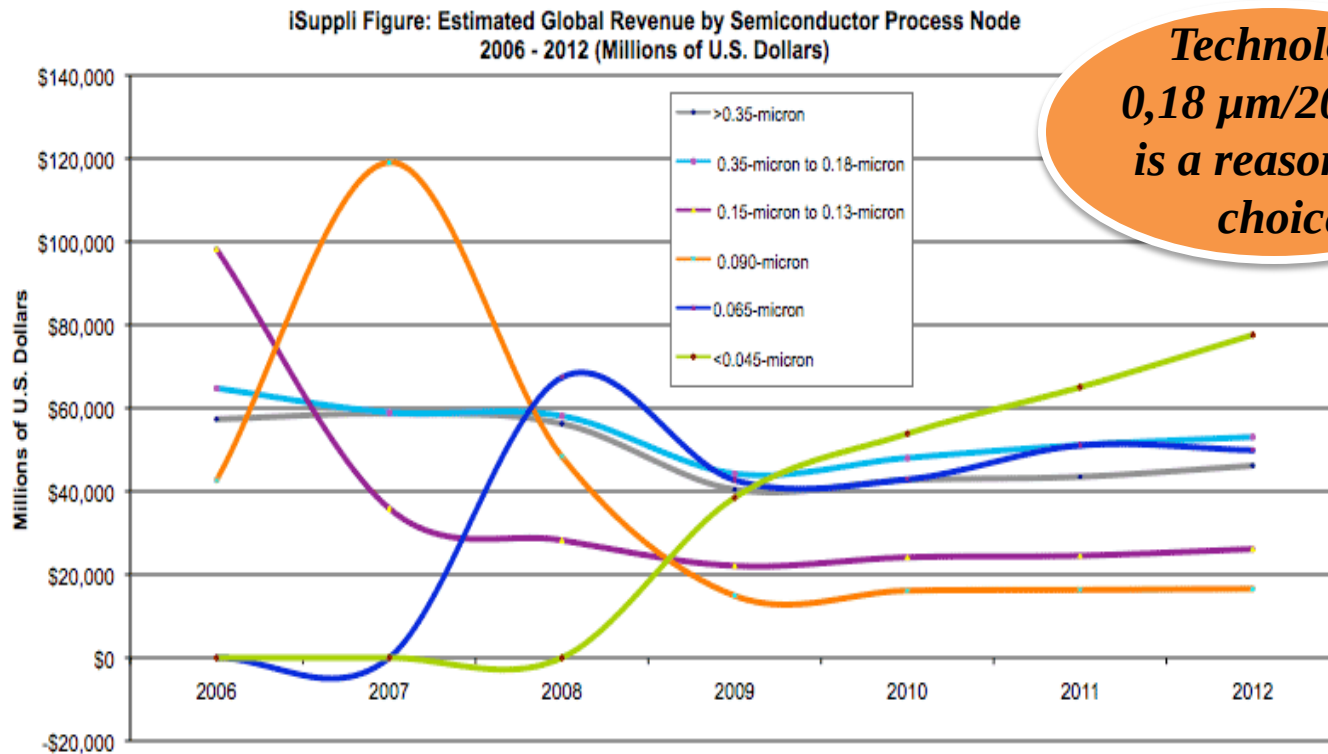
- Dependent on the cost structure of the Wafer-fab, the products it makes, the strategy it operates, a capacity of a minimum of 5k per month is required.
- Capacity is a function of product mix, so it can vary from 5k to 10k wafer per month.
- With this capacity, an investment of few hundreds Mio \$ is needed to enable the purchase of equipment, Fab building and the related infrastructure.
- Phase I:
 - 5 to 10 k Wafer per month
 - Up to 1.2 B chips per year (3 mm²)
- Phase II:
 - Double the capacity
 - Double the number of chip per year

Technology for Vietnam Wafer-fab

- Technology is a crucial factor for the Wafer-fab since it influences
 1. Investment volume
 2. Product
 3. Manageability for the young Vietnamese workforce
- The choice is 180 nm on 200 mm Wafer size
 - Revenues of all products made in Technologies down to 180 nm account for more than 100 B\$.
 - A wide variety of products can be made in these Technologies as shown below.

Analysis & the selection of technologies

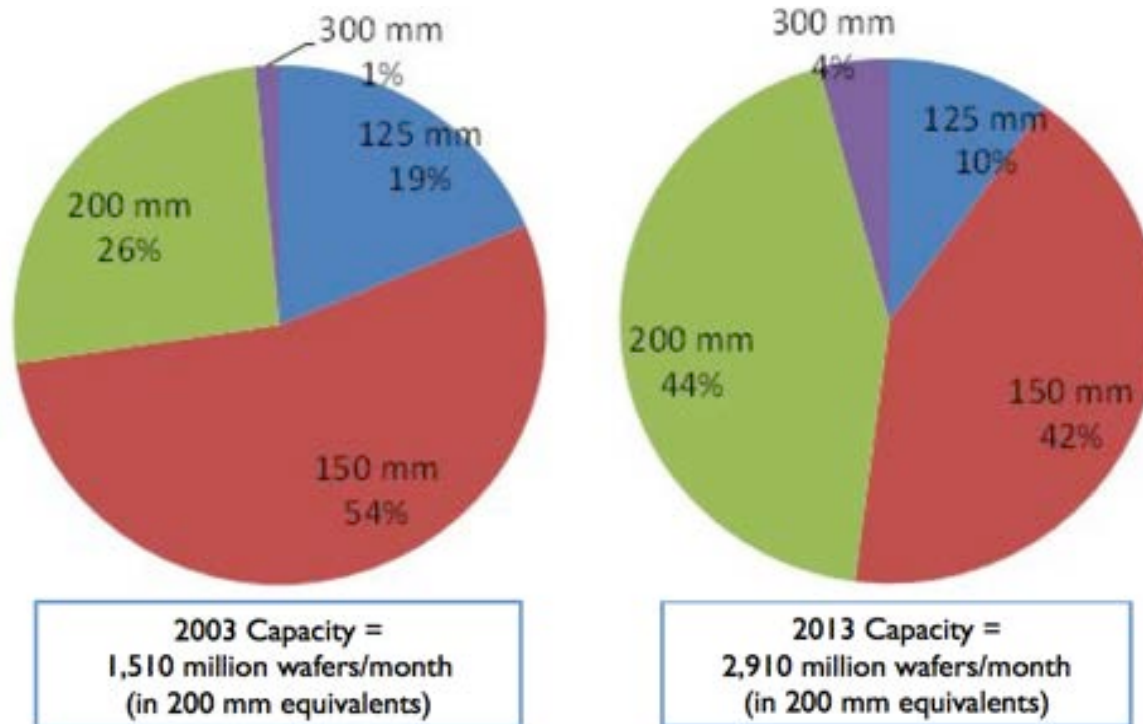
Technology 0,18 μm contribute 50billion USD for long term



*Technology
0,18 μm /200mm
is a reasonable
choice*

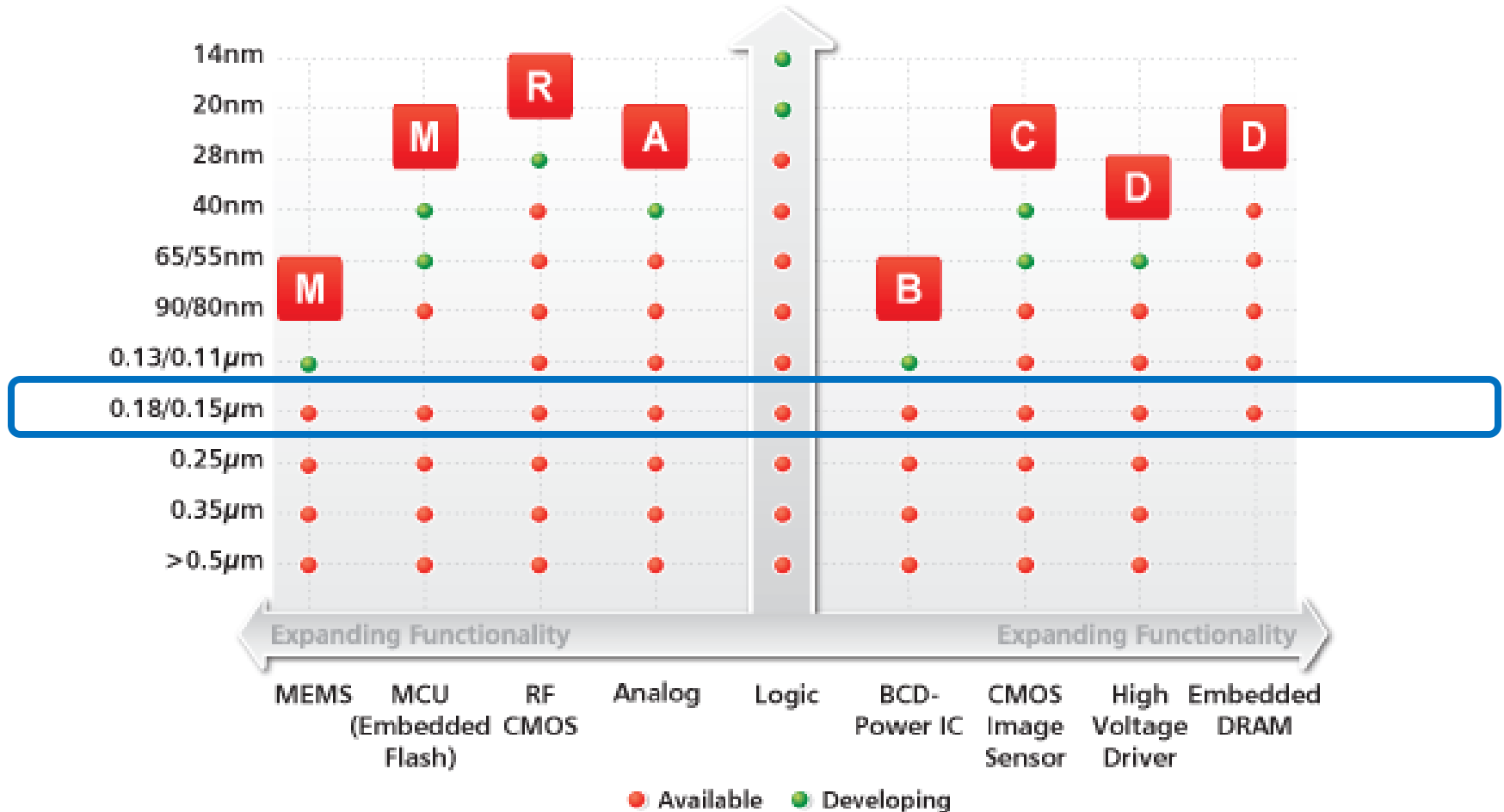
Source: iSuppli Corp. June 2009

Analysis & the selection of technologies



(Source: Opportunities in 200mm Semiconductor Technology Markets, 28 Nov. 2013, Fab Max)

TECHNOLOGY



Source ITRS

PRODUCTS OF WAFERFAB

Common
Electronic Chip

RFID Chip

Power IC

Products

- Chip used in industry and household appliances (power IC for switch)
- Electronic chips used in smart cards, credit cards, SIM cards, GSM module, GPS module, identity cards, cards on the bodies, health insurance card, driving license, ID card,...
- Chip electronics systems used in radio frequency identification (RFID)
- Processing by customer design

Research - Training

Design

Technology Transfer

Electronic chip market in Vietnam is very potential (>1 billion chips in 2015) with a high growth rate (23% - 27% /year). Focus on key industries such as "consumer electronics", "multimedia communications", "electronic board", "wireless" and "smart cards"

Current Demand:

- Demand for semiconductor IC in 2013: \$2,48 billion USD.
- Quantity: ~ 500 million electronic chip
- Growth rate: 23-27% / year

Future demand:

- Demand for semiconductor IC in 2015: \$4 billion USD
- Quantity: > 1 billion electronic chip
- Growth rate: 25%/year
- Vietnam's consumer electronics device market is expected to be 6.8 B \$ by 2014 (affordability of products) acc. CEA

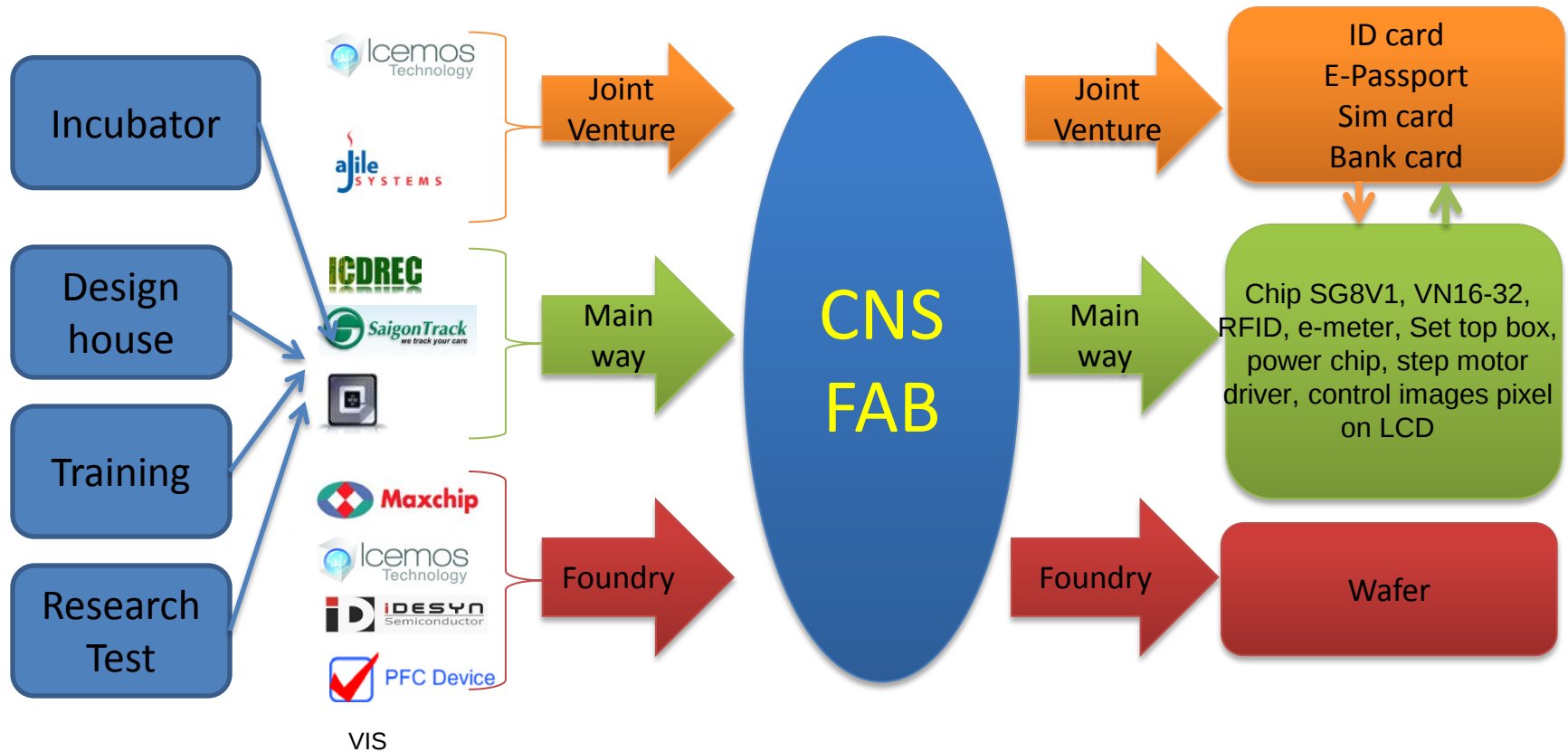
Applications	Market (%)	Technology
Consumer electronic	25	180nm 250nm
Multimedia (tv, computer, cell phone, radio, ampli, ...)	18	
Electronic board	12	
Wireless (sim card, USB, USB 3G, ...)	10	
Smart card (bus ticket, transportation fees, employee card, parking card, credit card / GSM, health insurance card, Electronic banking, identity card, passport, baggage control of the airline industry, ...)	8	
Electric products (capacitor/ voltage, electric meters)	6	
Microcontroller in automation industry, agriculture.	5	
Securities devices (camera, surveillance equipment car journey, ...)	4	
Others (security information, especially for Government and National security, ...)	12	

RFID'S APPLICATION

RFID	NHU CẦU (thẻ)
1/ ID	40.000.000
2/ Medical card, patients card	30.000.000
3/ Military ID	1.000.000
4/ Passport	30.000.000
5/ Card on body	20.000.000
6/ Identification of military weapons	60.000.000
7/ Smart card of bank and encode card	900.000.000
8/ Bus and train card	500.000.000
9/ Card poultry , swine , cattle , or other livestock for meat	500.000.000
10/ Brand apparel, retail	500.000.000
11/ Student system management	30.000.000
12/ Ticket at theatre	500.000.000
13/ Brand at supermarkets	500.000.000
14/ Management system	500.000.000
15/ Sim card	200.000.000
16/ Library card	100.000.000
17/ Others card (security information of Party, Government, e-Government)	
Tổng cộng	4.411.000.000

RFID demand
forecast to 2020

MODEL OPERATION



The flows are inter-changeable based on economic conditions

Progress of the project

Job	2009-2012		2013				2014				2015				2016			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Making an investment project prefeasibility, feasibility, design basis, design drawings, drafting																		
Hire land in SHTP. Recruitment, invite Senior Specialist to manage the project and to train the engineer																		
Bidding and selecting contractor, design construction drawings, cost estimates																		
Bidding and selecting contractor to implement the contract of purchasing equipments.																		
Hiring management module team, training, coaching																		
Bidding and implementing the contract of consultant and construction																		
Recruitment, training and coaching of engineers, equipment operators																		
Installation of equipment																		
Testing, operating, test equipment																		
Acceptance, commercial production																		



Investment location

Saigon High Tech Park, distr 9, Hochiminh city (SHTP)



Investment location

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Saigon High Tech Park, distr 9, Hochiminh city (SHTP)



Conclusion

The project is feasible because:

- 1 Projects aligned to the economic restructuring of HCM city and the country.
- 2 Worldwide and Domestic semiconductor demands increase
- 3 Sound strategy and careful cooperation with domestic and International companies (JV) securing Fab filling
- 4 Wide range of products possible through optimal choice of technology and equipment
- 5 Network of peers to share business available

